ECONOMIC DEVELOPMENT

IN THE

SOUTHERN PIEDMONT

1860-1950

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ITS IMPACT ON AGRICULTURE

By ANTHONY M. TANG

CHAPEL HILL

THE UNIVERSITY OF NORTH CAROLINA PRESS

To JANE

whose devotion and understanding
contributed much to this study
this book is affectionately dedicated

FOREWORD

THIS IS THE FIRST of what we hope will be several monographs emanating from Vanderbilt University on the general subject of Southern Economic Development, with Particular Reference to Agriculture. For some six years, three members of the Department of Economics and Business Administration of Vanderbilt University have been engaged in a large-scale research project, the major objective of which is to study the effects of local industrial-urban development (via the factor and product markets) upon the income and productivity of the nearby agriculture.[1] In this project, which has received generous financial support from the Rockefeller Foundation, we have been making intensive historical and cross-sectional studies of three Southeastern areas of twenty to twenty-five counties each. Professor Tang has concerned himself with the South Carolina–Georgia Piedmont, Professor Frank T. Bachmura is studying a Lower Mississippi Valley area, while I have given special attention to the Upper East Tennessee Valley.[2]

[1]. The original prospectus for the over-all project may be found in my article, "A Research Project on Southern Economic Development, with Particular Reference to Agriculture," in *Economic Development and Cultural Change,* Vol. I (1952), pp. 190-95.

[2]. Professor Tang has previously published two journal articles on his study area: "Farm Income Differentials in the Southern Piedmont, 1860-1940," *Southern Economic Journal,* Vol. 23 (1956), pp. 1-14; and "Industrial-Urban Development and Agricultural Adjustments in the Southern Piedmont, 1940-50," *Journal of Farm Economics,* Vol. 39 (1957), pp. 657-75. Professor Bachmura's reports have included: "Migration and Factor Adjustment in Lower Mississippi Valley Agriculture: 1940-50," *Journal of Farm Economics,* Vol 38 (1956), pp. 1024-42; and "Crop Alternatives to Cotton in the Arkansas-Mississippi 'Delta': A Prognosis," *Journal of Farm Economics,* Vol. 39 (1957), pp. 942-50. My own publications thus far have been: "Some Foundations of Economic Development in the Upper East Tennessee Valley, 1850-1900," *Journal of Political Economy,* Vol. 64 (1956), pp. 277-302 and 400-15; "The Effects of Industrial Development on Tennessee Valley Agriculture, 1900-50," *Journal of Farm Economics,* Vol. 38 (1956), pp. 1636-49; "Human Resources and Industrial Development in the Upper East Tennessee Valley, 1900-1950," *Quarterly Journal of Economics,* Vol. 71 (1957), pp. 289-316; and "Relative Economic Development of the Upper East Tennessee Valley, 1850-1950," *Economic Development and Cultural Change,* Vol. 5 (1957), pp. 308-24.

The original manuscript upon which the present monograph is based was accepted as a doctoral dissertation by Vanderbilt University in December 1955. Shortly thereafter it received an award from the American Farm Economic Association as one of that year's three best doctoral dissertations in the field of agricultural economics. Since that time, it has been thoroughly revised for publication.

In the monograph which follows, Professor Tang has done a thoroughly workmanlike job. He has presented a logically tight-knit analysis in which, to an extent all too uncommon in economic writings, hypotheses are clearly stated and then carefully tested. He has shown great ingenuity in making the most of at best unsatisfactory data. Despite the enormous mass of statistical materials upon which he has drawn, he has also proven himself the master of the statistics, rather than (as so frequently happens) permitting the statistics to become his master. The result is a research product which is unusually readable, considering the complexity of the problem under attack.

Most important, he has clearly demonstrated that, at least in the Southern Piedmont, factor adjustments (particularly human out-migration) within the area's agriculture have not sufficed to raise prevailing substandard farm productivity and incomes, except where they were strongly assisted by the ameliorative influences of nearby industrial-urban development. Thus, his findings indicate that, if carefully conceived, the efforts of Southern chambers of commerce and industrial development agencies to attract industry to low-income rural areas are not only well-founded but will need further intensification if the economic problems of Southern agriculture are ultimately to find solution.

WILLIAM H. NICHOLLS

PREFACE

This study attempts to investigate the resource and income problem of Southern agriculture within the context of substantial technological and economic development on the American scene. Three considerations motivate the study. First of all, geographical differences in farm income (per farm worker or per farm family) appear to be chronic, indeed increasing much of the time, in this country. The problem, with its implication of inefficient resource use, remains serious even today after some fifteen years of unprecedented economic prosperity. Scrutiny of the changes in the relative income positions of Ohio and South Carolina over the past one hundred years will serve to highlight the situation.

During 1850-60, a farm worker in South Carolina was about as productive as one in Ohio. The Southern farmer then had about as much capital and improved farmland at his disposal. In later years, however, his relative resource and income position swiftly deteriorated as the nation entered its era of rapid economic development. By 1870-80, his productivity had dropped to about 75 per cent that of his counterpart in Ohio; by 1900, to about 50 per cent; and by 1940, to no more than 40 per cent. Since that time his relative position has improved slightly—not nearly enough, however, to warrant the conclusion that his problem will solve itself in the near future.

Secondly, the nation's low-income problem is essentially Southern and agricultural in character for two reasons. A disproportionately large number of low-income families is found in the South. At the same time, Southern nonfarm incomes, when adjusted for cost of living differences, are not appreciably below the level of the non-South. These well-known facts suggest that the South, as the nation's outstanding low-income region, acquired this status by reason of its relatively low level of farm incomes.

Thirdly, any solution of the chronic farm problem would seem to require a thorough-going farm reorganization—a task that will fall

largely on the inefficient agriculture of low-income farm areas. It is, therefore, essential that we acquire a fuller understanding of the nature and causes of the resource and income problem in Southern agriculture. Only then would we be able to suggest how the needed reorganization might best be encouraged.

At the present, no one yet fully understands why the resource and income problem in agriculture tends to be much more severe in some farm areas than in others. While seemingly plausible explanations are not lacking, they suggest in the main a need for empirical investigations. This work represents an attempt to meet this need. Although some attention will be devoted to an examination of alternative explanations, the focus will be upon the proposition of relating regional agricultural problems to economic development. I believe that in the pages that follow much light will be shed on this proposition and, in particular, on the detailed process by which economic development influences the long-run resource and income posture of an area's agriculture. While I alone am responsible for any and all shortcomings of this monograph, I freely acknowledge my indebtedness to Professor T. W. Schultz of the University of Chicago, whose fertile imagination and uncommon insight conceived the general approach employed here, and to Professor William H. Nicholls of Vanderbilt University whose follow-up work was instrumental in helping me to sort out my thoughts.

A. M. T.

Nashville, Tennessee
February 15, 1958

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INTRODUCTION

STATEMENT OF THE PROBLEM

IT IS WELL KNOWN that average agricultural incomes[1] per farm worker or per farm family differ greatly between nations as well as between communities of the same nation. Perhaps less well-known, but equally significant, is the fact that, on the American scene, average farm incomes differ a great deal more among communities than average nonfarm incomes, particularly when adjusted for cost of living differences. Furthermore, observed average community farm incomes, far from tending toward equality over time, have pulled increasingly further apart. While some communities on the American scene, notably those of the Southern region, have remained virtually stationary in average (real) farm incomes, others have surged far ahead. Thus, today's low-income phenomenon is largely agricultural and Southern in origin.

Just how far have different farm communities (or nations) drifted apart in terms of average income? Here, Professor T. W. Schultz's

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1. The use of average income leaves much to be desired in that it abstracts from possible differences in income distribution among communities as well as from possible shifts in income distribution within a community as its income position changes. It ignores related welfare considerations. It also overlooks possible relationships between a community's income distribution and the parameters of its consumption function, hence its ability to realize savings and capital formation at any given income level. (The validity of the latter proposition requires only unequal marginal propensities to consume for different income classes.) In view of the lack of adequate data as well as numerous practical and theoretical difficulties in giving meaningful interpretations to different income distributions, any consideration beyond that of average income is out of the question. About all one could do in this regard is to point out that our present knowledge suggests a generally negative relationship between a community's average income and the relative dispersion of its income distribution.

By farm income, we mean income derived from agriculture. The concept includes all income payments from agriculture to factor-owners whether in or out of agriculture, but excludes all income payments from nonagricultural sectors to persons engaged in agriculture (e.g., government payments and income from part-time industrial employment).

striking example of Grundy County, Iowa, and Breathitt County, Kentucky, is highly instructive.[2] In 1945, in terms of the Hagood farm-operator family level-of-living index, the Kentucky county had an index of only 5 as compared with 196 for the Iowa county. This difference, percentage-wise, is fully as great as that between China and the United States in 1947, in terms of Colin Clark's data on levels of real national product per man-hour. This is, indeed, "a similarity that should not be dismissed too lightly." Looking back, we find that before 1800 the highest country was only 5 times the lowest in terms of Clark's data. This ratio between the highest and the lowest countries has since increased to 7 times by 1825, 17 times by 1910, 25 times by 1930, 33 times by 1940, and 39 times by 1947.[3]

These data suggest that there is a real poverty problem in agricultural areas even in this country and that, if the past trend in average community incomes is allowed to continue, *community-wide* poverty (in a relative sense) will become even more pronounced in the future. Insofar as poverty is socially undesirable and economically indicative of uneconomic resource allocation,[4] its elimination should clearly be the goal of any sound public policy. This at once points to the necessity of identifying the forces that bring about geographical disparities in farm income.

POPULAR EXPLANATIONS OF GEOGRAPHICAL FARM INCOME DISPARITY

In two seminal and highly significant articles published in 1950-51,[5] Professor Theodore W. Schultz launched a careful reexamination of a number of time-honored explanations of farm income differentials among areas. The critical evaluation led to his rejection of these arguments. In their place, he advanced a new line of inquiry centered

2. Theodore W. Schultz, "Reflections on Poverty Within Agriculture," *Journal of Political Economy*, LVIII (February, 1950), 2-3, n. 2.

3. *Ibid.*, pp. 8-9, n. 14. Although Clark's index is actually a measure of labor productivity in all economic activities, there can be little doubt that its divergent trend portrays as well the trend in agricultural labor productivity and the trend in farm income.

4. Poverty here is not to be confused with a second type of low-income phenomenon found in all communities where income distribution is not totally divorced from productivity. This phenomenon, identified with families at the low end of a community's income scale, is brought about by broken families, old age, disability of family heads, low personal ability (native and acquired), and the like. Although it is indicative of low productivity, it has no implications with respect to resource allocation and is primarily a welfare problem.

5. The article referred to in footnote 2 above contains his original exposition. A supplemental formulation may be found in his "A Framework for Land Economics—The Long View," *Journal of Farm Economics*, XXXIII (May, 1951), 204-15.

around the hypothesis that differential (geographical) farm income trends are explained by the uneven pattern of economic development among areas. Schultz's imaginative work has since received widespread attention among students interested in the solution of the resource and income problems of the low-income farm areas, having inspired a number of fruitful studies as well as major research projects. In this work, we propose to subject Schultz's persuasive thesis and its broad implications to a comprehensive, empirical, and historical investigation.[6]

The original list of popular arguments taken up by Schultz is not exhaustive; it is, however, more than suggestive since it includes all those most commonly used in explaining geographical farm income differentials. While some of these arguments are distinctly superficial, others are sophisticated and would bear rather close inspection. The more popular arguments, along with the Schultzian hypothesis, may be grouped broadly as follows:

1. Those which rest their explanations of geographical farm income disparity on differences in the natural ability of the human agent among communities

2. Those which rest their explanations of income disparity on differences among communities in their preferences for leisure or for particular ways of life[7]

6. The more important implications were spelled out by Professor William H. Nicholls in a series of hypotheses designed to explain the processes by which positive income effects of economic development are transmitted to agriculture. See his "A Research Project on Southern Economic Development, with Particular Reference to Agriculture," *Economic Development and Cultural Change,* I, No. 3 (October, 1952), 190-95.

7. Take communities A and B with identical populations and labor forces. B is assumed to have greater given preference for leisure. Its indifference curves are then steeper (with income on the vertical axis and leisure on the horizontal axis), indicating higher marginal rates of substitution of income for leisure at any given level of income and leisure. Under these circumstances, even when both A and B are faced with the same labor reward per hour, B will reach its equilibrium at a point where its total income (its per capita income) is below that for A at the latter's equilibrium.

The effect of particular ways of life on community income positions may be treated in the same manner. For instance, numerous economic historians (notably, Max Weber and R. H. Tawney) have contended that there is a real association between Protestantism and the rise of capitalism characterized by spectacular increases in total and per capita incomes in those countries of Protestant tradition. The argument, in essence, rests on the alleged fact that Protestantism removed the stigma traditionally cast upon money-making and that, at the same time, it caused people to put a heavier premium on hard work and wealth accumulation. This, of course, had the effect of changing the slope of community indifference curves and permitting the point of equilibrium to be reached at a higher income level.

3. Those which rest their explanations of income disparity on the ground. that communities have not been uniformly affected by the varying pattern of secular drifts in farm commodity prices

4. Those which rest their explanations of income disparity on community differences in natural endowments (for instance, that communities are endowed with land of widely different attributes)

5. Those which rest their explanations of income disparity on the uneven pattern of economic development "whose locational matrices are primarily industrial-urban in composition."[8]

COMMENTS ON POPULAR EXPLANATIONS

It is not the express purpose of this study to test empirically each of the above explanations. The study has a more limited objective: (1) to examine Schultz's matrix hypothesis in the light of available data and (2) to understand in some detail the processes by which economic development transmits its positive income effects to local agriculture. Nonetheless, a few general observations about the more popular versions may be made at this juncture.[9] It is hoped that empirical findings in later chapters will throw more light on their relative merits.

With respect to the first explanation above, which attributes geographical (farm) income differences to community differences in natural human endowment either on biological grounds or on the ground that poorly endowed people (of similar stock or race) tend to gravitate to poor land, it is sufficient to point out that there is no conclusive evidence that the farmers of, say, Asia are *naturally* less able than those of Europe or that, given an identical racial composition in two communities, the community with poor soil would have *naturally* inferior farmers. On the contrary, according to Professor Schultz, "Although the evidence is tenuous, it may be held that, whereas there are now poor and rich communities in agriculture, they are still essentially more alike than they are unlike one another, in the distribution of natural human endowments."[10] This, of course, does not mean that there are no observed community differences in human ability. But these differences are in the main attributable to variations in acquired human ability. In such a case, they become the consequences

8. Schultz, "A Framework for Land Economics . . . ," *op. cit.,* pp. 205-6.

9. It will be noted that the writer has freely drawn upon Schultz's observations, though with important modifications and expansions.

10. Schultz, "Reflections on Poverty . . . ," *op. cit.,* p. 4. Also his "A Framework for Land Economics . . . ," *op. cit.,* p. 208.

of differential rates of investment in the human agent. This, in turn, means that observed community differences in human ability are, in effect, the result of income disparity, since the investment in the human agent is primarily a function of income, past and present.

With respect to the second explanation above, which argues for what one might call cultural differences as the basis of community income differences, we may distinguish between two possible approaches. One such approach is to take cultural differences, hence differences in wants, as given. Under this formulation, communities may differ widely in average income and still be in equilibrium in terms of resource allocation, but this type of formulation is sterile and can be hardly more than an argument for hands-off policies in respect to low-income areas within agriculture. Moreover, there is no incontrovertible evidence that given wants do differ significantly between agricultural communities.[11] It seems far more plausible and meaningful to hold that community wants vary because community cultural developments are not independent of economic development, with its charac-

11. On the other hand, Professor Francis L. K. Hsu, for instance, not only recognizes great differences in cultural patterns but attaches much significance to them. ("Cultural Factors," *Economic Development—Principles and Patterns*, Harold F. Williamson and John A. Buttrick, editors [New York: Prentice-Hall, 1954], pp. 318-64.) In contrasting the Chinese cultural pattern against the Western, he cites the tradition of individualism and primogeniture in the West, producing the absence of personal security—which the Chinese possess through their tradition of mutual dependence within the "primary groups," i.e., kinship groups—as the force that drives the Westerners to hard work (high current income) and saving for a rainy day and old age (hence, rapid capital formation and still higher future income). However, there is one aspect Professor Hsu has overlooked. While economic success may be only desirable, not imperative, with the Chinese, their "higher" considerations for the good and prestige of their respective primary groups may induce them to do exactly the things that the Westerners feel compelled to do. Moreover, the Western tradition of individualism has undergone rather drastic changes during recent decades. One need only look at the popularity of social security programs in the Western world. At the same time, under Western influences, there has been a steady deterioration in the traditional Chinese values. Yet, there has been no narrowing in the (farm) income gap between China and, say, the United States. On the contrary, the divergent trend has continued. It appears unlikely that differences in cultural values or given wants, as great as they may appear to be between China and the United States, could account for the observed income trends.

Perhaps more importantly, as Professor Hsu implicitly recognizes, the real significance of cultural factors in relation to income levels may lie in their ability to create environments which may or may not be favorable to industrial development, rather than in their effects upon the subjective valuations of the desirability of income vis-à-vis leisure, broadly defined. When thus formulated, it becomes clear that the significant income-differentiating potential lies in the presence or absence of industrial development. As is borne out by our historical data shown earlier, without the instrumentality of industrial development before 1800, there were only minor differences in incomes between communities despite the centuries-old cultural and other differences.

teristic uneven pattern. Under the latter formulation, wants are no longer given and constant, but change with the pattern of economic development. It is the degree of economic development, rather than differences in given wants as such (if, indeed, there are any), that must be held accountable for community income differences in agriculture. When stated in this manner, the differences in wants between communities in different stages of economic development can be looked upon as "cultural impediments" through which uneven economic growth gives rise to uneconomic resource allocation and unequal income.[12] In conclusion, we may say that the second explanation of income disparity in agriculture, when positively formulated, becomes actually a part of the fifth explanation.

We now turn to the third explanation above, which attempts to relate income disparity in agriculture to the varying pattern of secular drifts in farm commodity prices. In this connection, we may simply state that the failure of the present price-support program to solve the income problem of America's low-income farm communities despite high support prices probably constitutes an adequate rejection of this argument. Certainly, in the long run, declining prices are not inconsistent with sustained high incomes.[13]

The fourth argument, which attributes community income differences in agriculture to natural differences in the quality of the land, requires a lengthier treatment. Actually, the differences in land quality can be looked upon as windfall gains to those communities endowed with "good" land at the time of their settlement.[14] Hence, the arguments presented below in respect to land are also applicable to all windfall gains. At the outset, let us distinguish between the effect of land on incomes and its effects on factor returns (prices). Let us also distinguish between three possible situations:

Communities faced with perfect factor markets

Under conditions of perfect factor markets, differences in land quality, no matter how great they may be, clearly cannot give rise to persistent unequal factor returns between communities. Even the technical rigidity in input combinations, alleged by some economists to be inherent in poor land, would fail to bring about differences in factor

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12. Schultz, "Reflections on Poverty . . . ," *op. cit.*, pp. 13-14, n. 24.

13. For a more eloquent rebuttal of the argument see *ibid.*, p. 6.

14. Judging by the manner in which this country was settled, e. g., the settlement under the Homestead Act and various state lottery acts, wherein no consideration for quality was given in parceling out the land, windfall gains of this type were apparently common occurrences at that time.

returns, for such land can always be abandoned. Unequal factor returns must be explained in terms of imperfections in the factor markets, and yet differences in land quality can give rise to differential per capita total (returns to all factors) incomes even under conditions of perfect factor markets. This is so because, while returns to factors may be equalized by free factor transfers between communities, differences in land quality would have called forth different input and enterprise combinations which may well yield different ratios of capital to labor, hence differential per-capita incomes as long as we assume that all communities have the same proportion of their population in the labor force. However, there is no necessary reason for income disparities thus created to show increasing trends over time. Nor are these disparities likely to be significant (in relation to those obtained under unequal factor returns).

Communities faced with equally imperfect factor markets

In this case, a community endowed with good land will be able, by virtue of its higher realized incomes and their positive effects upon savings and investment, to lessen the adverse effects of an imperfect capital market. This will lead to not only higher ratios of capital to labor in that community but also unequal labor returns in its favor. The differences in community farm incomes thus obtained will be more significant. However, the income-differentiating potential of land is subject to the leveling forces of free commodity trade between communities in that such trade tends to equalize factor returns without factor transfers.[15] It is also subject to inter-community factor transfers

15. This conclusion was first expounded in the Ohlin-Heckscher theorem and later elaborated upon by Professor Paul A. Samuelson in two articles in the *Economic Journal,* "International Trade and Equalization of Factor Prices" (LVIII [June, 1948], 163-84), and "International Factor-Price Equalization Once Again" (LIX [June, 1949], 181-97). The argument rests upon a set of rather stringent conditions and, for this reason, has come under frequent attacks. S. F. James and I. F. Pearch, for instance, have shown that factor prices are not necessarily equalized by commodity trade if one relaxes the assumption of homogeneous production functions throughout the range in which both countries are identical and if one introduces a number of commodities ("The Factor Equalization Myth," *Review of Economic Studies,* XIX, No. 4 [1951-52], 111-20). However, Professor Samuelson in his comments on this article ("A Comment on Factor Price Equalization," in the same issue, pp. 121-122), while granting the validity of this conclusion, argued that the simpler analysis better approximates reality.

It is well to remember also that the above argument is a static one so that its validity is not always verifiable on the basis of crude observations which may be influenced by vitiating forces. Such forces may lie in differential rates of economic development and population growth among areas, for example. Moreover, the presence within areas of imperfect markets (which hamper adjustments in response to trade-induced specialization in accordance with the principle of comparative advantage)

which, though imperfect, will likewise tend to equalize factor returns. This potential—as well as that arising from community differences, when present, in human ability, preferences, and secular price drifts—may be further limited by possible population upsurges in high-income communities. More specifically, since the explanations thus far reviewed are presumably sufficient in themselves to give rise to persistent income differences, their validity must not be contingent upon the presence of concomitant industrial development. But without the latter development, the populations of the communities under observation *may* be of the pre-industrial demographical type with growth behavior generally tending toward that of the Malthusian model.[16] At this point, it may be well to point out once again the relative insignificance of the differences in labor productivity between nations during the pre-industrial era before 1800.

Communities faced with imperfectly functioning factor markets of unequal efficiency

Here, in the long run, the significance of land (and all windfalls) with respect to incomes fades into the background. This follows because, in the long run and under a dynamic setting, the relative income position of a community depends upon its ability to make the necessary adjustments in response to changing economic and technological conditions and because this ability to adjust is determined by the relative efficiency of a community's factor markets. A community endowed with good land will ultimately see its advantage dissipated if its factor markets function imperfectly. On the other hand, a community endowed with poor land will eventually surge ahead in income if it has relatively efficient factor markets. One should not be surprised then to find that the Mississippi Delta, with one of the world's richest soils, is a low-farm-income area; while New England, with its

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may also make it difficult to observe the equilibrating effect of free commodity trade between areas upon their factor returns. Persistent differences in factor returns between the Southern region and the rest of this country should not be taken to mean that the argument is invalid. The argument is granted as soon as one concedes that factor returns would have been even more disparate in the absence of trade.

16. Recent findings by Professor William H. Nicholls in his intensive study of the Upper Tennessee Valley area seem to cast some doubt on the general validity of this statement. In 1850, long before this area acquired any important measure of industrial development, some counties showed population characteristics not unlike those of to-day's advanced, industrial areas. See his "Some Foundations of Economic Development in the Upper East Tennessee Valley, 1850-1900, Part II," *Journal of Political Economy*, LXIV (October, 1956), 405-6.

poor, rocky soil, is a high-farm-income area.[17] The import of these remarks on land is that the relevant approach is to explain how and why the factor markets persistently function with varying degrees of efficiency in different communities. In our later attempt to answer this query, we shall hypothesize that the rate of economic development exerts positive influences upon the performances of the factor markets.

THE ECONOMIC DEVELOPMENT APPROACH

The arguments listed above are not meant to be conclusive rejections of those explanations of differential farm incomes which are based on community differences in natural human ability, cultural patterns, secular drifts of farm commodity prices, or land. However, in our opinion, they do cast sufficient doubt upon the adequacy of these explanations in accounting for the great income disparities in agriculture—much less their ever-widening trend—that persist between farm communities in modern times. We believe that the attempt to relate community differences in farm incomes to the highly uneven pattern of economic development constitutes the most promising approach.[18] We also believe that this approach—which may be called an industrial-urban matrix approach since, as Schultz argued,[19] the locational matrix of economic development is largely industrial-

17. It is noteworthy that, where communities confront over time markets of varying efficiencies, the mitigating forces mentioned earlier (pp. 9-10) would tend to find their income-equilibrating effects submerged. The tendency toward factor-price equalization under free commodity trade, while observable under static conditions, is likely obscured by disequilibrating tendencies arising from dynamic conditions, operating within markets of unequal efficiency. Likewise, the equilibrating effect of factor transfers will be submerged, in effect, by definition, since the persistence of differential efficiency among markets serving various communities implies that whatever force or forces responsible for it are sufficiently dynamic over time to offset the equilibrating effect of factor transfers upon market efficiency. The same argument would apply to differential rates of population increases in response to income level differences since this Malthusian equilibrating mechanism, viewed from its effect upon factor proportions, is fundamentally no different from the factor-transfer mechanism.

18. In order for this conclusion to be logically warranted, we need to show that the five explanations of income disparity thus far presented actually exhaust the list of possible explanations, which admittedly is not the case. However, they do represent the five most likely and most popular versions. As positive evidence in support of our conclusions, we may once again point to the singularly striking phenomenon that saw communities and nations move from a state of relative equilibrium—in spite of centuries-old differences in cultures and land—during the pre-industrial age before 1800 to a state of widely different rural levels of living which by 1945 showed a relative dispersion of thirty-nine for the U.S. counties. (The relative dispersion is a simple statistical measure of variability within a distribution and is equal to the ratio of the highest value to the lowest.)

19. "A Framework for Land Economics . . . ," *op. cit.,* pp. 205-6.

urban in composition—represents the most meaningful proposition in the sense that it lends itself to empirical tests more readily than the other popular versions. Underlying this approach are the following propositions: (1) Factor and product markets are relatively more efficient within the effective confines of industrial-urban matrices and relatively less efficient in peripheral areas. (2) The development pattern has been sufficiently dynamic to maintain differential market efficiencies among areas in spite of (imperfect) equilibrating factor transfers—which, in the first instance, may be partially offset by differential rates of population increases between the industrially advanced and retarded areas. (3) The long-run income position of an area depends not so much on its current status as on its ability to adapt its economic organization to changing demand and technology. (4) This ability to adjust is a function of market efficiency. Thus formulated, a working hypothesis may be stated as follows: long-time, increasing disparity in agricultural income (per worker or per farm person) among areas is related to the pattern of local industrial-urban development whose positive income effect is transmitted to local agriculture through its impact upon local market efficiency.

The plausibility of this hypothesis becomes perhaps more apparent if attention is called to certain characteristics peculiar to agriculture. The typical farm firm, in this country as elsewhere, represents a modest family enterprise. As such it utilizes primarily *unpaid* family labor; it is also subject to severe external capital rationing. These features, compounded by farm people's greater rate of natural population increase and the resulting rise in population pressure upon a more or less fixed supply of land, tend to put farm firms in an unenviable position. They tend to find themselves confronted with chronic resource and income problems even as general economic development proceeds apace in the country. Within the context of this development, changes in demand and technology are such that labor underemployment tends to persist in agriculture, except in areas where farm firms have access to efficient capital and labor markets and where internal adjustment within agriculture has proceeded at a rapid pace. In this country, changes both in demand and technology have thus far meant reductions in (farm) labor and increased mechanization and optimal firm size. For an industrial concern of even moderate size, adjustments of this type would have been simple enough. The firm would fire a few workers and borrow needed money (or issue additional stock) to acquire capital equipment. But to a typical farm

firm the task assumes formidable proportions. Uncertainties unique to agriculture[20] and the firm's lack of adequate assets and equity likely prevent any borrowing sufficient to equalize rates of returns (to capital) and prevailing interest rates. At the same time, the firm's reliance upon unpaid family labor hampers its ability to adjust labor input properly unless alternative employment opportunities can be found for family workers. Both because of the direction of the secular changes in demand and the mode of agricultural organization, the typical farm firm feels the negative effects of local market imperfections more keenly than the typical industrial concern. This is saying that geographical farm incomes are relatively sensitive to differences in local market efficiency.

It is on the basis of these considerations that we argue on behalf of the economic development approach in explaining geographical farm income disparities. To place our total argument in its proper perspective, we hasten to concede that the role of values, institutions, and the like should not be dismissed summarily. Instead, they should be recognized but only for what they are—passive factors. In the first place, we may recall once again the insignificance of these factors with respect to their effect upon geographical incomes before dynamic economic development came to the forefront following the Industrial Revolution. In the second place, under a dynamic development setting, they tended to give way to changes in areas where development proceeded rapidly. Only in areas bypassed by such a development are they likely to become contributing forces to adjustment lags within local agriculture (hence, depressed farm incomes).

At this point, the reader may well have detected an apparent inconsistency between our hypothesis and the time-honored principle of comparative advantage. Let us consider this matter in some detail. The principle, when correctly stated, is unassailable. All communities have some field or fields of activities in which they have comparative cost advantages. Agriculture, viewed broadly as a single field, is undoubtedly one in which some communities have comparative cost advantage. Regional or international specialization along lines of comparative advantage maximizes productivity and income. Our hypothesis states that the level of income[21] is related to the level of local industrial-urban development, but clearly not all communities have com-

20. Internal capital rationing arising from operators' aversion toward risk and uncertainty also plays an important role in this regard.

21. Actually farm income. But the argument may be extended to include all income.

parative advantage in the nonagricultural field of activities. How then do we reconcile the two positions?

The capital stock of an area at any moment of time is the resultant of three types of past investments, local (domestic) investment, indirect external investment, and direct external investment.[22] As long as local entrepreneurs behave rationally (i.e., if they take into account local relative factor proportions), that capital which resulted from local and indirect external investments would have been allocated in accordance with the principle of comparative advantage. Direct external investment (as for example the erection of a textile mill by a New York firm in the Piedmont) is not subject to the decision-making process of local entrepreneurs. It is on the contrary the direct result of the decision-making of outside entrepreneurs who are guided by a set of relative factor prices different from that prevailing locally. In the case of the New York textile firm, the relevant set of factor prices consists of New York interest rates and Piedmont wage rates. Evidently, capital acquired by an area in this manner need not have been allocated (usually to nonagricultural enterprises) correctly viewed from the standpoint of local resource allocation. In the Southern Piedmont, particularly, local industrial-urban development is almost exclusively the result of this type of direct external investment. Since capital was not correctly allocated in this instance, should we not expect lower income in the industrial-urban counties of the Piedmont (than in counties where industrial-urban development has not taken place and where, consequently, all capital might have been correctly allocated) as predicted by the principle of comparative advantage rather than higher income as suggested by our hypothesis?

An obvious reconciliation lies in the explanation that capital acquired by an area through direct external investment does not subtract from, but adds to, whatever capital the area can accumulate through other channels. The former type of capital will always bring some added benefits to the area regardless of how it might have been used. Secondly, the principle of comparative advantage takes resources as given and then prescribes areas of specialization. It takes no account of the possible effects of particular lines of specialization upon the composition of resources in the long run. It is conceivable that a particular line of specialization, though contrary to the principle of

22. By the first type we mean investment made by local entrepreneurs and with local funds. By the second, we mean investment made by local entrepreneurs but with external funds. By the third, we mean investment made directly by outside entrepreneurs and with external funds.

comparative advantage under given resources, may be quite consistent with it viewed from the resource composition at some future date.

Before bringing this section to a close, it may be well to introduce and define two convenient concepts. By exogenous forces, we mean all forces with potentials to create income differentials in agriculture—such as given wants, natural ability of the human agent, land in its natural state, secular price drifts—which are external to or independent of industrial-urban development and the mechanism it sets in motion. By endogenous forces, we mean those forces that are internal to this mechanism. It should be noted that the exogenous forces may be characterized as given or nondynamic; whereas the endogenous forces, as a growth process, are dynamic.

Even though, as a general proposition, it is unlikely that exogenous forces, where existent, can explain the persistent farm income differentials and their increasing trend, we are, nonetheless, unwilling to leave them entirely out of consideration. For, in particular instances and in the short run, the exogenous forces can have noticeable effects upon a community's relative income position. It is for this reason that we shall devote the entire following chapter to a historical review and evaluation of the more important exogenous forces in our selected area.

SCOPE OF THE STUDY

The objective of this study is to establish empirically the relationship between the pattern of industrial-urban development and community farm income levels and to identify the processes through which this development brings about income disparity in agriculture. The development pattern itself will be taken primarily as given. No serious attempt will be made to explore the reasons for the existing pattern within the study area. In order to isolate the basic relationships under investigation, we have decided on a microscopic rather than a macroscopic area approach with the hope of holding some, if not most, exogenous factors constant throughout our small area. To this end, we have chosen a group of twenty-one contiguous counties in the Georgia–South Carolina Piedmont as our case study area. Our choice of the study area is based on the following criteria:

    a. similar land resources throughout the area
    b. similar human resources in terms of cultural, racial, and political backgrounds
    c. common historical background
    d. similar dependence on agriculture sometime in the past

e. important differences in the rate of industrial-urban develop-
ment during recent decades among counties.

As we shall later see, the Southern Piedmont area essentially meets
the above criteria, so that county differences in such exogenous factors
as natural human ability, preference patterns, and land quality may be
considered insignificant at the time major industrial-urban develop-
ment began to take shape around 1900. Since all the counties in this
area have for many decades relied heavily on the same main cash crop,
cotton, it cannot be said that they have been subject to the influence
of dissimilar secular drifts in commodity prices. Before 1900, the
Piedmont area, as a whole, was predominantly agricultural. Since that
time, some counties have experienced substantial industrial-urban de-
velopment, while others have continued their top-heavy dependence
on agriculture.

Our formal analysis will begin with an investigation of the more
important exogenous forces operating in the study area before 1900.
This part of the study, presented in Chapter II, serves a four-fold pur-
pose: (1) to acquaint the reader with the salient features of the South-
ern Piedmont in a historical context; (2) to identify areas of hetero-
geneity in terms of the exogenous forces during the period; (3) to
ascertain their effects upon farm incomes over time (we hope to throw
light on the plausibility of attributing persistent, increasing geographi-
cal farm income differentials to some original, exogenous disturbance);
(4) to evaluate the state of homogeneity in the study area at the time
major industrial-urban development began to take place (around 1900).
During this period, the income effect of an original, exogenous dis-
turbance, though significant in the relatively short run, tends to dis-
appear in the long run. With Chapter III, we begin our analysis of
the period 1900-40. The focus will be upon the highly uneven pattern
of industrial-urban development in the area and the level of farm in-
comes of the area counties over time. In contrast to the earlier con-
vergent trend, farm income differentials increased with time under
the impact of this dynamic development. As a result, increasingly
higher farm incomes (per worker) accrued to the industrially de-
veloped counties while those of the industrially underdeveloped coun-
ties remained relatively stationary.

In later chapters, we shall seek to establish in considerable detail
the processes by which industrial-urban development influences local
farm incomes. The analysis will be organized around a number of hy-
potheses whose purpose is to explain the way industrial-urban develop-

ment, via its impact upon the efficiency of local product, capital, and labor markets, influences migration, the organization of the farm firm (with respect to scale and factor and enterprise combinations), and the allocation of family labor among the family farm and off-farm employment. The testing of these hypotheses will be made in Chapters IV, V, and VI. Those related to the product markets will be taken up in Chapter IV, those related to the capital market in Chapter V, and those related to the labor market in Chapter VI. A brief summary of the hypotheses employed follows:

The Product Markets

1. As a result of the industrial-urban development in their midst, the developed counties have acquired better rural roads and more efficient marketing facilities, characterized by greater competitiveness, more efficient marketing practices, and greater internal and external economies, in all three functional categories, the assembling and disposal of farm products, the distribution of agricultural inputs, and the distribution of goods and services consumed by farm families.

2. The growth of urban centers (and rising incomes) in the developed counties creates new demand for certain farm products; however, because of market imperfections and distance barriers, favorable income-raising opportunities for readjustment in the enterprise combination of farm firms are largely limited to farmers in the developed counties.

3. Moreover farmers of the developed counties are in a position to market relatively greater quantities of certain farm products under forms that are relatively more attractive price-wise.

The implications of these hypotheses with respect to farm incomes are clear. The first explains increased (money) farm income in the developed counties attributable to favorable changes in the relationship between prices and costs. It also explains further increases in real income and level of living because of lower consumer prices. The last two seek to explain the income effect of industrial-urban development upon local agriculture through the induced changes in the demand for local farm products and their subsequent effects upon the enterprise combination and marketing alternatives (among several segmented markets) of local farms.

The Capital Market

1. As a result of local industrial-urban development—which represented influxes of outside capital and subsequent growth of local em-

ployment and incomes—the developed counties have shown more rapid increases in the resources of their financial institutions.

2. Because of market imperfections, the resulting increase in the ability and willingness to lend and the subsequent lessening in the severity of capital rationing have by and large benefited only the nearby farmers.

3. The federal and federally-sponsored lending agencies have thus far failed to offset county differences in local capital market performances and, in consequence, the developed counties' farmers (primarily full-time operators of commercial farms) have been able to undertake more rapid reorganization of their farm firms, thereby yielding increasing farm incomes and returns to labor and management.

4. Some of the side effects of the developed counties' more efficient capital markets (and higher incomes) have been (a) more rapid declines in their rate of tenancy, (b) greater investment in the human agent, and (c) more substantial investment (or less disinvestment) in agricultural land. (Although the impact of the first effect upon farm incomes in uncertain, that of the latter two is clearly favorable.)

The Labor Market

1. The greater alternative employment opportunities of the developed counties, because of job-rationing in favor of local residents and physical limits to commuting distances, are largely limited to nearby farm families, resulting in progressive upward revisions in the imputed cost of labor in the agriculture of the developed counties.

2. The increased imputed cost of labor has forced a reorganization of the farm firm in the developed counties with consequent increases in labor productivity toward levels that tend to cover the higher cost. The reorganization can proceed along two lines: the enlargement of the full-time commercial farms through increased capital inputs (with the help of these counties' more efficient capital markets) and the conversion of existing small farms to part-time farms through the diversion of underemployed family labor to nonfarm employment (with the help of these counties' more efficient labor markets).

3. Although out-migration has been for some time a familiar phenomenon in the underdeveloped counties, it has not been sufficient to raise the imputed labor cost at a rate comparable to that of the developed counties, so that the inducement to farm reorganization differed greatly among counties.

4. Moreover, farm reorganization in the underdeveloped counties has been hampered by their relatively inefficient factor markets.

5. The developed counties' higher farm incomes and labor returns are primarily attributable to their more extensive farm reorganization and higher labor productivity rather than to possible county differences in natural personal ability or preferences for leisure and particular ways of life.

The decade 1940-50 represents a highly unusual period. It was a decade of unprecedented general economic prosperity and high war-induced resource mobility. These are the conditions conducive to greater equality in factor returns and incomes not only between geographical areas but between the farm and nonfarm sectors as well. In Chapter VII, we shall attempt to discover, given the continued uneven pattern of industrial-urban development in the Southern Piedmont, whether the favorable conditions of the 1940's were able to arrest or reverse the earlier trend toward increasing farm income disparities among counties. It is clear that findings in this connection may shed light on the extent to which the maintenance of full-employment may be relied upon as a means of solving the resource and income problems of today's depressed farm areas. While full employment is undoubtedly a prerequisite to the solution, other policy measures may be needed to hasten the process of removing poverty from within agriculture. In this chapter, we shall also make a detailed analysis of the adjustment processes that took place within the agriculture of the study area during 1940-50. The purpose of this analysis shall be (1) to determine whether the observed increases in per-worker farm income were attributable primarily to increases in farm capital or decreases in (underemployed) farm labor or both; (2) to ascertain the dominant type of adjustment within each of the two agricultural sectors, commercial and part-time; and (3) to determine possible differences between the two dominant types of adjustment with respect to their responsiveness to local industrial-urban development, their impact upon per-worker farm income, and the ease with which each may be carried out. In this regard, we hope ultimately to be able to weigh the relative merits and demerits of the alternative means of solving the resource and income problems of the low-income farm areas.

Finally, in Chapter VIII we shall summarize our findings and present our conclusions. This part will also include an outline of policy implications that follow from our findings.

THE SOUTHERN PIEDMONT STUDY AREA DEFINED

Our study area, the second of a larger project on Southern Economic Development under way at Vanderbilt University, consists of the upper half of the Georgia–South Carolina Piedmont. It is a part of the great Piedmont Plateau that forms a long belt around the Allegheny Mountains and the Blue Ridge, reaching from Pennsylvania southwestward to Alabama. The study area is bound to the north by the North Carolina state line and the foot of the Blue Ridge and to the south by the lower Southern Piedmont counties.

It is an area of relatively shallow soil and rolling topography, susceptible to serious soil erosion usually characterized by deep gullies. With the exception of small parts of those counties bordering on the Blue Ridge, the entire area falls almost altogether between the elevation contour lines of 500 and 1,000 feet. The area is adequately drained by a number of rivers and tributaries which flow in a more or less parallel fashion from their headwaters in the Blue Ridge into the Atlantic. Among them the more important ones are: the Wateree, Broad (South Carolina), Saluda, Savannah, and Oconee rivers. The Chattahoochee, a tributary of the Apalachicola, is the only major river that links the study area to the Gulf of Mexico. Since the navigable heads of these rivers fail to reach the Piedmont, the study area remained in relative isolation until the coming of railroads.

In terms of modern counties, our area numbers twenty-one contiguous counties of which eleven are in Georgia and ten in South Carolina. The Georgia counties include Gwinnett, Walton, Hall, Barrow, Banks, Jackson, Madison, Stephens, Franklin, Hart, and Elbert. The South Carolina counties are Oconee, Pickens, Anderson, Greenville, Spartanburg, Cherokee, Union, York, Chester, and Lancaster. These counties are selected on the basis of the following criteria:

1. That the study area counties be separated from metropolitan centers by a substantial distance

2. That they include some predominantly rural-nonindustrial counties as well as some urban-industrial counties

3. That they shall have been culturally, physically and historically homogeneous prior to the beginnings of industrialization.

Subject to these broad criteria, the final delineation of our study area is based on the considerations (1) that unnecessary complications arising from frequent shifts in county boundary lines should be avoided as far as possible and (2) that the number of counties should be suffi-

ciently large to make statistical manipulations meaningful. It is unfortunately impossible to sidestep all county boundary shifts without violating one or more of the above criteria. The best one can do in this respect is to define the study area so that all, or nearly all, of the boundary shifts will be internal to the area. In this manner, the identity of the area as a whole may be maintained through the study period.

THE SOUTHERN PIEDMONT
BEFORE 1900

IN THIS CHAPTER we shall attempt (1) to outline briefly the salient features of the area's historical and economic transitions during the pre-industrial era before 1900, (2) to examine the relative homogeneity of the area with respect to numerous exogenous forces at the time local industrial-urban development began to reach significant proportions in 1900, (3) to identify important county differences, if any, in terms of these exogenous forces, and (4) to evaluate the likelihood that these differences might explain later (after 1900) county differences in farm income.

POPULATION

Homogeneity of the Area Counties' Population before the Introduction of Cotton

The early settlers of the Southern Piedmont, oddly enough, did not originate from the South Carolina–Georgia Tidewater. As early as 1732, the South Carolina Colonial Assembly actively sought to settle the "upcountry." It did so by erecting eleven townships in the pine barrens which then constituted an impassable belt separating the Piedmont from the Tidewater. The motive behind this move was both economic and military: to provide foodstuffs for the indigo-and-rice-growing planters in the Tidewater and to shield the coast from the marauding Indians. Small colonies of Irish, Germans, and others were soon formed in the new townships after liberal offers were widely advertized in Europe. But the desolation and niggardliness of the pine barrens put a swift end to this colonial enterprise. Only one group of German Palatine settlers stayed on to form a permanent community.[1] Meanwhile, as long as the forbidding pine barrens remained un-

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1. Ulrich B. Phillips, *A History of Transportation in the Eastern Cotton Belt* (New York: Columbia University Press, 1908), pp. 50-51. Hereafter cited as *Transportation*.

conquered, the settlement of the up-state Piedmont had to await in-migration from sources other than the South Carolina–Georgia Tide-water.

At the same time, the extensive southward movement of the population from Pennsylvania and other middle colonies continued to filter down both sides of the Blue Ridge. The migrants involved were chiefly of Scotch-Irish and German origins. Germans from Pennsylvania began to settle in the Maryland Piedmont about 1729. By mid-century, a few families of bold pioneers from Pennsylvania and Virginia settled in what later became Spartanburg and Abbeville counties in the South Carolina Piedmont. The Cherokee War (the Southern phase of the French and Indian War) temporarily checked further settlement in the Piedmont until 1755, when a treaty with the Cherokees opened to settlement a good part of the South Carolina Piedmont including, among others, Union, Spartanburg, York, Cherokee, and Chester counties of our study area. Following that year, a great wave of in-migration took place in the Southern Piedmont, induced by changing fortunes of the war that still raged on in the North: Braddock's defeat, endangering the Maryland and Virginia frontiers, and later the Peace of Paris and a Britannic royal edict restricting settlement west of the Appalachian divide. Historian Ramsay reported that "In a single year, 1,000 families were camped along the border of South Carolina, preparing to settle in the province. Not a few came from the east by way of Charleston. Upper South Carolina was soon filled with pioneer farmers and artisans of many nationalities and sects . . . ."[2]

By 1772, this great migratory movement was ready to cross the Savannah into the Georgia Piedmont, pending land cessions by the Creek Indians. In that year, "there were upwards of 600 families along the north side of the Savannah River waiting to settle [in the Georgia upland] as soon as the cession was effective." In 1773, an Indian land cession was negotiated after lengthy sessions, making available for the settlers a sizable area north of Augusta, including modern Elbert, Hart, and Madison counties.[3] The rest of the Georgia study area counties remained in the hands of the Indians and closed to mass settlement until after the Revolutionary War. Meanwhile, throughout

2. Lewis Cecil Gray, *History of Agriculture in the Southern United States* (Washington: Carnegie Institution of Washington, 1933), I, 121-22. Hereafter cited as *Agriculture*; and David Ramsay, *History of South Carolina* (Charleston: 1809), I, 208-15. Hereafter cited as *South Carolina*.

3. E. Merton Coulter, *A Short History of Georgia* (Chapel Hill: North Carolina University Press, 1933), pp. 122 and 211 (see map). Hereafter cited as *Georgia*. This acquisition was originally named Wilkes County.

our settled area there was "a gradual thickening of settlement...
through reinforcements from the same northward sources, aided now
also by straggling Irish, English, and other recruits across the barrens
from Charleston and Savannah." The remaining study area counties
were finally thrown open to the settlers—most of them from South
Carolina, North Carolina, and Virginia—by a series of Indian treaties
dated 1783, 1804, 1817, and 1818.[4] The pattern of settlement in the
study area appears to suggest that the area's early inhabitants, while
heterogeneous, were probably distributed in such a way that inter-
county differences in population characteristics were unimportant.

It has been pointed out by some historians that insofar as the
earliest settlers, mostly hardy and resourceful Scotch-Irish and Germans,
generally took up choice lands, the late-comers, usually of an "in-
ferior" stock, probably settled on less desirable tracts.[5] If this argu-
ment is historically valid, it would mean that those counties with re-
latively good land would have had higher proportions of "superior"
settlers. However, in view of the strong homogeneity of the land
throughout the Upper Southern Piedmont,[6] this thesis, regardless of
its validity, loses its relevance, as applied to the study area.

Heterogeneity of the Area Counties' Population after the Introduction of Cotton

Following the invention of the cotton gin in 1793 and the subse-
quent introduction of cotton into the Upper Southern Piedmont, the
composition of our area's population underwent important changes.
While planters poured in from the Tidewater with their slaves, small
pioneer-minded white farmers were leaving the study area in continua-
tion of their westward movement.[7] Thus, during the early decades of
the nineteenth century, our area as a whole experienced net out-migra-
tion of the free population and net in-migration of slaves. This pattern
of migration was also strengthened by additional slaves brought into
our area through purchases by the small- and non-slaveholders who had
profited sufficiently from cotton to acquire this form of asset. As a
result the pattern continued well into the 1840's. In the latter decade,

4. Phillips, *Transportation*, p. 49; and Coulter, *Georgia*, p. 211 (see map).
5. T. P. Abernethy wrote in his book, *From Frontier to Plantation in Tennessee*
(Chapel Hill: University of North Carolina Press, 1932), pp. 145-146: "Arriving late,
they [the shiftless drifters] took up the poorer acreage either in highlands or lowlands,
and continued to live much as they had lived before. No thought of rising in the world
ever occurred to them. They were seeking listless ease rather than fortune."
6. *Infra*, pp. 44-46.
7. David Wallace, *The History of South Carolina* (New York: American Historical
Society, 1934), III, 2. Hereafter cited as *South Carolina*.

the Upper Southern Piedmont lost 15 per cent of its 1840 free population through net out-migration, but gained 9 per cent of its 1840 slave population through net in-migration. It is not surprising that relative to the total the slave population increased from 15.6 per cent in 1800 to 35.0 per cent in 1850 in the study area—a relative increase of 124 per cent as compared with only 36 per cent in South Carolina and 15 per cent in Georgia.[8]

However, not all our counties were subject to the same migration pattern during that period. The settled but mountain fringe South Carolina counties (Pickens, Spartanburg, and Greenville) and the young Georgia counties (Gwinnett, Hall, Jackson, and Walton) received relatively few planters and slaves although contributing to the general exodus of the free population from our area. These counties throughout the ante-bellum era consistently ranked the lowest in terms of their relative slave population. The first group of counties was bypassed by planters because their frost-free season was thought to be too short for the cultivation of cotton—a shortcoming that was later remedied after the Civil War by the introduction of commercial fertilizers which materially shortened the growing season of cotton.[9] There are two explanations as to why planters did not seek the new lands of our young Georgia counties after they were thrown open to settlement with the conclusion of the Cherokee Treaty in 1818. The more important of these two explanations was advanced by economic historian M. B. Hammond: "After his first experience on the [older] up-lands of South Carolina and Georgia [which turned out to be rather unfavorable because of the soil erosion problem connected with a rolling topography], the cotton planter usually avoided the hill country" as soon as better lands were available elsewhere.[10] Virgin cotton lands were then available in abundance in Alabama, Mississippi, and areas farther west. The second explanation is that the rush for Western lands was more keenly felt in these young Georgia counties because of their relative proximity to the West. As a matter of fact, according to our migration estimates for the decade 1840-50, the four Georgia counties lost more slaves through out-migration than they gained through in-migration.

8. For the method employed in estimating net migration from decennial census population and vital statistics, see note b, Table 51.

9. Francis B. Simkins and Robert H. Woody, *South Carolina during Reconstruction* (Chapel Hill: University of North Carolina Press, 1932), pp. 256-58. Hereafter cited as *South Carolina*.

10. M. B. Hammond, *The Cotton Industry* (New York: American Economic Association, 1897), pp. 49-50.

Such a net exodus of slaves did not become general until after 1850 when the Southern Piedmont became a slave-exporting area. Consequently, as a result of this differential migration pattern in our area counties, the racial composition of their population had begun to differ rather significantly after 1800. In that year, in terms of the proportion of the total population that was Negro (slave), the relative dispersion was only 2.5 as compared with 4.5 for 1860, 4.6 for 1880, and 4.3 for 1900.[11] Next, we have to assess what effect, if any, this heterogeneity might have upon the respective farm incomes of our several area communities. Because of the institutional barriers faced by the Negroes (quite distinct from such alleged characteristics as natural inaptitude that are frequently attributed to them), one would expect the level of per-capita farm income or the labor productivity in agriculture to be associated negatively with the relative importance of the Negro population in our area counties. Let us examine the facts. The 1880 census showed that, if we correlate the value of farm products per worker and the percentage of the farm population that was Negro, our area counties yielded a rank correlation coefficient[12] of +0.773. In 1900, the coefficient was also positive (+0.495) for the same two series. Again in 1940, it was positive and equal to +0.443. These coefficients are all statistically significant.[13] It appears then that the counties that ranked high in value productivity of labor in agriculture did so not because of their relatively heavy Negro farm population but in spite of it. It is clear that existing county differences in race composition could not have explained the observed farm income differences. Indeed, it is probable that the racial differentials served to bring income differences below what they would have been had there been uniform race composition in the area.[14] Without attempting at this

11. Ratio of the highest value to the lowest.

12. The rank correlation coefficient used in this work, unless otherwise indicated, is Spearman's *rho*.

13. Coefficients computed from farm income data in Table 3, Columns 1 and 3, and Table 5 and from population data (1900 and 1940) in Table 9 for the developed and undeveloped counties and similar data compiled from the same sources for the nine intermediate counties. Data on per cent farm population nonwhite for 1880 are from *United States Census, 1880*, V. I., *Population*. For our definitions of farm population, see footnotes b and c, Table 8 below.

In testing the significance of Spearman's rank correlation coefficients, E. G. Olds's table ("The Five Per Cent Significance Levels for Sums of Squares of Rank Differences and a Correction," *Annals of Mathematical Statistics*, XX [1949], 117-18), is used. This table is constructed on the basis of probability alone and is independent of the distribution of sample coefficients, of which very little is known for certain sample sizes. The significance level adopted in this work is the 5 per cent level.

14. In order to assess the net association between income and race composition, a

point to ascertain the real explanations, we conclude that observed in-
come differences must be explained by forces other than the race com-
position of the area counties' farm population. A similar conclusion
can be reached if one notes the amazing stability over time of our
counties' relative standing in terms of the race composition of their
farm population. This is clear from the strong correlation in this re-
spect between 1880 and 1900 (*rho* = +0.997) and between 1880 and
1940 (*rho* = +0.976). This stability disqualifies race composition as
a possible explanation of the important inter-temporal changes in our
counties' relative position with respect to farm income level.

AGRICULTURE

Early Agriculture

   In the Carolina–Georgia upland, particularly the Piedmont, the eco-
nomic and social developments of the eighteenth century had been in
marked contrast with those on the seaboard. The upland was then the
home of small (grain and livestock) farmers engaged in diversified,
self-sufficient economic activities. On the other hand, the tidewater
was the land of large planters supported by slavery and staple agri-
culture (rice and indigo). Isolation and self-sufficiency were then the
early characteristics of our study area. What little surplus the settlers
did produce was sent not to Charleston or Savannah but to the Eastern
Seaboard. For a number of years, the belt of pine barrens, a hundred
miles or more in breadth, constituted an effective barrier to any normal
commercial intercourse between the food-producing upland and the
staple-producing lowland. Rivers and streams, beyond the fall line,
though navigable downstream at great risk part of the year, were too
swift and unreliable to be avenues of commerce between the Southern
Piedmont and the Tidewater. As our area grew in population and
more land was cleared, the disposal of surplus local farm products soon
became a problem. Grains were too bulky to bear the expenses of
marketing even though Charleston and Savannah regularly imported
foodstuffs, often from abroad, for nearby plantations. To minimize
the difficulties and expenses arising from a primitive transportation
system, the farmers of the area experimented with several lightweight,
easily marketable staples—among them, tobacco, hemp, and flax. Only
tobacco proved partially successful.[15] Several tobacco towns were in

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multiple correlation analysis is presented in Chapter III with farm income per worker
as the dependent variable and value added by manufacture per capita and per cent
farm population Negro as the independent variables. See *infra*, pp. 92-93.
   15. Phillips, *Transportation*, pp. 46-54.

fact founded on the upper course of the rivers to serve as way stations for the inspection and shipment of tobacco. "But," as Professor Phillips put it, "their budding hopes of prosperity from the staple were promptly blighted. The product was of inferior grade, the price was low, and the cost of freightage high. The export from Charleston rose from 2,680 hogsheads in 1784 to 9,646 in 1799, but it declined thereafter. Tobacco, never more than a makeshift staple, was gladly abandoned for cotton at the first opportunity."[16]

This opportunity came in 1793 when Eli Whitney, a young Yale graduate, invented his celebrated cotton gin. Some short-staple upland cotton had been raised for home use in our area before this invention, but it had no commercial value because of the peculiar difficulty of separating lint from seeds for this type of cotton. Following the perfection of the gin, the cultivation of cotton began to increase by leaps and bounds in the lower part of our study area. Under the existing high prices, cotton was a veritable bonanza. In 1801, the price of cotton at the ports was forty-four cents a pound, but the total production of the nation was still only forty million pounds. One of the limiting factors was the shortage of labor which was partially solved by the importation of slaves.[17] However, the upland cultivators were handicapped by a second limiting factor, the high cost of transportation. While cotton prices were sufficiently high for the growers to hurdle the enormous cost of shipping this staple, few could afford to bring in bulky grains—which would have been necessary if they were to specialize in cotton. As a result, our area continued generally to practice diversified agriculture,[18] particularly in its upper portion where cotton matured too slowly for the short growing season. This disadvantage remained with our mountain-fringe counties until after the Civil War when the introduction of commercial fertilizers—the use of which hastened the growth of cotton—and the soil erosion problem in the lower counties equalized growing conditions. Insofar as cotton was the most profitable crop during the early decades of the nineteenth century,[19] the inability of the upper counties to grow cotton as ex-

16. Ulrich B. Phillips, *American Negro Slavery* (New York: D. Appleton and Co., 1928), pp. 155-56. Hereafter cited as *Slavery*.

17. South Carolina reopened the slave trade in 1803 until forbidden by Congress four years later (Wallace, *South Carolina*, II, 383-84).

18. Phillips, *Slavery*, pp. 156-62.

19. Historian David Ramsay wrote in 1808, in his *History of South Carolina,* that "when the crop succeeds and the market is favorable [which was the case], the annual income of those who plant it is double to what it was before the introduction of cotton." Other supporting evidence can be found in the extremely high rank correla-

tensively as elsewhere in the study area constituted a source of wind-fall gains for the lower counties. About this, more will be said later in the chapter.

During the first decade of the nineteenth century, cotton had done little more than replace tobacco as the cash staple of the upland. The rush into cotton, thus far moderate in our area, was further postponed by the Embargo and Non-Intercourse acts preceding the War of 1812 and finally the war itself. However, it was resumed with increasing intensity following the arrival of the peace. By 1819, the Southern cotton crop—by far the bulk of it from the Eastern Cotton Belt of which our study area was an important part—amounted to 167 million pounds as compared with 48 million pounds (including 8 million pounds of the sea-island variety) produced in the entire United States in 1801.[20] The peak of the golden cotton era was probably reached around 1826 in the old cotton belt and, therefore, the study area. In that year, the price of middling upland at New York was 18.59 cents per pound, the highest price ever reached during the period 1819-1861. Thereafter, the Western states began not only to eclipse the old cotton belt in cotton production but to drive down cotton prices with their tremendous output. However, cotton continued to spread throughout the Southern Piedmont until about 1850. In fact, between 1840 and 1850, the area's cotton production more than doubled. During 1850-60, our area showed a slight absolute decrease (2,087 bales) in cotton production but substantial increases in wheat and hay production.[21]

After half a century's expansion, "King Cotton" by 1850 had firmly established its undisputed position in the Upper Southern Piedmont. However, its reign was far from universal. In that year, total production ranged from 17,810 bales in Chester County to only 205 bales in Hall. Even after putting the production data on a per-1,000 acres-of-improved-land basis to allow for inter-county variations in size and farm land acreage, the relative dispersion was still 19.2 for 1850 and 15.5 for 1860. As was pointed out earlier, cotton was the most profitable

tion coefficient, + 0.930, between the value of farm capital per worker and the production of cotton per 1,000 acres of improved land in farms in our area in 1850. This reflects high past incomes in the traditional cotton counties.

20. Phillips, *Slavery,* p. 162; Ramsay, *South Carolina,* II, 218.

21. Insofar as cotton and slavery are known to have been positively related, the ebb and flow in the cotton production of our area can be gleaned from the migration patterns of its slave population. The decrease in the production of the staple during 1850-60 was accompanied by substantial net out-migration of slaves (5,398) from our area counties. On the other hand, the previous decade, while showing a 123 per cent increase in cotton production, netted a gain of some 5,368 slaves through in-migration.

crop at least during the early decades of the 19th century. The unequal opportunities faced by our area counties in the production of this staple constituted in effect a source of windfall gain to those counties endowed with favorable conditions in the cultivation of cotton.

Given this uneven spread of cotton in our area counties during the ante-bellum era, to what extent may the consequences of this unevenness have affected later farm incomes of our counties even though the cultivation of cotton was subsequently to become general in our area by virtue of certain postwar developments? This question becomes all the more relevant in view of the highly significant rank correlation coefficient between the value of farm capital (excluding slaves) per worker (including slaves) and the production of cotton per 1,000 acres of improved farmland.[22] This coefficient was +0.930 in 1850 and +0.676 in 1860 for our area counties. This indicates that the income effects of cotton—as a source of windfall gains that increased the planters' income in the recipient counties—upon the investment of the old cotton counties had been positive and significant. The resulting high ratio of capital to labor in the cotton counties, of course, meant high labor productivity and high per-capita income. To provide an adequate answer to this question, one needs to take into account the total impact of cotton upon local agriculture. Although cotton was responsible for the cotton counties' relatively high level of income and investment[23] before the Civil War, it also left behind a legacy that was not without undesirable aspects. It is to the latter aspects that we now turn out attention.

The Impact of "King Cotton" on Agriculture

The impact of cotton on Southern agriculture cannot be fully appreciated without prior assessment of the relationship between cotton and slavery. That the rise of slavery was closely associated with the introduction of cotton can be seen from the high correlation between

22. Computed from decennial census statistics.

23. The income effects cotton had on investment were not as great as they could have been were there no slavery in the area. This is because the planters as a rule ploughed back the bulk of their profits in the form of new purchases of additional slaves who from our standpoint were members of the labor force, not owned capital. If the profits were invested in agriculture in a real sense, the ratio of capital to labor would have been higher than they were in the old cotton counties. Of course, one may argue that insofar as the income was concentrated in the hands of a few under a slave system, a greater proportion of it was in the end saved and invested (in the real sense) than it would have been possible under a free labor system even though all investments would have been real under the latter system. This, however, is an unlikely situation especially in view of the fact that Southern planters, true to their aristocratic tradition, went heavily into the conspicuous type of living.

cotton production per 1,000 acres of improved land and per cent of population slave in the Southern Piedmont. In terms of *rho*, the correlation coefficient was +0.909 in 1850 and +0.868 in 1860. The traditional Southern misconception was that the growth of cotton was dependent upon the existence of slavery. One typical Southern pamphleteer declared that "It is impossible to destroy the one without destroying the other. The alliance between cotton and Negroes, we will venture to say, is now the strongest power in the world." The statement was only a half truth. While it was true that the destruction of cotton might have led to a voluntary manumission by the slaveholders, it was not true that the destruction of slavery would have meant the abandonment of cotton. The explanation lies in the fact that cotton offered many advantages—which Professor Hammond outlined in detail—over other crops for the use of slave labor. There was no other staple whose culture and market might have been extensive enough to engage profitably the existing body of slaves, and diversified farming would have been ill-adapted to slave labor.[24] Economic historians agreed that slavery was on its way out just before the turn of the century until cotton gave it new impetus. On the other hand, slave labor had no exclusive advantages over free labor in the cultivation of cotton. Hammond estimated that the relatively low cost of maintaining slaves and the absolute control which this form of labor afforded its owner were more than offset by its lack of incentive.[25]

It remains to explain then why cotton had given rise to the slave labor in the first place if slave labor offered no definite advantages over free labor. We may recall that the factor that stood in the way of expanding cotton production was the labor shortage. Under the then existing high prices of cotton, at the turn of the century, Southern planters and farmers wanted laborers immediately and in large numbers. Moreover, they preferred laborers over whom they could have firm control. It was not surprising then that they should have turned to slaves, especially in view of the fact that slaveholding meant social prestige in the South. At the same time, the free laborers as a rule avoided the slave states where labor was considered servile. If they

24. The success of using slave labor lay in a planter's ability to group his slaves in large numbers and close formation while at work. Otherwise, the cost of supervision might well become prohibitive. The nature of diversified farming would not only multiply the number of tasks to be performed by the slaves, but would require them to work in scattered groups.

25. Hammond, *Cotton Industry*, pp. 43-50, 63, and 94-95; and Ralph B. Flanders, *Plantation Slavery in Georgia* (Chapel Hill: University of North Carolina Press, 1933), p. 220. Hereafter cited as *Slavery in Georgia*.

came south at all, they did so with the intention to own farms, not to work alongside the slaves as field hands.

We have pointed out earlier that cotton possessed numerous advantages over other crops in the use of slaves. From this it follows that the large body of cotton-supported slaves[26] would tend to render Southern agriculture highly inflexible. As it turned out later, there was a great deal of truth in this. The South was forced to persist in its lopsided dependence on cotton long after it ceased to be profitable—particularly in such areas as the Southern Piedmont—simply because of its sheer inability to fit its slave labor into other more rewarding alternatives. Professor Hammond, speaking of the late ante-bellum period, remarked, "Taken year after year the culture of cotton did not yield such large profits as would have resulted from a diversified system of farming, and it often proved the occasion of loss."[27] Yet, cotton continued to rule supreme in the South. It appears that Southern planters, after having invited slavery for the sake of cotton, later found themselves forced to grow cotton for the sake of its slaves.[28]

A second effect of cotton on Southern agriculture was the prevalence of the "exhaustive system of agriculture." For one thing, cotton, through its positive relationship with slavery, discouraged the influx of immigrants, thus accounting for the sparse white population, and limited the demand for agricultural land in the South. This meant extremely low land values which made the exhaustive system economically feasible. As the editor of a Southern agricultural paper put it in 1860, "the planter scarcely considers his land as a part of his permanent investment." Land was then something to be worn out, not improved. Moreover, diversified, land-conserving agriculture with appropriate crop rotations was difficult to be put into practice under slave labor. As a result of these forces, even though cotton was less exhaustive to the soil than any other great Southern staple, the planters who usually neglected even to return the cotton seed to the land were frequently compelled to seek out new fields. The seriousness of this "land killing" process can be seen from the fact that, while in the North

26. *United States Census, 1850, Compendium*, reported 72.6 per cent (or 1,815,000) of all the slaves in the United States engaged in cotton production. This number was equivalent to 78.3 per cent of all the slaves in the ten cotton states.

27. Hammond, *Cotton Industry*, p. 87.

28. Our case about the inflexible character of slave labor, although well documented, may be overstated. Professor Charles E. Bishop, in his correspondence with the writer, argued that the planters persisted in growing cotton because "it was profitable for them [to do so] as long as they had their slaves and did not have the capital to make other kinds of adjustments."

the value of land in the older states was several times higher than that in the new states, in the South the opposite was true.[29] The same process is also reflected in the extremely low percentage of all farm-land that was improved in the old cotton states—less than 30 per cent in South Carolina and Georgia during 1850-60 as compared with more than 60 per cent in the New England and Middle Atlantic states. Our study area, being in the vanguard of the cotton rush, faced the soil exhaustion problem relatively early. By 1850, the situation had become sufficiently grave to force a large number of planters to leave for the Western states with their slaves during the following decade. Coincidental with this development were (1) the change in the study area's status from that of a slave-importing area to that of a slave-exporting area, (2) the reversal in the trend of the area's average farm size which had been increasing steadily from the time cotton gained popularity,[30] and (3) absolute decreases in the production of almost all crops and livestock.

Perhaps the most important effect of cotton, through its positive relationship with slavery, on agriculture was the shortage of capital. The extent to which Southern capital was tied up in slaves can be seen from the following figures: of the total value of all real and personal property in Georgia in 1850 (placed at $335,425,714) almost half was in the form of slaves.[31] In South Carolina, this proportion was undoubtedly higher. Even if we place the average price of our area's slaves at a most conservative figure, $500 for 1850 and $900 for 1860, the total value of its slaves still far exceeded its total value of all farm property, excluding slaves, for both years. The consequence of the planters' insatiable desire to acquire more and still more slaves was fully demonstrated by the primitive implements commonly used on their plantations and the disproportionately small investments these implements represented. On one South Carolina plantation of 4,200 acres—of which 2,700 acres were under cultivation—and 254 slaves, the capital invested in all tools and implements, including wagons, amounted to only $1,262. Another plantation in Alabama with 1,100 acres and 120 slaves reported an investment in implements of only $500.[32] That the predominance of slaves in total Southern capital retarded Southern agriculture (and manufacturing) is too obvious to

29. Hammond, *Cotton Industry,* pp. 79-80 and 83-84.
30. Flanders, *Slavery in Georgia,* p. 71; Hammond, *Cotton Industry,* pp. 100-1.
31. Flanders, *Slavery in Georgia,* pp. 213-14.
32. Hammond, *Cotton Industry,* p.78.

warrant further comments.[33] At this point, it may be timely to recall Adam Smith's apt comment on slavery that "the work done by slaves, though it appears to cost only their maintenance, is in the end the dearest of any."[34]

Before we bring this section to a close, let us answer the question posed earlier: Insofar as our cross-section analysis for 1850 and 1860 indicated a very high correlation between the production of cotton per 1,000 acres of improved land and the value of farm capital per worker, to what extent might this consequence of the uneven spread of cotton before the Civil War have affected our counties' agriculture in later years, even though the cultivation of cotton was to become general after the war? Undoubtedly, the leveling forces of the Civil War had removed some of the cotton-induced differences in the value of farm capital per worker. But, under conditions of external capital rationing, the residual differences might still have been sufficient to influence significantly later farm income trends among counties. To provide an answer to this question, we correlate cotton production per 1,000 acres of improved farmland, 1860, on the one hand, and farm capital per worker, 1880, 1900 and 1940, on the other.[35] In terms of *rho,* the correlation coefficient between the relative importance of cotton in 1860 and per-worker farm capital in 1880 is +0.355. This seems to suggest that the leveling forces of the Civil War did not completely remove the ante-bellum, cotton-induced differences in per-worker farm capital. However, by 1900, these differences had for the most part disappeared. This can be seen from the low correlation coefficient +0.063, between the prewar relative cotton production and per-worker farm capital in 1900.[36] It appears reasonable to assert that the income-differentiating potential of the uneven, prewar spread of cotton may be considered to have disappeared sometime after 1880, so that later differences in farm incomes between counties must be attributed to some other force or forces.

This finding also appears to be consistent with the argument, presented earlier in the preceding chapter, that a *given* exogenous com-

33. Insofar as importation of slaves from foreign countries was no longer permitted at that time, one may argue that the movement of capital occasioned by the purchase and sale of slaves was internal to the nation. This was undoubtedly true. But this movement was not internal to the South. It represented an exodus of capital from the Southern states to the slave-exporting border states.

34. Adam Smith, *The Wealth of Nations,* Book I, Chapter 8.

35. Data computed from census data.

36. The same may be said of 1940. The correlation coefficient for that year is only + 0.166.

munity difference (e.g., differential capital to labor ratio resulting from unequal ability to grow cotton among counties), while capable of bringing about important short-run differences in farm income, is not likely to be sufficient in itself to sustain these differences—even under conditions of capital rationing—in the long run. The underlying reason for this outcome is that over a sufficiently long period the workings of the equilibrating forces, although imperfect, may be expected to be adequate to destroy the income-differentiating potential of the given difference. That the equilibrating forces had been at work in the study area during 1860-1900 can be seen from the rapid narrowing of the county differences in per-worker farm capital and farm income after the Civil War. Thus, the coefficient of variation, as a measure of relative dispersion, dropped from 0.265 in 1860 to 0.160 in 1900 with respect to per-worker farm capital;[37] and from 0.207 in 1880 to 0.094 in 1900 with respect to per-worker farm income.[38] These figures clearly indicate that the counties of the study area were becoming more alike during that period, so that by 1900 the area had achieved a fair degree of homogeneity. In contrast, as we shall see in the next chapter, the period after 1900 was marked by increasing differences between our counties in terms of not only farm income but other socio-economic indexes as well.

Agriculture after the Civil War

During Reconstruction, agriculture in the Southern Piedmont was characterized by three major developments of far-reaching consequences: (1) the introduction and popularization of commercial fertilizers, (2) the solution of labor problems in the form of a crop-share arrangement, and (3) the solution of credit problems in the form of a crop-lien system. These three developments together with high cotton prices in the immediate postwar years accounted for the resurgence of "King Cotton" in the post-bellum era to a degree never attained before. For the first time, cotton became the dominant crop in the mountain-fringe parts of our area where thus far little cotton had been grown. The introduction of commercial fertilizers in 1867 made it technically feasible not only to increase the per-acre yield of cotton but to grow the staple on old exhausted fields and on mountain-fringe land where cotton would mature too slowly for the short season without commercial fertilizers.[39] At the same time, the high cotton prices provided

37. Computed from census data.
38. See Table 3 below, Columns 1 and 3.
39. Simkins and Woody, *South Carolina*, pp. 256-58; Wallace, *South Carolina*, III, 284-85.

the necessary economic incentive to exploit this newly broadened tech-nological horizon, while the crop-share and crop-lien systems provided the necessary institutional impediments that tended to perpetuate large cotton acreages (or even to increase them) when lower cotton prices could no longer justify them on economic grounds.

As a result of these developments, there was a definite postwar trend away from the highly uneven pattern with which cotton had spread to our area counties before the Civil War. In terms of the pro-duction of cotton per 1,000 acres of improved land in farms, the re-lative dispersion for our area counties decreased from 15.5 in 1860 to only 2.1 in 1880. Thereafter, it remained practically unchanged, 2.1 in 1900, 1.9 in 1920, and 2.8 in 1940. Actually, the relative importance of cotton can best be measured from the input rather than the output side. In other words, the percentage of all improved land in cotton would be a better measure of that than the output of cotton per 1,000 acres of improved land since the former abstracts from variations in yield. Unfortunately, crop acreage data were not included in the agri-cultural censuses before 1880. If the relative importance of cotton in our area counties is measured by the proportion of the improved land devoted to its cultivation, then the relative dispersions become 2.3 for 1880, 2.3 for 1900, 1.5 for 1920, and 1.8 for 1940. Meanwhile, in the study area as a whole, cotton became increasingly important. In 1860, the production of cotton in the Southern Piedmont was only 55 bales per 1,000 acres of all improved land, as compared with 122 bales in 1880, 151 bales in 1900, and 157 bales in 1940.

From the above evidence, we conclude not only that the position of cotton as the dominant crop since the war had improved and be-come undisputed in the study area as a whole, but that its dominant position had achieved in all the area counties a degree of uniformity hitherto unknown. This degree of uniformity, in our judgment, was sufficiently great to warrant the statement that after 1880 our Piedmont area was essentially homogeneous in respect to its dominant crop type. This enables us to dismiss on grounds of inapplicability the theory that disparities in community farm incomes are primarily attributable to dissimilar secular drifts in farm commodity prices.

Thus far, we have briefly explained the resurgence of cotton in the Southern Piedmont after the war. The effects of the introduction of commercial fertilizers in 1867 and the high postwar prices of cotton upon the subsequent spread of this staple are evident. But the rela-tionship between the crop-share and crop-lien systems and the sustained

popularity of cotton is not. It is to the latter relationship that we now turn our attention.

Postwar agricultural labor problems and the crop-share arrangement.—The postwar agricultural problems were many. Had there been no vexing problems of race and color, the reconstruction of the Southern agriculture would have been difficult enough. To make a bad situation worse, the South Carolinians (and the Mississippians) rushed headlong into a disastrous blunder by passing the "Black Code" of 1865, which brought upon them the wrath of the federal government and the distrust of the freedmen. The code was an attempt to regulate the freedmen's relation to the society based on the presumption that he "would neither work steadily nor behave safely without special restraint." It was in effect an outright attempt to revive the prewar controls over the Negroes, and, as such, it provided a vengeful Congress with the necessary excuse to nullify President Johnson's moderate actions and to plunge the South into a prolonged, vindictive phase of military rule and reconstruction.[40] This course of events undoubtedly did much to shock the whites into sterile negativism and the Negroes into hopeless confusion. To that extent, it greatly hampered the economic recovery of the South.

Immediately after the termination of hostilities, laboring under fantastic illusions, the freedmen often refused to work in the fields even though their labor was now to bring compensation. To their simple minds, slavery was synonymous with work and freedom with leisure and idleness. With the Freedmen's Bureau and numerous Northern charitable organizations supplying them with food, clothing, and even transportation, they began to wander aimlessly about the country. In the meantime, there was a persistent and general belief among them that the national government was going to make every freedman a fullfledged landowner. Their credulity was such that in some areas they were easily taken advantage of by the unscrupulous outsiders who sold them painted, numbered land stakes at one or two dollars apiece. These stakes, the freedmen were told, were all that was necessary to secure the coveted "40 acres." Under these circumstances, few freedmen were disposed to hire out their labor.[41] Agriculture, particularly on the plantations, was at a virtual standstill, and little cotton was grown despite its high prices.

Plagued by the uncertainty of labor and the lack of credit, many

40. Wallace, *South Carolina*, III, 234-42.

41. Simkins and Woody, *South Carolina*, pp. 225-29; Hammond, *Cotton Industry*, pp. 125-26.

planters would have been glad to liquidate their plantations. But there were few buyers. Hence, the large estates escaped disintegration for the time being not because of the planters but in spite of them. Their aspiration was then to continue their planting operations with as little change as possible from the ante-bellum routine which consisted of large-scale cultivation with the Negroes working in gangs under strict supervision. To this end, they hoped to substitute some kind of wage payment—preferably a share of the crop—to the freedmen for labor formerly exacted of them. Needless to say, the freedmen wanted no part of this "wage" system. As free agents, they now wanted to get as far away as possible from the old regime. Their aspiration was then to become independent owner-operators. Only after President Johnson's amnesty proclamation in May, 1865—providing for easy restoration of all property, except slaves, to its original owners —did the Negroes scale down their aspiration to that of being independent tenant-operators. The planters at first resisted even this idea. "The leasing of land to the Negroes," said one planter, "is ruinous. Improvement is almost impossible; depreciation of property almost certain; it makes the laborer too independent; he becomes a partner and has the right to be consulted."[42] However, the freedmen were insistent, and they had the upper hand economically and politically. As Thompson put it, "the white man wanted his work more than the Negro wanted to work."[43]

In the end, the planters were forced to concede the status of "independent" tenant-operators to the freedmen but not before they succeeded in attaching their own peculiar interpretation of the meaning of the word "independent." The particular leasing agreement that became all but universal was the crop-share system, more commonly known in the South as the "cropping system." Under the arrangement, the landowner provided his croppers with the workstock and equipment, part of the seed and fertilizers, and the necessary credit, while retaining his right to prescribe the type of crops to be raised and to supervise to varying degrees their cultivation. The division of the control of the land was nominal. Nonetheless, even under the cropping system, the freedmen came to enjoy a degree of freedom hitherto unknown to them. They abandoned the cabins clustered around the "big house" and took up their abode in private cabins scattered over the

42. Hammond, *Cotton Industry*, pp. 123-25; Simkins and Woody, *South Carolina*, pp. 229 and 235-36.

43. C. M. Thompson, *Reconstruction in Georgia*, 1865-1872 (New York: Columbia University Press, 1915), pp. 68-69. Hereafter cited as *Georgia*.

land. They now worked in family groups instead of in supervised gangs. These changes, said the United States Commissioner of Agriculture, meant more to the Negro "than any of the post-bellum amendments to the Constitution."[44] The crop-share arrangement represented an ingenious compromise between the landless blacks and the white planters. As such, it was instrumental to the resumption of agricultural activities in the South. Its popularity, well established by 1870, can be seen from the subsequent rapid "breaking-up" of many plantations as reflected in the drastic decreases in the average size of the (census) farms throughout the South between 1860 and 1870.[45] However useful the system might have been as a stop-gap measure, it unfortunately contained built-in features that tended to perpetuate the system itself and to force Southern agriculture into the strait-jacket of cotton. Since another postwar stop-gap measure—the crop-lien system based on merchant credit—had similar effects on Southern agriculture, we shall postpone our elaboration on this subject to the next section.

Postwar agricultural credit problems and the crop-lien system.—The Southern planter, even in prosperous years before the war, never accumulated much working capital or liquid wealth, for he ploughed back his profits by buying new land and more slaves. Both land and slaves were then valuable properties, and their owner had no difficulty in securing advances, usually in cash, from his cotton factor in cities. When the cotton crop was marketed, the factor simply deducted the amount of advances plus a reasonable interest from the receipt and forwarded the difference to the planter. The war, however, destroyed slavery and rendered cotton land all but valueless; consequently, it undermined the traditional agricultural credit system of the South. For a while, the cotton factor tried to continue his prewar role as the chief source of Southern agricultural credit. Cotton prices were sufficiently high in the late 1860's so that the planters' low equity that resulted from the losses in land value and slaves did not deter the cotton factor from making the necessary advances. Meanwhile, in order to encourage the extension of agricultural credit, the legislatures of nearly all the cotton states passed lien laws that gave the creditor-factors and later local merchant-lenders the prior claim on future crops. However, early labor troubles, subsequent crop failures, and finally the enactment of stay laws prevented many factors from recovering their advances and greatly reduced the scope of their lending operations. In

44. As quoted in Simkins and Woody, *South Carolina*, pp. 235-37.
45. Hammond, *Cotton Industry*, pp. 131-32.

the end, it was the disintegration of the plantations and the rise of the small tenant-farmers following the development of the crop-share arrangement that dealt the fatal blow to this traditional "factor-to-planter" credit channel.

The latter course of events pointed to the need of local sources of credit to which landless sharecroppers could have ready access. Under these circumstances, the country merchant was in a unique position to assume the role of money-lender. Meanwhile, with the improvement of communications and transportation there came the development of "interior buying" which enabled the country merchant to further eclipse the position of the cotton factor—this time, in the marketing of cotton. Thus, the local storekeeper became a dominant figure in the life of Southern cotton growers. To them, he was at once a creditor, a seller of supplies, and a buyer of cotton.[46]

With the rise of merchant-lenders and the fall of big-city factors, the character of loans quickly underwent drastic changes. The cotton factor was accustomed to make loans to well-established planters in cash, for the use of which he charged a fixed interest rate but seldom attached any stringent conditions in respect to the borrowers' operations. On the other hand, the country merchant rarely made cash loans to his customers. Under the merchant crop-lien system, as Professor Hammond put it:

> The advances come in the form of articles of food, especially corn and bacon, in wearing apparel, furniture, crockery, agricultural implements—in short everything purchased by the farmer which the merchant has to sell. Instead of charging fixed rates of interest on the amount of these loans, the merchant seeks remuneration for these advances by charging higher [20-100 per cent] prices for the goods thus sold on credit than when he sells for cash .... In order to secure the repayment of these loans, it is customary throughout almost every county in the cotton belt for the advancing merchant to take out a regularly recorded mortgage on the crops of his credit customers.

When one of these mortgages has been recorded against the Southern farmer, he has usually passed into a state of helpless peonage to the merchant who has become his creditor. With the surrender of this evidence of indebtedness, he has also surrendered his freedom of action and his industrial autonomy. From this time until he has paid the last dollar of his indebtedness, he is subject to the constant oversight and direction of the merchant .... Except for cash no other merchant will sell him anything,

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46. Simkins and Woody, *South Carolina*, p. 273; Thompson, *Georgia*, pp. 87-88; Hammond, *Cotton Industry*, pp. 142 and 294.

for the first merchant holds the lien on his property and prospective crops, and the second merchant would have nothing as a guarantee of repayment. The farmer can exercise no right to hold his crop, or to seek his own market, until he has delivered to the merchant enough of the produce which he has raised to cover, at the ruling market prices, his indebtedness to the latter for supplies. Should the total receipts for his crops be insufficient to wipe out his indebtedness to the merchant, as very often proves to be the case, his contract binds him to continue his dealings with the merchant for the succeeding year .... But it is not alone with respect to the buying of his merchandise and the sale of his produce that the farmer is subject to the control of the merchant creditor. The latter dictates what crops shall be grown, and how much of each .... It is in this connection that the agricultural credit system of the Southern states has so profoundly affected the later history of cotton culture, and has exerted an influence strong enough to determine almost completely the direction which Southern agriculture has taken since the close of the Civil War.[47]

The undesirable aspect of this particular crop-lien system lies in the fact that there were impelling reasons why the merchant-lenders would insist on increasingly larger cotton acreages. First of all, cotton was the cash crop with a ready market. Secondly, the more cotton the farmers raised, the less food crops they could grow, and the more fertilizers they required. This meant, of course, more business to the merchants. When the farmers began to appreciate the advantages of a diversified agriculture, they would receive prompt notice that to reduce their cotton acreage was to reduce their "line of credit." In many instances, the debtors found themselves in a vicious circle. Under steadily declining cotton prices, they often found themselves unable to "pay out" at the end of the harvest. With each unpaid balance, they were required to plant even more cotton, and hence, to rely still more heavily on advances. They would begin another season more likely than not to be deluded once again by the vain hope that this year might see the end of their indebtedness. It looks as though the lien system saved the poor man in order to enslave him.[48]

That the postwar credit system had rendered Southern agriculture highly inflexible hardly needs further elaboration. That the postwar crop-share arrangement—wherein the landlord reserved the right to prescribe the type of crops to be raised—had lent strength to the adverse effects of the credit system becomes equally clear when one looks at the fact that cotton was the crop that afforded the landlord the surest

47. Hammond, *Cotton Industry*, pp. 145-46.
48. *Ibid.*, pp. 150-52; also Wallace, *South Carolina*, III, 284.

basis of securing his rent and any loans he might feel compelled to seek.[49] We have thus seen how these two major postwar developments had forced Southern agriculture into the strait-jacket of cotton with its disastrous consequences to the Southern farmers. These developments were also probably no less disastrous to Southern agricultural land.[50] In the first place, under a short-term leasing agreement which was characteristic of the crop-share system as practiced in the cotton states, the tenant, even if acting rationally, would have little interest in any long-range soil conservation measures. In the second place, under the ubiquitous crop-lien system, the debtor was likely to be too hard pressed to think of his soil. As probably no less than 50 per cent of the cotton states' farmers in 1890 were the victims of these postwar developments that trapped them in the strait-jacket of cotton—a staple that saw its price slip from 29 cents per pound in 1869 to less than 7 cents in 1895—it is small wonder that agrarian rumblings should have reached thunderous proportions in the South by 1890.

However, in imputing guilt to the landlords or merchant-lenders, one can easily overdo it. Both systems were meant to be transitional measures, and, as such, they were instrumental to the recovery of Southern agriculture. The cropping arrangement, as a compromise system of labor and land tenure, made possible the full resumption of agricultural production. The crop-lien system, by providing the penniless freedmen with the necessary capital that was otherwise unobtainable, made available the minimum required lubricant without which the cropping system could not have functioned. Unfortunately, like all makeshifts, these temporary systems tended to generate self-perpetuating forces from which the principals could not easily escape. As a matter of fact, the landlords from the beginning preferred the wage system or even outright liquidation of their plantations to the compromise cropping arrangement that was forced upon them by the freedmen's persistent demand. Had the development of small, landless tenants not taken place, the merchant crop-lien system would not have arisen in the first place. Furthermore, there was a substantial body of opinions supporting the view that many merchants would have preferred cash transactions. As Hammond and Simkins and Woody had pointed out, the statement that "the road to wealth in the South, outside of the cities and apart from manufactures, is merchandising" was not borne out

49. Hammond, *Cotton Industry*, p. 190.
50. *Ibid.*, p. 191.

by the facts.[51] For our purposes, it is, however, irrelevant to ascertain the guilt or innocence of the principals involved.

Thus far, our review of the salient post-bellum developments in Southern agriculture and their implications contains not so much our interpretation as that generally held by historians. An economist might take a dim view of the whole proceedings and simply state that the South was forced into the strait-jacket of cotton by the then existing factor proportions quite independent of the institutional arrangements that asserted themselves in Southern agriculture after the Civil War. That is to say, given a relatively large farm labor force and relatively small farms, an optimal farm organization at that time might well be one centered around cotton. This argument, though plausible from a short-run standpoint, ignores two long-run aspects: (1) The effect of the post-bellum institutional arrangements upon the ability of Southern agriculture to make adjustments in response to changing conditions; and (2) their effect upon factor proportions over time. It is interesting to note that, as these new postwar institutions reduced the number of "independent yeoman farmers"—the backbone of the great westward movement before the war—population rose sharply during 1870-1900 in the South. In the latter period, the Piedmont showed an average rate of population increase of 29 per cent per decade as compared with only 4.7 per cent per decade during 1830-60. This suggests that *perhaps* one of the consequences of the new institutions was an aggravated or, at least, sustained factor proportion problem.

At the same time, the popular historian's view lacks balance and perspective, since it tends to lead one to believe that the low agricultural income in the South can be explained wholly by these institutions, and the high income in the North by their absence. We should like to argue that even if the situation had been reversed the North would have surged ahead in agricultural income. For the institutions mentioned above would have collapsed under the impact of the region's remarkable industrial-urban development. Institutional arrangements do not outlive the conditions under which they flourished. It is for this reason that the manorial system collapsed as new dynamic forces came into being. It is also for this reason that the long-established Southern agricultural institutions are now beginning to break down rapidly as the dynamic industrial-urban growth changes the economic structure of the region. It is to these dynamic forces that we should

51. Hammond, *Cotton Industry*, p. 156; Simkins and Woody, *South Carolina*, p. 277.

turn in seeking plausible explanations for comparative regional income trends.

For our purposes, however, the discussion of the post-bellum agricultural institutions is relevant only insofar as it affords a basis for understanding why cotton became and remained popular in all our study area counties after 1870, thus destroying the important differences that existed before the war among counties. By 1900 then, the Southern Piedmont had become substantially homogeneous with respect to the dominant cash crop, tenure arrangement, and type of farming.

<div align="center">LAND RESOURCES</div>

Land is here defined in a broad sense that takes into account such attributes as soil quality, location, topography, rainfall, and temperature. In this section, we shall attempt to show the homogeneity of land throughout our study area. On the basis of various topographical maps that we have consulted, we feel that we can reasonably conclude that there are no important differences in topography between our area counties. Likewise, there is a striking homogeneity among the area counties in terms of rainfall and temperature. At this point, it may be well to recall that the inter-county differences in topography and temperature, though minor, were sufficient to account for the uneven spread of cotton in our area before the Civil War. This in our opinion represents a special case—in the sense that its significance depended on certain technological conditions at a given time—whose effects upon county incomes and investments, at any rate, had been thoroughly evaluated and found to be of no consequence to later periods. As we have already seen, under a different set of technological conditions brought about by the application of commercial fertilizers after the war, cotton spread rapidly to the mountain-fringe sections of our area where little or no cotton was grown earlier. The three aspects of land thus far mentioned—topography, rainfall, and temperature—are constant attributes. Hence, our conclusion of homogeneity based upon modern maps would be quite applicable to all relevant points of time.

The same, however, cannot be said of the quality of soil and the location of land. By the latter attribute, we mean the proximity of relationship of land to roads, rivers, and markets. Both of these attributes often change over time on a same plot of land. In order to rule them out as a possible explanation for observed county differences in farm incomes during 1900-40, we would have to demonstrate that

there was a substantial homogeneity in terms of those attributes among our area counties before 1900 and that later differences, if any, were attributable to the pattern of industrial development. On the basis of 1950 Soil Conservation Service data there were important differences between our area counties in terms of average soil capability class (Table 26). Yet, in terms of soil type, our area is a strikingly homogeneous one.[52] The explanation for this apparent discrepancy, as we shall show in a later chapter,[53] lies in unequal rates of investment (or disinvestment) in land between counties as a result of unequal rates of industrial development during 1900-40. This appears to indicate that with respect to soil quality our area was probably homogeneous before 1900, particularly in view of the similarity of the type of farming and land tenure in all our area counties during the latter decades of the nineteenth century.[54] This conclusion is supported by the trend in crop yields. If the relative dispersion for the combined relative (average yield for the entire area = 100) cotton and corn yields is computed from census returns, we find that it showed no change in our area during 1880-1900, while increasing by 20 per cent during 1900-40.[55]

We now come to the situs aspect of agricultural land. Obviously, this is not a problem that can be dealt with satisfactorily either empirically or visually. Nonetheless, it is possible to make certain crude judgments in this connection. In respect to water courses, our area counties were not only adequately but uniformly drained by a multitude of rivers, tributaries, and creeks.[56] Since no important man-made improvements or additions had been made since the Civil War to the existing water courses in and around the study area, the situation just described must have prevailed since that time. In relation to marketing centers, our area counties had access to four such centers—Atlanta,

52. Actually, in terms of broad soil type classification, modern soil maps show two major soil types—Cecil sandy loam and Cecil clay loam—in the study area (Department of Agriculture, *Agricultural Atlas* [Washington: Government Printing Office, 1937]). However, Cecil clay loam simply represents an eroded phase of Cecil sandy loam without its top sandy soil. This lends support to the thesis that the 1950 differences in soil capability were attributable to past differential rates of investment (or disinvestment) in land and that our area's soil was originally of the same type.

53. *Infra,* Chapter VI, pp. 142-44.

54. In 1900, for instance, no county in the area showed a variation in the rate of tenancy of more than 11 per cent from the area average (67.5 per cent).

55. Cotton and corn are chosen because they were the two dominant crops throughout the study area, accounting in most years for 60-70 per cent of the total improved acreage of each county.

56. See, for instance, *Asher and Adam's Atlas and Gazetteer of the U. S.* (1873).

Augusta, Columbia, and Charlotte—that formed a semicircle around the study area. With the development of "interior buying" of cotton in the 1870's, the relative ease of access to these centers became much less important. The access to cities within the study area as an attribute of land is not considered at this point, since the development of urbanization in the area—a twentieth-century phenomenon in the first place—will be treated as an integral component of the industrial development whose total impact upon agriculture will engage our attention in later chapters. Among the various determinants of the locational attribute of land, the access to roads is probably at once the most important and the most changeable, so we shall investigate in some detail the development of roads in and around the study area. The development of railroads will be taken up in a later section in this chapter. At this point, it suffices to say that as early as 1880 all but one area county (Madison) had one or more railroads within their boundaries and that by 1900 all but two (Banks and Franklin) had two or more railroads. Since it was the smaller counties that had fewer rail lines, all of our area counties had rather equal access to this mode of transportation. Our area's land was substantially homogeneous in 1900 in terms of this particular locational attribute. The development of rural roads, being a product of the modern motor age, will be dealt with in a later chapter.

In conclusion, we believe that the above pieces of evidence suggest the homogeneity of land (in all its attributes) throughout our study area at the turn of the century. Consequently, it is probably safe to dismiss land as a possible independent explanation for the observed county differences in farm incomes during 1900-40.

<div align="center">TRANSPORTATION</div>

Early Development

During the pre-cotton era when the Southern hinterland was characterized by isolation and self-sufficiency, the demand for an improved transportation system linking the interior to the tidewater never received popular attention. In the Upper Southern Piedmont, some tobacco was grown as a makeshift cash staple. But it was of an inferior quality, and its price was never sufficiently high to warrant much expansion in its output. Moreover, the marketing of this staple required no elaborate transportation system. It remained for cotton to arouse in the people of the Southern upland a paramount interest in securing easy connections with the ocean highway.[57]

57. Phillips, *Transportation*, p. 54.

The Napoleonic War with its consequent restrictions on American cotton exports and finally the War of 1812 temporarily checked the expansion of cotton and dampened the public enthusiasm for internal improvements. But the arrival of peace in 1815 brought a great rise in cotton prices and unparalleled zeal for cotton production in the Piedmont. Transportation on a large, low-cost scale became for the first time a really crucial problem. Subsequently, a totally new factor—the threatening rise of the West as a cotton producer—made the transportation problems of the Eastern Cotton Belt even more acute. As Phillips put it, "[the Western lands] were fresh and fertile, the rivers abundant and deep.... With great chagrin, the older cotton districts found that the westward movement was now flowing past them and carrying with it many of their most enterprising citizens. To check this unwelcome decline, heroic measures of remedy must be discovered and applied. The chief remedy discussed was that of internal improvements, to lessen the cost of marketing."[58]

In response to the popular clamor for internal improvements, South Carolina reacted somewhat more vigorously than Georgia. While both states resorted to direct state appropriations to support their piecemeal program of improving certain inland waterways and constructing a few turnpikes, Georgia's expenditures on its improvement program amounted to only little more than one-fifth of the amount appropriated by South Carolina during the years following the War of 1812.[59] This may partly explain why cotton was accorded less attention in our Georgia area counties during the ante-bellum era than in our South Carolina area counties.

In evaluating the effectiveness of the internal improvement program of the two old cotton states, we might borrow Professor Phillips' succinct summary: "The system of state appropriations to miscellaneous improvements, the building of a few ill-constructed turnpikes and the removal or circumvention of a few river obstructions, was a tinkering enterprise—an attempt to transform a totally inefficient system into an efficient one by means of patching over the bad places." After a brief era of state appropriations, 1818-30, both states reverted to their earlier policy of leaving the task of improving their transportation systems to private initiative.[60] The failure to solve the transportation problems faced by the upland cotton growers before the railroad era was undoubtedly one reason—among others already mentioned in

58. *Ibid.*, pp. 69-71.
59. *Ibid.*, pp. 100-13; Coulter, *Georgia*, pp. 237-38.
60. Phillips, *Transportation*, pp. 19-20, 98-100, and 116-18; Coulter, *Georgia*, p. 237.

earlier sections—why cotton did not spread as widely before the Civil War as it did later in the study area.

The Railroad Development before the Civil War

With the news of the successful operation of the first railroad in England, the course of future actions became clear in the mind of the upland cotton growers. During the early railroad era, however, the commercial interests of Charleston and Savannah, underlined by a bitter rivalry between the two port cities, took precedence over the cotton growers' interests in the construction of railroads.[61] The early roads, therefore, represented efforts by these two cities to divert inland traffic from each other; as such, they benefited the study area counties only to a very limited extent.

The cotton crisis of the early 1840's, which saw cotton prices drop to an unprecedented low of less than six cents per pound in 1845, made our Piedmont growers even more keenly aware of their need for cheap transportation. By the latter part of that decade, the organization of independent railroad companies began to take shape in the study area. These small companies for the most part relied on stock subscriptions of the state and small inland towns that were eagerly competing for rail transportation. A number of connecting lines off the several prongs of the trunk line (South Carolina Railroad) issuing from Charleston were built by these companies in the study area during the decade 1850-60. The Charlotte and South Carolina Railroad, traversing Chester and York counties of the study area, was completed in 1852. The next year saw the completion of the Greenville and Columbia Railroad, that gave rail facilities to Greenville and Anderson counties. The Spartanburg and Union Railroad, that linked Spartanburg and Union counties to the South Carolina Railroad at Columbia, was completed in 1859. The King's Mountain Railroad, a feeder road from Yorkville (York County) to the Charlotte and South Carolina at Chester (Chester County), reached completion in 1865. The Blue Ridge Railroad—which started out as a transmontane project with plans to link Knoxville, Tennessee, to Charleston through the Rabun Gap—contributed in

61. The earliest line, completed in 1833, linked Charleston to Hamburg, a town located in the Lower South Carolina Piedmont across the Savannah from Augusta, Georgia. The road, 136 miles long, was at the time the longest railroad in the world. It was designed to divert river traffic away from Savannah to Charleston, rather than to serve the upland cotton growers (Samuel M. Derrick, *Centennial History of South Carolina Railroad* [Columbia, S. C.: The State Co., 1930], p. 20; Wallace, *South Carolina*, II, 406).

1859 to the area's network with a line from Anderson to Walhalla in Pickens County (now Oconee County).[62]

At the outbreak of the Civil War, every South Carolina county in the study area, except Lancaster,[63] had rail connections with the seaboard. However, the main line that was to traverse the length of our whole area did not materialize until after the war. On the other hand, none of our Georgia counties, except Walton, had rail facilities. However, the rise of Atlanta with its proximity to our Georgia counties might have to some extent offset the advantages held by our South Carolina counties. Atlanta—a creation of the Georgia Railroad and the state-owned Western and Atlantic Railroad, with the latter giving the city access to the Corn Belt—had by 1860 well-nigh monopolized the whole commerce in Western produce imported by the entire Eastern Cotton Belt. At any rate, whatever effects unequal transportation facilities may have had on our area counties' agriculture were soon to disappear with the resumption of new constructions after the Civil War.[64]

The Railroad Development after the Civil War

Plagued by the carpetbagging Reconstruction regimes and their own lack of resources, the railroads of South Carolina and Georgia fared badly during the early postwar years. The construction of new roads was not generally resumed until the 1870's. The Atlanta and Charlotte Air Line, part of a great line linking New Orleans to the Eastern Seaboard, was conceived as early as 1856, but its actual construction was delayed by the war and its unfavorable aftermath. The section from Atlanta to Charlotte, North Carolina, was finally completed in 1873.[65] For the first time, our study area had a trunk line that traversed its entire length and linked the following counties together:

62. Phillips, *Transportation*, pp. 216-17; 335-36; 340-48; and 375-80.

63. Also Pickens and Cherokee in terms of modern counties.

64. The total effect of improved transportation upon local agriculture is difficult to assess in the study area. Its immediate effect was undoubtedly lower freight costs for out-going cotton and incoming manufactures and western produce, hence, an increase in money and real incomes. This, in turn, may have had positive effect upon investment and, therefore, future income. On the other hand, as Phillips put it: "Transportation is not an end in itself, but when rightly used, is a means to the end of increasing wealth, developing resources, and strengthening society. And in the South, these greater purposes were not accomplished. The building of railroads led to little else but the extension and the intensifying of the plantation system and the increase of staple output. Specializing and commerce were extended, when just the opposite development, towards diversification of products . . . , was the real need." (*Transportation*, pp. 19-20.)

65. E. Merton Coulter, *The South during the Reconstruction, 1865-1877* (Louisiana State University Press, Baton Rouge, La., 1947), pp. 238-39. Hereafter cited as *The South*; Thompson, *Georgia*, pp. 318-19.

Gwinnett, Hall, Banks, Stephens,[66] Oconee, Pickens, Greenville, Spartanburg, and Cherokee.[67]

During the 1870's two other non-local railroads were under construction in our area. By 1880, the Spartanburg and Asheville was completed from Spartanburg to Hendersonville, North Carolina; while the Chester and LeNoir was completed from Chester to Dallas, North Carolina. The decade also saw the construction of a number of feeder lines in the Upper Southern Piedmont. The Northeastern Railroad of Georgia, linking Lula (Hall County) on the Atlanta and Charlotte to Athens on the Georgia Railroad, was open to traffic in 1876 and gave Jackson County rail facilities for the first time. The Elberton Air Line completed in 1878 ran from Toccoa (now Stephens County) on the Atlanta and Charlotte to Elberton (Elbert County) and provided Hart, Franklin, and Elbert counties with rail connection. A spur, called the Hartwell Railroad, linked the town of Hartwell (Hart County) to the Elberton road in 1879. In 1880, two more local feeder lines were completed. One, the Walton Railroad, connected Monroe (Walton County) with Social Circle (Walton County) on the Georgia Railroad. The other, the Cheraw and Chester Railroad, extended rail facilities to Lancaster County for the first time by linking the town of Lancaster to Chester on the Charlotte, Columbia, and Augusta Railroad.[68]

During the 1880's and 1890's the construction of railroads continued at a rapid rate in and around the study area. The decades saw the completion of a host of local feeder lines and three major non-local lines. Among the latter, the most important was the Seaboard Air Line that ran lengthwise through the lower tier of our area counties—Gwinnett, Barrow,[69] Madison, Elbert, Union, Chester, York, and Lancaster— thereby adding another east-west trunk line to our area's rail network. In addition, the Air Line constructed a branch line that tied Walton County to its main line in Gwinnett County. A second major addition was the Port Royal and Western Carolina Railroad which entered the study area at three different points in an effort to reach all three leading area cities, Greenville, Spartanburg, and Anderson. This road —subsequently a part of the Atlantic Coast Line—gave these three cities a much more direct connection with Augusta and the Atlantic Seaboard. The third intersectional line, the Ohio River and Charleston,

66. Then a part of Habersham and Franklin.
67. Then a part of Spartanburg, Union, and York.
68. For more detailed information on these roads, see *Poor's Manual of Railroads,* 1870-80.
69. Then a part of Gwinnett, Walton, and Jackson counties.

was of lesser significance to the study area. This line, later a part of the Southern Railway system, cut across Lancaster, York, and Cherokee counties on its way from Camden, South Carolina, to Shelby, North Carolina, and points north. The feeder lines completed during 1880-1900 were briefly as follows: (1) the Lawrenceville Branch Railroad (Gwinnett County), (2) The Gainesville, Jefferson and Southern Railroad (Hall, Jackson, and Walton counties) which shortly after its completion in 1884 became a part of the Georgia Railroad, (3) the Greenville and Northern Railroad which was originally conceived as another transmontane effort to reach into the heart of the Corn Belt but later deteriorated into a neighborhood line that never got beyond the borders of Greenville County, (4) the Pickens Railroad (Pickens County), (5) the Glenn Springs Railroad (Spartanburg County), (6) the Union and Glenn Springs Railroad (Union County), (7) the Lockhart Railroad (Union County), later a part of the Southern Railway System through a leasing arrangement in 1900, (8) the Smithonia, Danielsville and Carnesville Railroad (Madison County).[70]

By 1900, all our area counties were equipped with rail facilities. In fact, this had been true of all counties since 1892 and of all but Madison County since as early as 1880. The distribution of rail facilities was strikingly uniform at that time and remained so throughout the modern period, despite certain very minor additions and abandonments.[71] This uniformity becomes even more real if we recall certain developments—such as the standardization of gauges, the introduction of through traffic, and the consolidation movement during the late nineteenth century[72]—which tended to minimize the differences in cost and efficiency offered by the mainline and branch-line roads.

70. For further details on these roads, see various volumes of *Poor's Manual of Railroads*, 1880-1900.

71. Additions: (1) The Carolina, Clinchfield and Ohio Railroad (the Southern end from Spartanburg to the North Carolina–Spartanburg County line completed in 1909); (2) the extension of a branch off the Seaboard Air Line to Great Falls, Chester County, 1900-10; (3) the extension of the Union and Glenn Springs to Pride, Union County on the Seaboard Air Line after the line was reorganized under the name of Buffalo, Union and Carolina; (4) the Greene County Railroad, 1914, from Monroe, Walton County to Apalachee on the Georgia Central; and (5) the Elberton and Eastern Railroad, 1918, from Elberton, Elbert County to Washington, thence to the Georgia Railroad, then already a part of the great Louisville and Nashville system.

Abandonments: (1) The Glenn Springs Railroad (Spartanburg County), 1910-20; (2) The Smithonia, Danielsville and Carnesville Railroad (Madison County), 1914; (3) The Lawrenceville Branch Railroad (Gwinnett County), 1920; (4) The Lawrenceville–Loganville branch of the Seaboard Air Line (Gwinnett and Walton counties), 1932-36; (5) The Elberton and Eastern Railroad (Elbert County), 1933. (For details see *Poor's Manual of Railroads*, various volumes, 1910-1940.)

72. See Coulter, *The South*, pp. 240-46.

In drawing inferences from the above facts, let us first of all point out that, apart from its effect upon farm organization and its flexibility, the development of transportation can cause money income to vary between counties by creating county differences in prices paid and prices received. This is true of the census gross farm income data which are arrived at by multiplying enumerated physical outputs by the county-unit prices, rather than by the central market prices. Secondly, let us distinguish between two possible cases. First, if the development of transportation was to some extent determined by the level of local economic activities, the uniformity of our area's rail development before 1900[73] reflects the even pattern of its economic development prior to the industrial era. The continuation of this uniformity during 1900-40 after the industrial development had disrupted the even pattern of economic development in our area could then be explained in terms of a general recognition on the part of the public and the railroad industry of the adequacy of the existing network. At any rate, as we shall point out in a later chapter, it appears that the subsequent variations in the volume of traffic in our various counties, resulting from the uneven spread of industrial-urban development among them, were met by the uneven development of highways and rural roads in these counties. Secondly, if the railroad development was exogenous, i.e., external or prior to economic development—as undoubtedly was the case with the early roads in the West, which were built ahead of the demand—the uniformity of the railroad development in our area would then enable us to assert that the observed differences in farm incomes between counties during 1900-40 are not attributable to this exogenous force. At this point, it may be well to state once again that our objective in this chapter—apart from bringing out the salient historical facts helpful to a general understanding of the study area—is to identify and evaluate the more significant exogenous forces so that the relationship between the observed county differences in farm incomes and the pattern of industrial development (working through the endogenous forces it set in motion) can be established less equivocally.

MANUFACTURING AND MINING

Early Orientation before the Cotton Era

Before cotton dominated its economy following the War of 1812, the Southern Piedmont was well oriented toward a diversified social

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73. There had been virtually no development in the other modes of transportation since the beginning of the railroad era. (See, for instance, Coulter, *Georgia*, pp. 393-94; Coulter, *The South*, pp. 246-49; and Amanda Johnson, *Georgia as Colony and State, 1733-1937* [Atlanta: Walter W. Brown Co., 1938], p. 641).

and economic development similar to that of the Northen Piedmont in Pennsylvania.[74] The early settlers in the study area were largely European immigrants of peasant and artisan background, inured to an industrious and frugal existence and certainly not accustomed to rely on slaves. Their peasant background and the remoteness of the area from markets inclined them toward a family type of farming characterized by diversification and self-sufficiency. Their isolation as well as their lack of an easily marketable cash crop, coupled with the prevalence in their midst of men with artisan training, encouraged the development of diversified nonagricultural industries of a household variety.[75] In fact, household manufacturing was then so prevalent in the Southern Piedmont that the area came to be known as the "manufacturing section."[76] In 1810, the value of home-manufactured cloth alone amounted to $982,728 in our study area or $8.89 per capita.[77] In the same year, of the 3,267,141 yards of cloth produced in South Carolina, all but 126,463 yards were of upland origin.[78] It was largely because of the industry of the small Piedmont farmers—to which the above data amply testify—that the South of 1810 (Virginia, the Carolinas, and Georgia) surpassed all New England in the value of all manufactures.[79]

In contrast, the production of agricultural staples was the keynote along the coastal Tidewater. There, plantations and slavery predominated. Specialization was carried so far that not only manufactures were imported but, except the coarse fare for the slaves, foodstuffs as well. According to Wallace, "during the early years of the French Revolutionary Wars, even the twigs for sweeping the decks of vessels were imported."[80] Unlike our small Piedmont farmers, the planters despised productive labor just as the haughty Greeks and Romans once did. To them, planting alone was worthy of a gentleman's time and attention and, "with the exceptions of learned professions, no pursuit which yielded income from personal effort or employment was properly respected."[81] This was then their *raison d'être* for slavery. Manu-

74. F. J. Turner, "Old West," *Proceedings*, Wisconsin State Historical Society, 1908, p. 212. Also Gray, *Agriculture*, I, 122.

75. Gray, *Agriculture*, I, 122-123.

76. Wallace, *South Carolina*, II, 365.

77. Computed from *United States Census, 1810*.

78. Wallace, *South Carolina*, II, 409.

79. Broadus Mitchell, *The Rise of Cotton Mills in the South*, Johns Hopkins University Studies in Historical and Political Science, Ser. XXXIX, No. 2 (Baltimore: Johns Hopkins University Press, 1921), 10. Hereafter cited as *Cotton Mills*.

80. Wallace, *South Carolina*, II, 409.

81. *Ibid.*, 363.

facturing, needless to say, was deemed a base occupation. The idealized agrarian mentality of the ruling class was so extreme that not until 1845 did it allow the repeal of a Charleston city ordinance prohibiting the use of steam engines within the city's corporate limits.[82]

As great as these differences were between the Piedmont and the Tidewater, they were soon to disappear after the War of 1812 as the upland succumbed to the stepped-up invasion by "white cotton and black slaves." Agricultural fundamentalism as championed by Calhoun and other notable Southern statesmen gained acceptance in the upland and further strengthened its hold in the lowland. Meanwhile, Gregg, the leading proponent of Southern industrialism, became "a missionary who preached an unaccepted faith."[83] Thus, after a promising start, the Southern Piedmont retrogressed and became industrially speaking, along with the rest of the South, "a desert of Sahara." It took the ravages of the Civil War, the shock of defeat, and the humiliation of Reconstruction to reawaken the South. At this point, it is well to recall with another historian D. A. Tompkins that, except for the combined influence of the invention of the cotton gin, the institution of slavery, and the checking of immigration, "A manufacturing development throughout the Piedmont region of the South might have continued parallel with that which has taken place in Pennsylvania."[84] It is to this crucial period of industrial stagnation, 1820-60, that we now turn our attention.

Industrial Stagnation, 1820-1860

During and immediately after the War of 1812, before the manufacturing pursuits were abandoned in favor of planting, several groups of New Englanders settled in the Southern Piedmont to utilize its ample water power, ready raw materials, and abundant labor[85] and "laid the foundation for the tens of thousands of spindles which were in due course of time to hum in the Piedmont belt."[86] These mechanically inclined, as well as business-minded, pioneers soon started several mills of moderate size (500 spindles or so) largely with their own capital. Their enthusiasm, however, proved to be short-lived. For the most part, their efforts failed to turn public apathy into active support for

82. John G. Van Deusen, *Economic Bases of Disunion in South Carolina* (New York: Columbia University, 1928), p. 276. Hereafter cited as *Economic Bases*.

83. Mitchell, *Cotton Mills*, p. 41.

84. As quoted in *ibid.*, p. 10.

85. Wallace, *South Carolina*, II, 411.

86. August Kohn, *The Cotton Mills of South Carolina* (Charleston: Daggett Printing Co., 1907), p. 17.

their enterprise. The prices of cotton were then sufficiently high so that the people found it "more profitable to raise cotton than weave it."[87] Northern operators and mechanics were often ostracized socially, and many left the area as a result. Phillip Weaver, a master mechanic from Rhode Island and the founder of the mill that failed as early as 1819, expressed his feeling as follows: "I wish to leave this part of the country and to settle myself and my family in a free state where [we] will not be looked down upon with contempt because I am opposed to the abominable practice of slavery."[88] Historian Olmstead confirmed the discouraging effect the institution of slavery exerted on the movement of immigrants and Northern workers (and outside capital) to the South. "New England factory girls," according to him, "were occasionally induced to come to the Georgia mills but soon left because of the degraded position of laborers."[89] The unhappy experience of these Northerners clearly showed the inroad cotton and slavery had made on the uplanders' way of life that only a short time ago had been free and unfettered. It is not surprising then that in 1860 the foreign-born population in the study area should have accounted for only 0.49 per cent of its total population. In contrast, the comparable percentages for Massachusetts, Ohio, and the nation as a whole were 21, 14, and 13 per cent respectively.[90] This, undoubtedly, was an important contributing factor to Southern industrial stagnation during the period.

The rise of Southern agricultural fundamentalism following the ascendency of cotton and slavery produced other ramifications that prompted the Southerners to look upon manufacturing with disfavor. In 1816, when the original protective tariff act was under debate, Calhoun and other lesser Southern leaders gave it strong support. Twelve years later when another protective tariff bill came before Congress, Calhoun found it so objectionable that he plunged South Carolina headlong into an open belligerence that culminated in nullification and near-secession in 1832. This grand reversal of Calhoun's stand on tariffs reflected partly the steady decline in South Carolina's fortunes during the period. The city of Charleston was then experiencing an unprecedented depression.[91] Meanwhile, under the growing competi-

87. Wallace, *South Carolina*, II, 409.
88. As quoted in *ibid.*, p. 411.
89. As quoted in Richard H. Shryock, *Georgia and the Union in 1850* (Durham: Duke University Press, 1926), p. 81.
90. Computed from *United States Census, 1860*, Vol. I, *Population*.
91. Wallace, *South Carolina*, II, 404.

tion from rich Western cotton fields, the state was fast losing not only its position as the leading cotton producer, but a good part of its population. Coincidental with these developments was the steady decline in cotton prices. Under these circumstances, it was not surprising that the South Carolina leaders should have launched a search for scapegoats. Nor was it surprising that they should have found the goat in the protective tariffs that were benefiting a North already resented for its constant moralizing on slavery. The South, particularly South Carolina, began to "calculate the value of the Union."[92] Nationalism began to give way to sectionalism and states' rights. Professor Turner put it more bluntly this way, "[with] cotton at 30 cents South Carolina was nationalistic in 1816; with it at 20 cents in 1820 she found the tariff a grievance; with it at 14¾ cents in 1824 she found the tariff unconstitutional; and with it at 9 cents in 1827 she prepared to nullify."[93] More fundamentally, however, Calhoun's reversal reflected the basic change in South Carolina's economy from a state of relative diversification in 1816 to that of agricultural staple production in 1828.[94]

The bitter struggle over the tariff issue raged on from 1828 to 1833. As late as December, 1832, President Jackson threatened to "use the influence that a father would over his children whom he saw rushing to certain ruin." South Carolina reciprocated with a "defiant promise to meet force with force." While Jackson threatened, he also pleaded with Congress to lower the tariff. The stormy episode finally came to an end as a result of the compromise Tariff Act of 1833, but it opened rather than closed an era. Cotton, adopted as a servant, had emerged as king, driving his subjects whither they would not have gone.[95]

The new unfolding era was one of Southern separatism and negativism. Just when the tariff squabble was passing into history, the dormant slavery issue burst forth in time to magnify all the evils of the nullification controversy. As Professor Wallace aptly summed it up: "From 1832 to 1860 South Carolina was in effect not so much a part of the country as a dissatisfied ally . . . awaiting a favorable op-

92. *Ibid.*, 418-19.

93. As quoted in *ibid.*, p. 445.

94. It is interesting to note that Calhoun's reversal was not without parallel. During the same period, Webster representing New England interests made an equally grand reversal, but in the opposite direction, in his Congressional stand with respect to the tariff issues. His early stand for free trade indicated the mercantile character of New England's economy. His later advocacy of protection reflected the predominance of manufacturing interests built up in that area during 1816-1828 (Mitchell, *Cotton Mills*, p. 40).

95. Wallace, *South Carolina*, II, 444-46 and 453.

portunity to dissolve the alliance. The whole mental life of the state was most unhappily affected by the psychology of persecution and defiance, continually dwelling on Southern wrongs. An enormously disproportionate amount of her abilities was drawn into politics for the defense of her peculiar and, supposedly, vital interest. The free sweep of the great South Carolina intellects of the Revolutionary and following periods was checked, and, in the expressive phrase of Professor Gildersleeve, the South Carolina mind after 1832 became a 'fetus in a bottle.'"[96] What has been said of South Carolina also applies to the other Southern states during 1832-60, though to a lesser extent. Needless to say, it was these Southern attitudes as portrayed by Wallace and other noted Southern historians that prompted the Southerners to cling stubbornly to the *status quo* characterized by cotton and slavery. It is only against this background that one can begin to appreciate the weight of Calhoun's argument against manufacturing on the ground that it was "likely to create a pro-tariff element and destroy the unity without which slavery could not be protected."[97] As a result of this and the more familiar agrarian arguments, the anti-manufacturing sentiment apparently became strong enough in the South so that news editors literally ran the risk of receiving a beating should they charge political candidates with owning stock in manufacturing establishments.[98] In this hostile environment, it was small wonder that Southern manufacturing should have become stagnant during that period, if indeed, it had not retrogressed.

This conclusion appears to be amply borne out by the census returns on the value of commercial and home manufactures for 1850 and 1860. The per-capita value of all (commercial and home) manufactures was only $9 in 1850 and $14 in 1860 for the study area as a whole, while in 1810 the per-capita value of home-manufactured cloth alone amounted to $9. It seems reasonable to expect that had there been more complete returns, the 1810 per-capita value of home manufactures alone—not to mention the per-capita value of all manufactures—may well have exceeded the per-capita value of all manufactures for both 1850 and 1860, despite the fact that the 1810 values were rather inflated as compared with those of 1850 and 1860.[99] While commercial manufacturing—i.e., manufacturing carried on in "establishments"—

96. *Ibid.*, II, 453.
97. Mitchell, *Cotton Mills,* p. 41.
98. Wallace, *South Carolina,* III, 11.
99. The BLS wholesale price index (1926=100) is 107.7 for 1810, 62.3 for 1850, and 60.9 for 1860.

was relatively unimportant in 1810, the presence in the study area of (iron) mining and mechanical arts (e.g., blacksmithing)—both considered as manufacturing in the 1850 and 1860 censuses—would certainly further raise per-capita value of manufactures for our area in 1810.

Iron mining was probably of considerable importance in the Upper Southern Piedmont at that time, since a number of our area counties— notably York, Spartanburg, Greenville, Anderson, and Union—were sometimes referred to as the "old iron districts."[100] In 1810, the study area reported at least six bloomeries and forges. Five years later, York County alone reported one forge, one furnace, one rolling mill, and one nail factory.[101] For the most part, the iron industry of our area barely managed to hang on during the period of general industrial decline, 1820-60, until it completely disappeared after the Civil War. That this complete disappearance was historically unique can be seen from the comment made by the Bureau of Census in its industrial survey of 1880: "South Carolina furnishes the only instance in the history of the country of a state having wholly abandoned the manufacture of iron."[102]

To lend perspective to this brief summary of the events during the crucial period, 1820-60, let us compare the industrial growth of the South with that of Massachusetts. How Southern agrarianism of the ante-bellum type had caused the South to permit New England to gain an unchallenged industrial supremacy by default can be seen from the following data. We may recall once again the industrial supremacy that the South (Virginia, the Carolinas, and Georgia) held over New England as late as 1810. By 1860, the combined total value of commercial manufactures of the same Southern states amounted to only about 40 per cent of that of Massachusetts alone. Even in terms of all (commercial and home) manufactures, the combined value of these Southern states was still less than half of that of Massachusetts. In the meantime, the growth of New England's population was only slightly higher than that of the old South, so that the per-capita differences between the two regions were fully as striking as the differences in total industrial growth.

100. Wallace, *South Carolina,* III, 17-22.

101. See Victor S. Clark, *History of Manufactures in the U. S.* (Washington: Carnegie Institution of Washington, 1929), I, 219-20, 497, and 504-5; Van Deusen, *Economic Bases,* pp. 285-86; J. B. O. Landrum, *History of Spartanburg County* (Atlanta: Franklin Company, 1900), pp. 135-55; and *United States Census, 1880,* Vol. II, "Iron and Steel," *Manufacture,* p. 97.

102. *United States Census, 1880,* Vol. II, "Iron and Steel," *Manufacture,* p. 833.

The Impact of Ante-Bellum Agrarianism upon Our Area Counties' Industrial Development

We have seen that the ante-bellum agrarianism brought about by the rise of cotton and slavery had been a strong deterrent to Southern industrial development. What had been its effect on our individual area counties' industrial development in view of the fact that the spread of cotton and slavery was highly uneven in these counties? To answer this question, let us examine the available relevant census data for 1860. In that year, the rank correlation coefficient (*rho*) between the proportion of the total population that was slave and the per-capita value of home manufactures for our area counties was –0.554. This indicates that there was perhaps less aversion toward the use of labor in non-agricultural endeavors in those counties where cotton and slavery had made relatively little headway than in the traditional cotton-slave counties. However, perhaps to a large extent, this may simply be a reflection of a more advanced market economy in the latter counties.

The relationship between the proportion of the total population that was slave and the per-capita value of commercial manufactures offers an interesting contrast. Here, we find that *rho* is positive and equal to +0.526 for 1860. This appears to indicate that, even though there might have been less open local hostility toward manufacturing in the non-cotton-slave counties, their being identified as a part of the Deep South had, nonetheless, caused outside capital and skill to shy away from them. These counties suffered the consequences of an extreme agrarian atmosphere along with the cotton-slave counties without, at the same time, receiving the benefits from cotton that had accrued to the latter counties in the form of greater capital formation arising from higher farm incomes. It was undoubtedly the greater availability of local capital—despite its lavish use by the slaveholders to expand their holdings—that gave the cotton-slave counties an edge, a small one to be sure, in commercial manufacturing.

In 1860, the six leading counties in terms of per-capita value of commercial manufactures were Greenville, Elbert, Walton, Spartanburg, York, and Lancaster; and the six that lagged farthest behind were Pickens, Franklin, Hart, Hall, Madison, and Union. Among the leaders, the per-capita value ranged from $32 to $11; and among the least industrialized, from $6 to $2. For the former counties, the chief industries were flour and meal, cotton goods, carriages, and sawed lumber. For the latter counties, they were carriages, sawed

lumber, and leather.[103] The absence of the flour and meal and cotton goods industries from the list of leading industries in the non-cotton-slave counties probably indicates that the products of these two industries were by and large made in the homes.

In short, it appears safe to conclude that some differences in popular attitudes toward manufacturing probably did exist among our various area counties before the Civil War, although these differences, because of the offsetting differences in local capital formation, were insufficient to give rise to differences in the degree of industrialization in the expected direction. At any rate, whatever prior differences there were in our counties' popular attitudes toward manufacturing disappeared after the Civil War, which destroyed once and for all the agrarian myth. It is to the postwar period that we now turn our attention.

The Revival of Industrial Spirit

After the war, the people of the prostrate South, groping for an explanation of their humiliating defeat, arrived at the inevitable conclusion that the outcome was so because the North was industrial and the South had crowned the wrong king. This realization, eventually, brought in its wake a new spirit that swept aside the earlier antipathy toward nonagricultural pursuits. Professor Mitchell succinctly summed up the Southern change of heart as follows:

It has been seen how cotton, for long years, had been hurtful to the South; how it had joined with slavery and secession to bring the disaster of the Civil War; how after humiliating but sobering Reconstruction years the curtain was ready to lift on a new act in which the characters should be chastened in spirit, clarified in thought, and quick to discharge roles. The South, by 1880, was ready to be no longer negative, but affirmative; not just the passive resultant of its past, but the conscious builder of its future.[104]

In line with the New South spirit, conservative and radical legislatures alike, in South Carolina and Georgia, sought to encourage the development of manufacturing. In South Carolina, the conservative legislature of 1865 enacted a tax law exempting machinery from the state property tax. In the first radical legislature (1868) a resolution was passed by the House appointing a committee to investigate the possibility of extending "the faith and credit of the state to the development of manufacturing enterprises." In 1873, the radical legislature exempted for ten years all capital invested in the manufacture of cotton,

103. For detailed industry breakdown, see *United States Census, 1860*, Vol. III, *Manufacture*, Table I.

104. Mitchell, *Cotton Mills*, p. 60.

woolen and paper fabrics, iron, lime, and agricultural implements from all state, county, and municipal taxes except the two-mill school tax.[105] In Georgia, with the industrially-inclined "Bourbon Democrats" in control since the 1870's, state supports to manufacturing industries were undoubtedly even more active. The program of these Bourbons in general embodied the philosophy of the great Southern industrial prophet, Henry W. Grady, who advocated that the New South should "wear the halo and absorb the romance of the olden times, but it should get away from the retarding philosophy of the Old South."[106]

In spite of occasional opposition from a few rabid upholders of the Lost Cause who refused to be reconstructed even economically, local groups also actively sought to develop local industries. Not infrequently, Southern communities offered improved mill sites *gratis* to anyone who would erect cotton factories on them. There were also instances of cooperative efforts by local citizens to pool their resources in an attempt to build cotton mills. In Anderson County, citizens took steps to revive the People's Manufacturing Company that had been inactive since 1871. In 1875, the residents of Spartanburg County organized the English Manufacturing Company, which purchased 3,000 acres of land, divided the lot into tracts of six acres, and made them available to English and American settlers on the condition that they, in return, purchase the company's stocks. This appears to have been a community effort to attract artisan settlers as well as scattered capital. The Grange was also active in promoting cooperative manufacturing. In an effort to overcome postwar capital stringency, Southern mill promoters resorted to yet another scheme by appealing to potential investors on philanthropic and humanitarian grounds. Yet, despite state and local aid and the absence of open hostility, Southern industries failed to make significant progress during 1865-80. As Simkins and Woody put it, "not even for humanity's sake were mills established."[107]

In accounting for this failure, Professor Mitchell listed several reasons. Among them were the high postwar prices of cotton and the belief that this condition would persist on the ground that cotton could be raised only scantily with free labor. Consequently, Southern attention was once again focused upon cotton. This restoration of "King Cotton," taken in conjunction with the high prices of factory equipment (which did not return to the 1860 level until 1880), retarded

105. Simkins and Woody, *South Carolina*, pp. 291-96.
106. Coulter, *Georgia*, pp. 363-65.
107. *South Carolina*, pp. 301-5.

Southern industrial development. When cotton prices did return to the 1861 level in 1876, another obstacle—the political upheaval following the scandal-ridden Hayes-Tilden election—came in time to further divert popular attention away from industrial development.[108] The Panic of 1873 was, of course, another strong deterrent to the Southern attempt to industrialize. In fact, the last direct consequence of the panic was not removed until 1879 when specie payment was finally resumed.[109] Among other retarding factors, Professor Mitchell mentions the general shortage of capital that characterized the early postbellum years in the South. During 1865-80 and some years afterwards, the South received little help from Northern capital and know-how. On the contrary, there were strong evidences of conscious Northern efforts to sidetrack industrial development in the South.[110]

It was then not surprising that the total value added by manufacture in the Southern Piedmont should have increased (54 per cent) only slightly more than its population (47 per cent) during 1860-80. Put on a per-capita basis, the area's increase was only 7 per cent.[111] In 1880, its per-capita value added by manufacture stood at only $4 as compared with $39 for the nation, $42 for Ohio, and $137 for Massachusetts.

With the passing of the above mentioned retarding forces after 1880, the advance of Southern industries, particularly cotton textiles, became in the words of Professor Mitchell, "extraordinary" and "convincing." Likewise, Professor Brooks referred to 1880 as "the date of the Southern Economic Renaissance."[112] Nonetheless, by 1900, the per-capita value added by manufacture in the Southern Piedmont was still but $22—a figure matched by Ohio in 1860 and by Massachusetts probably as early as 1820-30. Looking at the study area as a whole,

108. In this close contest, Democrat Tilden, after an apparent victory, was counted out by a likely Republican fraud. The resulting Southern reaction was so strong that the region sank back into its old negative sectionalism and preoccupied itself with all-out preparations for a Democratic victory in 1880. Subsequently, "Solid South" politics absorbed the people's energy and interests. It took another shock treatment, Democrat Hancock's defeat in 1880, to jar the South out of its insensibility. In the years that followed, according to Mitchell, the South began to recognize that the pressing task of the South from the day of Appomattox was economic and social and not political (*Cotton Mills,* pp. 88-93 and 99).

109. *Ibid.,* pp. 100-1.

110. *Ibid.,* pp. 110-11.

111. Changes in the price level during the entire period 1850-1900 were extremely minor for the years under consideration. If we use the BLS wholesale price index (1926 = 100), the price level was 62.3 for 1850, 60.9 for 1860, 65.1 for 1880, 56.2 for 1890, and 56.1 for 1900.

112. Mitchell, *Cotton Mills,* pp. 75 ff. and 105, fn.

we can safely conclude that it was still predominantly pre-industrial in 1900, although it had forged ahead of both Georgia ($20) and South Carolina ($17) in terms of per-capita value added since 1880. This conclusion would hold fairly even in the case of the area's most in-dustrialized county at that time, Spartanburg, which then had a per-capita value added of $46—a figure only slightly more than one-half of Ohio's and one-fourth of Massachusetts' for the same year, 1900. In spite of the already considerable *relative* differences in per-capita value added among our various area counties in 1900, it is clear that (1) all of these counties were still primarily agricultural, (2) the absolute differences in the degree of their industrialization were as yet not sufficiently great to affect local agriculture noticeably, and (3) con-sequently, our choice of 1900 as the beginning year of our intensive study period is a justifiable one. That local agriculture had not yet been affected by the budding industrial development during 1880-1900 can be seen from the non-correlation (*rho* = +.005) between the increases in value added by manufacture per capita and the increases in value of farm products per worker during that period.

<div align="center">SUMMARY</div>

From the lengthy historical materials presented above, the following conclusions and comments appear warranted:

1. Before the influx of cotton, the counties of the Southern Pied-mont study area were headed toward a diversified and rather homo-geneous development. Their peoples, while heterogeneous, were of similar ethnic composition. Slavery was relatively unimportant in all counties. There were also no noticeable differences in their early agri-cultural and industrial orientation.

2. Subsequent introduction of cotton, through its positive relation-ship with slavery, destroyed this homogeneity in the study area as a result of the dissimilar growing conditions among counties in the cul-tivation of this staple. Important differences began to appear among the area counties with respect to (a) the relative importance of slavery, (b) the type of farming, (c) the popular attitude toward agrarianism vis-à-vis industrialism, (d) the level of farm income per worker, and (e) the rate of capital accumulation (excluding investment in slaves) in agriculture. Because of the favorable cotton prices at that time, particularly during the early ante-bellum period, the predominance of cotton in the old cotton counties had resulted in relatively high income and investment in agriculture in these counties. The late ante-bellum

period, 1850-61, also saw a highly uneven railroad development in the study area, although it is difficult to say whether this pattern was related in any way to the uneven spread of cotton before the Civil War.

3. Although cotton, as a source of windfall gain, was capable of giving rise to important county differences in income and the rate of capital formation in the short run, available post-Civil War data indicate that these differences were not sufficient to sustain themselves over a long period of time. Conceivably, under conditions of immobile factors of production, given differences in farm capital per worker could persist, thus leading to sustained differences in labor productivity and farm income per worker over time.[113] Partly because of the leveling forces of the Civil War, but largely because of the workings of the equilibrating forces during the postwar period, the income-differentiating, cotton-induced, prewar differences in per-worker farm capital had almost completely disappeared by 1900. That the equilibrating forces had been at work in the study area throughout the postwar period appears to be clear from the substantial decreases in the observed county differences in per-worker farm capital and farm income between 1860 and 1900. With respect to farm capital per worker, the coefficient of variation dropped from 0.265 in 1860 to 0.160 in 1900; with respect to farm income per worker, it decreased from 0.207 in 1880[114] to 0.094 in 1900. These figures indicate that our area counties had become much more alike in these regards during that period.

4. Meanwhile, the Civil War destroyed not only slavery, but any prewar county differences in the popular attitude toward agrarianism vis-à-vis industrialism. Certain postwar developments—such as the introduction of commercial fertilizers and the subsequent general spread of cotton throughout the study area, the breakdown of plantations, the rise of the crop-lien merchant credit system and the cropping system and their subsequent general introduction to all area counties, the completion of the rail network that blanketed the entire area with a striking uniformity, and the triumph of "Solid South" politics—also brought to the area a degree of homogeneity hitherto virtually unknown.

5. Because of these convergent movements during 1865-1900 among our study area counties, the Southern Piedmont had, by 1900, become

113. Free commodity trade may also have helped to limit the magnitude of these differences by its equalizing effect upon factor returns.

114. Although it is desirable to go back farther than 1880, the census returns on value of farm products for 1870—the first year gross farm income was ever reported—were, by the Bureau of the Census' own admission, too inaccurate to be used in the case of the Southern states.

remarkably homogeneous, not only in terms of labor productivity and income in agriculture, but also in terms of other socio-economic indexes. The period appears to be one in which all our area counties tended toward a long-run equilibrium, and the year 1900 appears to mark the point of near-equilibrium. In the following chapter, we shall note that the period after 1900 was in contrast one of marked divergences; and, in later chapters, we shall attempt to determine the nature and causes of these divergences.

6. One important exogenous factor—the cotton-induced differences in our counties' relative Negro (slave) population—had persisted during the decades following the Civil War. Our measure of relative dispersion indicates that, in this respect, our counties remained about as different from one another in 1900 as they were in 1860 and 1880. However, our findings indicate that the observed farm income differentials among the area counties, before and after 1900, cannot be explained by this exogenous force.[115]

115. See *supra,* pp. 26-27 and *infra,* Chapter III, pp. 92-93.

INDUSTRIALIZATION AND DIVERGENT FARM INCOME TRENDS, 1900-40

IN THE PRECEDING chapter, we have shown (1) that, as a result of the highly uneven spread of cotton before the Civil War, the Southern Piedmont was far from homogeneous during the ante-bellum period but (2) that, in the absence of substantial industrial development in its midst, there was a marked movement on the part of the area counties toward a long-run equilibrium in terms of farm income during 1860-1900. In this chapter, we shall attempt to show (1) that, during 1900-1940, there was a noticeable, but highly uneven, industrial development in the study area and (2) that, coincidental with this development, there was a general departure from a state of relative equilibrium in 1900, resulting in not only persistent but increasingly greater differences in farm incomes between the area counties.

INDUSTRIALIZATION

During 1900-40, the total value added by manufacture increased from $11,846,196 to $105,322,861 in the Southern Piedmont (Table 1). This represents a relative growth of 789 per cent, as compared with increases of 191 per cent for Massachusetts, 336 per cent for the nation, 526 per cent for Georgia and Ohio, and 643 per cent for South Carolina. Even allowing for its population increase—which was modest (54 per cent)—the growth of value added by manufacture in the study area still remains imposing. During that period, the value added by manufacture per capita rose from $22 to $129—an increase of 486 per cent as compared with 88 per cent for Massachusetts, 152 per cent for the United States, 277 per cent for Ohio, 345 per cent for Georgia, and 426 per cent for South Carolina. As a result of the study area's relatively higher rate of industrial growth, its per-capita value added had risen from only 15 per cent of that of Massachusetts in

1900 to 47 per cent in 1940. Thus, industrial growth was notable in the Southern Piedmont during 1900-40.

However, not all counties in the area have shared in this growth. In 1940, two of the area counties reported no manufacturing; two showed a per-capita value added of less than $10 and the remaining seventeen counties ranged from $27 to $199[1] (Table 1). Also in 1940,

TABLE 1. Value added by manufacture, total and per capita, 1900 and 1940, and value of manufactured products as per cent of value of farm products, 1940, Southern Piedmont[a]

	VALUE ADDED BY MANUFACTURE				V.M.P. as Per Cent of V.F.P., 1940[c]
	Total (000)		Per Capita		
	1900	1940	1900	1940	
Anderson (S.C.)..........	$ 1,699	$ 11,740	$ 31	$ 132	570%
Cherokee...............	768	3,975	36	119	424
Chester...............	369	3,895	13	120	537
Greenville.............	1,723	24,948	32	183	1,799
Lancaster.............	203	4,677	8	139	615
Oconee................	386	2,066	16	57	225
Pickens...............	196	3,083	10	83	350
Spartanburg...........	3,032	23,079	46	181	975
Union.................	942	3,505	37	112	837
York..................	885	11,658	21	199	966
Banks (Ga.)...........	43	0	4	0	0
Barrow................	100	2,064	10	158	547
Elbert................	191	1,698	10	87	306
Franklin..............	59	147	4	9	29
Gwinnett..............	301	789[b]	13	27	156
Hall..................	302	4,316	15	124	631
Hart..................	104	117[b]	7	8	26
Jackson...............	125	1,094[b]	7	55	278
Madison...............	33	0	3	0	0
Stephens..............	103	916	13	71	400
Walton................	282	1,555	15	75	170
All Counties..........	11,846	105,322	22	129	447
Georgia...............	45,176	283,316	20	91	408
South Carolina........	22,850	169,847	17	89	359
Ohio..................	339,368	2,125,474	82	308	1,555
Massachusetts.........	408,971	1,188,319	146	275	3,594
U.S...................	5,658,986	24,682,918	75	188	727

[a]Compiled or computed from *United States Census, 1900*, V. III, *Manufacture*, Appendix III, Table 47 and *United States Census, 1940, Manufacture*, V. I and *Agriculture*, V. II.
[b]Individual county value data withheld by the Bureau of the Census "to avoid disclosure." However, the Bureau kindly supplied us with combined totals for the three counties. The above data were estimated by allocating the combined value of all three counties on the basis of their respective enumerated number (not withheld) of manufacturing wage earners.
[c]Gross value of manufactured products as per cent of gross value of farm products.

the gross value of manufactured products relative to the gross value of farm products sold, traded or consumed on farms ranged from zero to 1,799 per cent in the study area. Of the twenty-one area counties, four reported relative value of manufactured products of less than 100 per cent, two 100-200 per cent, five 200-500 per cent, and the remainder 500-1,799 per cent (Table 1). In that year, four area counties exceeded the national average of 727 per cent. Insofar as it is known that in-

1. The coefficient of variation for the distribution is 0.66.

dustrial development is not unrelated to the growth of urban centers, hence, the development of service industries, perhaps the significance of differential industrial development can also be measured by the relative nonfarm employment in the area counties. As a per cent of total number employed (aged fourteen years old and over), the number employed in all nonagricultural industries, excluding mining and construction industries, ranged from 18.6 per cent to 81.3 per cent in 1940 (Table 2). The above empirical evidence indicates beyond doubt the unevenness of the study area's industrial-urban development during 1900-40.

TABLE 2.   Per cent distribution of employed persons aged fourteen and over by industry, 1940, Southern Piedmont[a]

| | | Per Cent Employed in | | Per Cent Employed in All Other Nonagricultural Industries | | | | |
	Number Employed	Agriculture[b]	Mining and Construction	Total	Manufacturing[c]	Utilities	Trade[d]	Others
Anderson (S.C.)...	31,363	32.3	2.6	65.1	35.4	1.8	9.6	18.3
Cherokee.........	11,283	39.6	2.9	57.5	33.4	2.3	7.4	14.4
Chester..........	12,174	38.4	2.5	59.1	32.2	2.4	7.1	17.4
Greenville.......	50,417	15.0	3.8	81.2	39.6	3.7	13.0	24.9
Lancaster.........	11,525	32.2	4.0	63.8	38.5	1.4	7.8	16.1
Oconee...........	10,641	47.2	3.4	49.4	21.7	1.7	8.0	18.0
Pickens..........	12,165	40.7	4.1	55.2	29.8	1.2	7.3	16.9
Spartanburg......	45,053	22.6	2.8	74.6	40.2	3.7	10.0	20.7
Union...........	11,137	32.3	1.9	65.8	39.1	2.1	7.3	17.3
York............	22,390	30.8	2.4	66.8	34.5	2.0	9.3	21.0
Banks (Ga.)......	2,280	79.2	2.2	18.6	5.5	1.0	3.2	8.9
Barrow...........	4,920	46.2	2.4	51.4	27.8	1.7	5.7	14.2
Elbert...........	6,992	44.2	5.3	50.5	17.4	1.9	7.8	23.4
Franklin..........	4,484	64.5	2.2	33.3	10.1	0.7	7.9	14.6
Gwinnett.........	9,257	48.9	3.7	47.4	22.4	2.2	8.8	14.0
Hall.............	11,835	29.8	3.7	66.5	29.5	3.3	12.1	21.6
Hart.............	4,906	74.4	1.8	23.8	5.2	1.5	4.8	12.3
Jackson..........	6,864	53.5	2.4	44.1	22.8	1.5	6.4	13.4
Madison..........	4,067	71.9	2.2	25.9	5.4	1.0	5.6	13.9
Stephens..	4,441	30.1	4.0	65.9	33.5	3.6	9.4	19.4
Walton...., .᠀᠀...	7,256	54.1	1.3	44.6	19.8	1.4	6.6	16.8
All Counties......	289,600	33.3	3.1	63.6	32.4	2.5	9.4	19.3
Georgia..........	1,107,412	35.1	4.2	60.7	18.5	4.7	11.7	25.8
South Carolina....	661,073	39.6	3.6	56.8	22.8	2.9	9.4	21.7
Ohio.............	2,344,967	11.0	5.7	83.3	33.4	7.4	17.4	25.1
Massachusetts....	1,534,787	2.7	4.6	92.7	36.8	6.5	18.7	30.7
U.S.............	45,166,083	18.7	6.6	74.7	23.4	6.9	16.7	27.7

[a]Computed from *United States Census, 1940, Population*, V. II, Table 23.
[b]Includes forestry and fishery.
[c]Includes logging and sawmill operations.
[d]Includes wholesale and retail trades.

For readers who have little or no familiarity with the Southern Piedmont area, a description of the composition of its manufacturing industries would undoubtedly be informative. However, because of the overwhelming predominance of a single industry (textile), a detailed description is hardly warranted. In 1940, according to the Sixteenth

Census, of the area's total number of persons employed in manufacturing industries (93,003), 84 per cent were employed in textile mills. The remaining 16 per cent were scattered among a dozen or so census-classified industries or industry-groups. Diversification during the 1940's reduced somewhat the relative importance of the textile industry —an industry characterized by relatively low productivity and relatively high employment of women. Even so, as late as 1950 fully 76 per cent of the area's total number of manufacturing workers continued to be employed in the textile industry. Of the total number of textile workers, almost 40 per cent were females in both 1940 and 1950.

INCREASING INCOME DISPARITY IN AGRICULTURE

Coincidental with this notable, but highly uneven, industrial-urban development, there was, during 1900, a noticeably widening trend in per-worker income differentials in agriculture. Before we present our supporting data, let us first define farm labor force. For our time-series data, a rather crude definition of farm labor force is adopted to include all male rural-farm residents aged fifteen and over. Where the rural-farm population is returned separately, complete with age and sex breakdowns, as it was in 1930 and 1940, the determination of farm labor force is a relatively simple task. For the earlier years where only the rural population was returned separately, the task of arriving at a reasonable estimate of farm labor force becomes virtually impossible.[2]

2. It is true that some economists have estimated farm labor force on the basis of rural male population aged fifteen and over. In such an event, comparable farm labor force can be determined for all counties for all years without difficulty. In particular instances, this method may yield reasonably good estimates. Frank T. Bachmura, for instance, used this simpler technique in his Iowa farm income study ("Geographic Differentials in Returns to Corn Belt Farmers: 1869-1950," unpublished dissertation, University of Chicago, 1953). When applied to the Southern Piedmont, however, it gives highly unsatisfactory estimates. The underlying reason for this is the uneven distribution of the area's significant rural nonfarm population. If the proportion of total population rural and the proportion of total population rural-farm are computed respectively for 1930—the first year for which both can be obtained from census returns on a county basis—we have the following results: Anderson 79% (50%), Banks 100% (88%), Barrow 74% (68%), Cherokee 79% (56%), Chester 83% (54%), Elbert 75% (68%), Franklin 100% (80%), Greenville 75% (33%), Gwinnett 88% (70%), Hall 72% (47%), Hart 100% (85%), Jackson 86% (70%), Lancaster 87% (61%), Madison 100% (85%), Oconee 100% (66%), Pickens 86% (56%), Spartanburg 73% (39%), Stephens 61% (53%), Union 76% (46%), Walton 83% (70%), and York 68% (51%). The above data clearly show that the simpler method would significantly overstate the farm labor forces of some counties, notably Greenville and Spartanburg, relative to those of other counties, notably Banks and Stephens. This, of course, means that per-worker farm incomes of the former counties will be understated relative to those of the latter. This bias, inherent in the simpler method, was undoubtedly less pronounced in the earlier years,

For 1900, estimates of farm labor force are made on the basis of the population outside of incorporated places.[3] A check revealed that this definition would include substantial numbers of nonfarm residents who were members of (textile) mill villages located outside of the corporate limits of towns and cities or in unincorporated places. Since the distribution of mill villages was highly uneven among the area counties, the failure to adjust for them would result in serious distortions in county estimates of per-worker farm income. The identification of these mill villages was made by checking the exact location of each mill shown in the *Handbook of South Carolina* (Department of Agriculture, Commerce, and Immigration, Columbia, 1908, pp. 457-63) against the 1900 census list of incorporated places. Once the unincorporated mill villages are properly identified, the exclusion of their residents from our farm labor force estimates becomes relatively simple, since the *Handbook* contains detailed data on individual firms' employment and mill population. As for the Georgia area counties—where data on mill location, employment, and population are lacking—their farm labor force was adjusted downward by a flat 25 per cent of the number of males aged fifteen and over engaged in manufacturing in 1900. This adjustment factor, arbitrary though it may seem, is actually based on data from two South Carolina area counties, Pickens and Chester, whose rurality and industrial development were comparable to those of the Georgia counties.

For 1910 and 1920, extensive search failed to come up with an objective method of estimation that would yield farm labor forces comparable in definition to those of 1900, 1930, and 1940.[4] Also, the Census Bureau did not report value of farm products sold, traded, and consumed on farms for 1910 and 1920. Consequently, we feel that it is more desirable to omit these two years in our time series on per-worker

1900-1920, but it still may have been significant enough to render the relative income position of our area counties meaningless. For 1880, however, we believe the simple definition of farm labor force would yield satisfactory estimates.

3. Although it is desirable to deduct the inhabitants of unincorporated places from our estimates, the census did not give separate enumerations for such places until 1950, then only for those of 1,000 population and over.

4. Professor William H. Nicholls of Vanderbilt University recently developed a promising method of estimating the rural-nonfarm population (hence, rural-farm population) on the basis of census population counts in incorporated places and Rand McNally's estimates for unincorporated places shown in its publication, *Commercial Atlas*. This method should yield acceptable estimates of county rural-farm population for all years for which census enumerations of rural-farm population are not available. Rand McNally's list, however, is not always complete; nor do its population estimates always appear reasonable.

value of farm products (gross farm income) than to estimate both the labor force and the value of farm products by dubious methods.

For 1900, Table 3 presents two sets of per-worker gross farm income data. In the first set (Column 2), a farm worker is defined as a rural male resident aged fifteen and over; in the second set (Column 3), as a male aged fifteen and over who resided outside of incorporated places and unincorporated mill villages.[5] Since the latter definition is more comparable to the rural-farm definition used for 1930 and 1940, it will be adopted in later empirical investigations. Actually, the two sets of data give no appreciably different coefficient of variation (Table 3)—which is the relevant measure for the problem at hand—even though they indicate fairly extensive reshuffling in the area counties' relative standings. In terms of per-worker gross farm

TABLE 3.   Gross farm income per worker, Southern Piedmont, 1880-1940[a]

	1880[b]	1900[b]	1900[c]	1930[d]	1940[d]
Anderson (S.C.)	194	204	242	597	405
Cherokee	200[e]	190	233	680	342
Chester	220	196	221	490	354
Greenville	156	175	212	584	317
Lancaster	223	198	225	443	333
Oconee	102	141	175	493	306
Pickens	137	186	221	537	316
Spartanburg	169[e]	164	217	672	388
Union	203[e]	204	236	526	282
York	208[e]	182	223	515	316
Banks (Ga.)	141	202	219	423	274
Barrow	183[e]	174[e]	208[e]	732	382
Elbert	202	186	199	487	275
Franklin	159[e]	175[e]	200[e]	477	323
Gwinnett	195[e]	184[e]	226[e]	539	279
Hall	124	163	179	436	310
Hart	162	187	220	522	364
Jackson	193[e]	202[e]	243[e]	588	327
Madison	193	193	210	494	316
Stephens	106[e]	120[e]	174[e]	421	213
Walton	227[e]	195[e]	245[e]	697	488
All Counties:					
Weighted Average	181	183	219	559	339
Unweighted Average	176	182	216	541	329
Coefficient of Variation	0.207	0.113	0.094	0.166	0.170
Relative Dispersion	2.225	1.700	1.408	1.739	2.291
Georgia	179	180	f	561	375
South Carolina	170	200	f	535	390
Ohio	227	265	f	981	689
Massachusetts	280	393	f	1,590	1,131
U. S.	199	256	f	1,068	707

[a] Computed from gross value of farm products as reported in *United States Censuses*, 1880-1940, *Agriculture* and from farm labor force estimates, *infra*, Appendix III, Table 48, Columns 1-5.
[b] Farm labor force defined to include all rural male residents aged fifteen and over.
[c] Farm labor force defined to include all male residents aged fifteen and over outside of incorporated places and unincorporated mill villages.
[d] Farm labor force defined to include all rural-farm male residents aged fifteen and over, except in the case of Massachusetts where urban farm population is included as well.
[e] Data adjusted to allow for changes in county boundaries.   The basis of adjustment is presented in Appendix I.
[f] Farm labor force not estimated.

5. The overwhelming majority of the population in towns and cities as well as unincorporated places of virtually any size fell in the nonfarm category.

income, the coefficient of variation was only 0.094 in the study area in 1900. By 1930, it had risen to 0.166 and, by 1940, to 0.170. The relative dispersion, as a crude measure of variations within a distribution, shows the same increasing trend in intercounty differences in per-worker income. In 1900, the relative dispersion was 1.41 as compared with 1.74 in 1930 and 2.29 in 1940 (Table 3). The number of counties that deviated from the (unweighted) mean by 15 per cent or more was only three in 1900, and none had a deviation of more than 19 per cent. In 1940 eight counties had deviations of 15 per cent or more, with one county showing a deviation of as much as 48 per cent. These measures of dispersion indicate clearly that, during 1900-40, there was a persistent trend toward increasingly greater county differences in per-worker gross farm income.

The trend toward greater farm income differentials is visible not only among the area counties but among the larger geographical divisions as well. Data for the United States and selected states in Table 3 amply bear this out. In 1900, per-worker gross farm income of Georgia and South Carolina represented respectively 70 and 75 per cent of the national average ($256).[6] By 1940, these percentages had fallen to 53 and 55 per cent respectively. Even though gross farm income data leave much to be desired, the shift from a gross to a net basis, as we shall show in a later chapter,[7] does not significantly narrow the differences in farm income. Indeed, a recent study on geographical differentials in returns to Iowa farmers showed that such a shift may actually increase the relative magnitude of the differentials.[8]

SELECTION OF DEVELOPED AND UNDERDEVELOPED COUNTY GROUPS
AND THEIR DIVERGENT INCOME TRENDS

The selection of developed and underdeveloped counties of the study area is made on the basis of their relative standings in terms of value added by manufacture per capita (Table 1) in 1940. The six top-ranking counties, with value added per capita ranging from $199 to $132, are selected as the developed counties. They are York, Greenville, Spartanburg, Barrow, Lancaster, and Anderson. The six lowest-ranking counties, with value added per capita ranging from zero to

6. The national average is probably understated relative to the averages of South Carolina and Georgia, since the farm labor force is here defined to include all rural males 15+ and since the rural-nonfarm population was probably less important in the South in 1900.

7. *Infra,* Chapter V, Table 23.

8. Frank T. Bachmura, "Geographical Differences in Returns to Iowa Farmers," *Journal of Farm Economics,* XXXVII, No. 2 (May, 1955), 346.

TABLE 4. Divergent per-worker income trend in agriculture, developed and underdeveloped counties, 1900-40

Counties	Value Added by Manufacture Per Capita, 1940[a]		GROSS FARM INCOME PER WORKER									
			1900[b]		1930[b]		1940[b]		1940[c]		1940[d]	
Developed Group:												
York...........	$199	1	$223	5	$515	8	$316	$9\frac{1}{2}$	$369	11	$372	6
Greenville......	183	2	212	9	584	5	317	8	479	4	378	5
Spartanburg....	181	3	217	8	672	2	388	2	521	1	453	1
Barrow.........	158	4	208	11	732	1	382	3	439	5	395	4
Lancaster.......	139	5	225	4	443	11	333	5	482	3	407	3
Anderson.......	132	6	242	2	597	3	405	1	497	2	434	2
Group Average and Rank Sum......	$165	21	$221	39	$591	30	$357	$28\frac{1}{2}$	$465	26	$407	21
Underdeveloped Group:												
Jackson........	$ 55	7	$243	1	$588	4	$327	6	$375	10	$331	8
Gwinnett.......	27	8	226	3	539	6	279	11	389	9	306	11
Franklin.......	9	9	200	12	477	10	323	7	432	6	328	9
Hart...........	8	10	220	6	522	7	364	4	429	7	351	7
Madison........	0	11	210	10	494	9	316	$9\frac{1}{2}$	400	8	318	10
Banks..........	0	12	219	7	423	12	274	12	287	12	286	12
Group Average and Rank Sum......	$ 17	57	$220	39	$507	48	$314	$49\frac{1}{2}$	$385	52	$320	57
Significance Level of Group Differences[e]........	P < .01		Not Sign.		Not Sign.		Not Sign.		P = .04		P < .01	

[a] From Column 3, Table 1.
[b] From Columns 3-5, Table 3.
[c] Value of farm products sold, traded, and consumed on farms (*United States Census, 1940, Agriculture*, V. II, County Table XIV) per person 14 years old and over employed in agriculture (*ibid., Population*, V. II, Table 23).
[d] Value of farm products per rural-farm resident fifteen years old and over (*ibid., Population*, V. II, Table 27) adjusted for sex and off-farm nonfarm work. The number of farm-operators, i. e., the number of farms (*ibid., Agriculture*, V. I, County Table I), is adjusted downward by the number of man-days farm-operators worked off-farm on nonfarm jobs during the census year (*ibid., Agriculture*, V. I, County Table IX), after the number of man-days is converted to the number of man-years on the basis of 250 man-days = 1 man-year. The number of male non-operator farm residents—the difference between the total number of male rural-farm residents and the number of farm-operators (assumed to be all male)—is also diminished by the estimated number of man-years spent in school or worked off-farm on nonfarm jobs. The latter estimate is based on a rate of off-farm employment assumed to be twice that of farm-operators. The number of female farm residents is likewise adjusted downward by that rate. In addition, the females are assumed to be only one-tenth as productive as their male counterparts because of their lower productivity on an hourly basis and of the fact that, under comparable circumstances, they spend fewer hours in farm-work than the male farm family members. The method outlined here is very similar to the one used by Bachmura in his dissertation, Chapter III.
[e] Significance level is computed from rank sums rather than group averages.

$55, will be called the underdeveloped counties. They are Banks, Madison, Hart, Franklin, Gwinnett, and Jackson (Table 4).

With the two groups of counties thus defined, the question now at hand is this: Have these two groups of counties moved apart in per-worker farm income since 1900? At this juncture a few words about the statistical technique to be employed are in order. The method represents an application of Frank Wilcoxon's nonparametric rank technique of determining the significance of the difference between two independent sample means.[9] In applying this technique, we rank

9. *Some Rapid Approximate Statistical Procedures* (rev. ed.; New York: American Cyanamid Company, 1949), p. 13. Hereafter cited as *Statistical Procedures*.

all 12 counties (6 in each group), sum the ranks for each group, note the smaller rank total, and refer to Wilcoxon's prepared table for the corresponding significance level. With $N = 6$—there are 6 counties in each of our two groups—the table shows a significance level of 0.05 for a (smaller) rank total of 27, 0.02 for a total of 24, and 0.01 for a total of 23. The 0.05 level will be taken as the point of demarcation between significance and non-significance in group differences. The developed and underdeveloped groups of counties are said to differ significantly with respect to a certain attribute if the smaller group rank sum is 27 or less.

In 1900, both the developed and underdeveloped groups showed a rank sum of 39 in terms of per-worker gross farm income (Table 4), indicating that they were completely alike in this respect. By 1930, the rank sum of the developed group had dropped to 30 and, by 1940, to 28.5. These decreases, of course, mean compensating increases in the underdeveloped group's rank total which arose from 39 in 1900, to 48 in 1930, to 49.5 in 1940. Although the groups were still not significantly different from each other in the latter year with respect to farm income per worker, a strong presumption is that they had moved apart since 1900.

Up to this point, the farm worker is taken to mean a rural-farm male resident of fifteen years of age and over. This definition as applied to 1900[10] is probably very satisfactory. With the development of part-time farming and commuting between farm residences and places of nonfarm employment during the recent decades, it is no longer adequate for 1930 and 1940. Its effect, when it is applied to recent years, is to overstate the number of farm workers of the developed counties relative to that of the underdeveloped counties, since relatively fewer rural-farm residents of the former counties were full-time farmers. For 1940, Table 4 presents two other sets of per-worker farm income data.[11] In the first set, a worker is defined as a person, male or female, of fourteen years old and over, who was gainfully employed in agriculture. This definition has the virtue of eliminating from farm labor force all rural-farm residents who either were employed altogether in nonagricultural industries or worked more hours

10. The reader may recall that, in 1900, a farm worker was defined as a male person of fifteen years of age and over who resided outside of all incorporated places and all unincorporated mill villages. This definition, though different in wording, was designed to approximate the rural-farm definition by the elimination of rural-nonfarm male population.

11. See Table 48 below for estimated farm labor forces.

on their nonfarm jobs than on their farms. The definition also excludes all farm family members who were not gainfully employed in or out of agriculture. With the farm labor force thus defined, the rank sum of the developed group drops to twenty-six which indicates that the developed group had significantly higher per-worker farm income than the underdeveloped group in 1940.

In one aspect, however, the above definition is highly unsatisfactory. The number of gainfully employed, as reported in the *United States Census, 1940* (*Population*, V. II, Table 23), was obtained on the basis of the employment status during the last week of March, 1940. This fact raises two questions: (1) Insofar as the census week represents a relatively low farm labor-input period in cotton farming areas, to what extent did it understate annual farm labor force in the area counties and, more importantly, was the understatement of comparable magnitude in all counties? (2) How representative, in general, was the census week of the employment situation in our various counties during the year? This question is relevant because farm persons who had part-time off-farm employment were included either in the farm labor force or in the nonfarm labor force depending on whether they had spent a greater number of days on farm or nonfarm work during the census week. Since the census week, as a sample, was neither large nor random, distortions in the enumerated farm labor force must be expected.

The other set of per-worker farm income data (Column 6, Table 4) is based on a more refined definition of farm labor force designed to overcome the above-mentioned shortcoming. Since the method of estimation is rather involved, its description is relegated to a footnote in Table 4. At this juncture, it suffices to point out that the farm labor force as defined in this method consists of the rural-farm population of fifteen years old and over, adjusted downward for off-farm, nonfarm employment, for school attendance, and for lower productivity and labor-force participation rate of the females. The principal improvement of this definition lies in its use of the enumerated number of man-days worked off-farm on nonfarm jobs—which number was returned on the basis of the entire census year rather than the census week. Under this definition of a farm worker the rank sum of the developed group, in terms of per-worker gross farm income, drops to twenty-one which is the lowest possible sum. The differences in per-worker farm income between the developed and underdeveloped counties are highly significant in 1940.

To bring this section to a close, let us summarize as follows: (1) From an equal position in 1900, the developed counties—which were then just as predominantly agricultural as the underdeveloped counties—have pulled increasingly farther ahead of the underdeveloped counties in farm income; (2) as a result of this divergent trend, the farm incomes of the developed counties had, by 1940 (perhaps as early as 1930, if a more satisfactory definition of farm worker were adopted for that year), become significantly higher than those of the underdeveloped counties; (3) consequently, there was a significant relationship between the level of farm income and the degree of industrial development.

COMMENTS ON THE RAPID STATISTICAL PROCEDURE USED

Appropriateness of Its Use

At the outset, we have decided upon the use of some appropriate nonparametric procedure in determining statistical relationships, on the basis of the following considerations: (1) the desirability of freeing ourself from the assumptions (e.g., those of normality and homoscedasticity) implicit in the parametric techniques, (2) the limited number of our counties, (3) the crudeness of most of the data employed which may best be regarded as ordinal rather than as having the property of interval or ratio scale, and (4) the large number of variables to be introduced. In this regard, several possibilities present themselves. Among them are Spearman's rank correlation, Kendall's rank correlation, Chi-square test, and Wilcoxon's rapid rank method of determining the significance of group differences. In our analysis, we shall be concerned with the impact of local industrial-urban development upon various socio-economic variables (in particular, those related to agriculture and farm population). Stated in different terms, our main concern will be to determine possible differences in terms of these socio-economic attributes between the group of counties that have had substantial industrial-urban development and the group of counties that have remained essentially agricultural-rural since 1900. When thus formulated, the analysis lends itself admirably to Wilcoxon's treatment, which in terms of its rapidity and labor-saving aspects is probably unsurpassed by any of the better-known statistical methods, whether parametric or nonparametric.

To be sure, as is true with all nonparametric techniques, Wilcoxon's method does not fully utilize the information contained in the data. In fact, this method, in the manner we have adopted it, does not even

utilize all study area counties. These objections, however, must be moderated by the above considerations in favor of such a rapid method and by the fact that for our purposes it is sufficient to know whether statistically significant relationships exist between industrial-urban development and certain relevant variables. Knowledge about the "degree of relationship," while useful, is not essential.[12] Even so, the loss of information appears great under our method. The issue, therefore, merits some additional comments.

In general, the lower power-efficiency of a nonparametric procedure resulting from the loss of information tends to increase the likelihood of rejecting a researcher's working hypothesis in favor of the null hypothesis. In a sense then he is using cards that are stacked against him. Moreover, the loss in efficiency is real only if the data possess the property required by the efficient parametric procedures and if the assumptions underlying the latter methods are met. In terms of the variables we shall employ in this work, a strong presumption is that these two conditions are generally far from being fulfilled.

The discard of the intermediate counties—which is not necessitated by our use of the Wilcoxon technique—is made to insure the meaningfulness of our classification. This study is not so much concerned with the relationships between value added by manufacture per capita and the relevant variables *observed* at any point in time as it is with the relationships between their respective *normal* values at the same point in time. Because of the presence of random shortrun fluctuations in the observed values, failure to discard the intermediate counties would probably mean the inclusion of some counties in one group when in terms of their normal positions they would belong to the other group. In addition, the discard means an important reduction in the amount of compilation and computation.

Wilcoxon's rapid method finds its ideal application to samples drawn from different, but homogeneous, processes. The purpose is to ascertain whether the samples differ significantly from one another with respect to some attribute or attributes. In such cases, the internal rank order within each sample is of no relevance, since individual items in each sample are presumed to be identical. The same cannot be said of the various counties within our developed and underdeveloped groups. In terms of value added by manufacture per capita in 1940 (the basis of our group classification), the range is from

12. At any rate, because of the small number of counties, any information about the degree of relationship will be rough since "r" or *rho* would be subject to large standard error.

$199 to $132 for the developed group and $55 to $0 for the under-
developed group. Since neither group appears homogeneous, one may
argue that their internal rank order in terms of the dependent variable,
say, farm income per worker, should be taken into account. The
rapid method, which bases its significance test on group rank sums,
does not take this into account. In the case of per-worker farm in-
come, 1940, the rank sum for the developed group would remain 21
(Table 4, Column 6) regardless of whether its internal rank order
is 6, 5, 1, 4, 3, 2, or 6, 5, 4, 3, 2, 1, or 1, 2, 3, 4, 5, 6. Yet, these different
rank orders would undoubtedly affect correlation coefficients.

In reply to the above objection, we may point out that there is no
one index that adequately measures the pattern of industrial (or, more
precisely, industrial-urban) development among the area counties. Al-
though we believe that value added by manufacture per capita is a
satisfactory single measure, it is undoubtedly crude. It may be argued
that manufacturing wages paid per capita or some other more general-
izing measure of the development of all nonagricultural industries
might be used instead as the basis of classifying the developed and un-
derdeveloped groups of counties. Several alternatives have, as a matter
of fact, been tried. In all cases, the group differences in terms of gross
farm income per farm worker are statistically significant, although the
composition and internal rank order of the counties in each group have
been different as classified according to the various criteria. If manu-
facturing wages per capita were used as the basis of classification, the
developed group would include the following counties: Greenville,
Spartanburg, York, Union, Lancaster, and Chester; and the under-
developed group: Oconee, Gwinnett, Franklin, Hart, Madison, and
Banks. A comparison with the composition and internal rank order
of the two groups as classified by the value added by manufacture per
capita (Table 4) indicates that the changes are rather extensive. De-
spite these changes, the gross farm income per worker remains sig-
nificantly higher in the developed group than in the underdeveloped
group.[13]

Under these circumstances, all counties within each group, re-
gardless of the criterion used as the basis of classification, may best
be looked upon as being in the same general stage of economic de-
velopment. Actually, for our purposes, it is sufficient that our classi-

13. As classified by manufacturing wages per capita, the developed group shows an
average gross farm income per worker of $384 and the underdeveloped group $322,
as compared with $407 and $320 respectively (Table 4, Column 6) when the group
classification is arrived at by using value added as the criterion.

fication is accurate to the point of saying that the counties of the developed group were more industrialized in 1940 than those of the underdeveloped group. This means that, with respect to the values of the dependent variables, the internal rank order within groups should not be taken seriously. Nonetheless, when the internal rank order within either or both groups indicates a strong correlation contrary to the overall relationship, we shall apply an appropriate test to determine if the correlation is significant. As Table 4 (Col. 6) shows, there is a strong negative correlation within the developed group between value added by manufacture per capita and farm income per worker in 1940, although the overall relationship between these two variables is positive. However, a significance test shows that while rho is equal to –0.65, the coefficient is not significant.[14] If rho were significant, there would be reason to suspect that the correlation between farm income per worker and value added by manufacture per capita may be nonlinear. More specifically, this may mean that industrialization, operating through factors which are its functions, may actually affect farm income adversely after this development has reached a certain stage.

Insofar as this particular case involves an internal group rank order contrary to the overall relationship, it would be informative to see whether the result yielded by the rapid method is substantially the same as that obtained by the more efficient correlation techniques. To this end, a scatter diagram is plotted for all twenty-one counties of the study area with farm income per worker on the vertical axis and value added by manufacture per capita on the horizontal axis.[15] The scatter (Chart 1) indicates a fairly distinct linear correlation between the two variables (*rho* = +0.66 and r = +0.54). A significance test shows that the probability of the correlation coefficient, r = +0.54, being explained by chance is only about 7 in 1,000.[16] Consequently, we conclude that the relationship between industrial-urban development and farm income per worker is significant.[17] This, we may recall, is the same conclusion yielded by our rapid method. Even under

14. According to E. G. Olds' table on critical values of *rho*, for N = 6, *rho* need be as high as 0.829 in order to meet the significance test at the five per cent level.

15. Data from Table 5.

16. A one-tailed "t" test is used because the direction of the relationship is predicted by our hypothesis.

17. The computed regression equation, $Y = 312.06 + 0.5037 X$, shows that, for each increase (or decrease) of $1 in value added per capita, the corresponding increase (or decrease) in farm income per worker is about 50 cents.

X = Value Added by Manufacture Per Capita, 1939
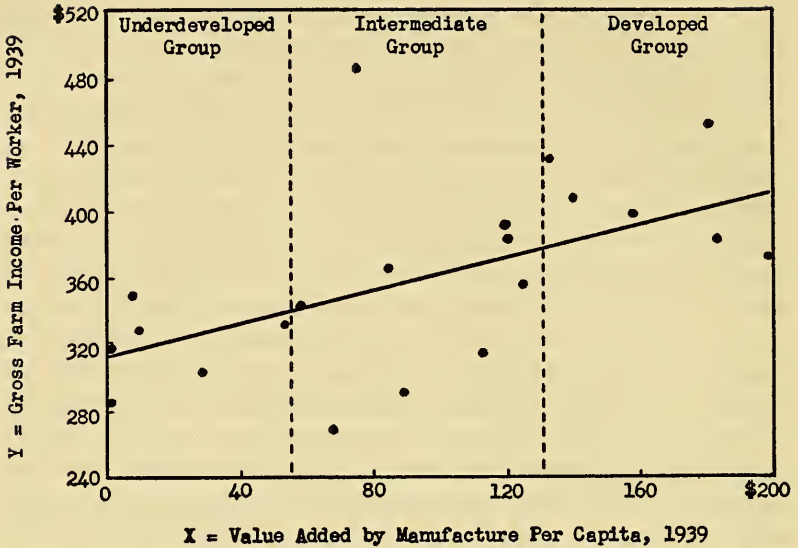
CHART 1. Scatter Diagram Showing the Relation between Gross Farm Income Per Worker, 1939, and Value Added by Manufacture Per Capita, 1939, with Computed Regression Line (Y = 312.06 + 0.5037X). Data from Table 5.

TABLE 5.   Value added by manufacture per capita (X) and gross farm income per worker (Y), 1940[a]

Counties	X	Y	Counties	X	Y
York	$199	$372	Pickens	$83	$365
Greenville	183	378	Walton	75	487
Spartanburg	181	453	Stephens	71	247
Barrow	158	395	Oconee	57	342
Lancaster	139	407	Jackson	55	331
Anderson	132	434	Gwinnett	27	306
Hall	124	357	Franklin	9	328
Chester	120	382	Hart	8	351
Cherokee	119	390	Madison	0	318
Union	112	311	Banks	0	286
Elbert	87	290			
			Average	$92	359

[a] Data of X from Column 4, Table 1, and data of Y from Column 6, Table 4 and partly computed from the same sources shown in fn. d, Table 4.

rather unfavorable conditions (adverse rank order within groups), the rapid method appears to be an adequate substitute for the orthodox correlation in establishing associations, though not their degree.

Is a "Regression Fallacy" Involved?

One common pitfall in statistics arises out of (1) setting up classes on the basis of the data in a base year, where such data contain an

important transitory (random) component,[18] and (2) tracing the group or class behavior over time. Thus, individuals may be classified by the size of their income in the base year, and the average income of these classes may be computed for other years. Suppose that one observes that the average incomes of the individuals in the upper income classes of the base year have declined more or increased less, during a given period beginning with the base year, than the average incomes of those in the lower income classes. The common fallacy lies in the usual inference that there is a convergence between these income classes.

This inference is valid only if the income classes are set up on the basis of data which include the permanent component alone. Where individuals are classified by observed income which includes important transitory elements, the above inference is fallacious. Insofar as individuals do wander in terms of their relative income status from one year to the next because of the randomness of the transitory elements, the extreme income classes of the base year will, of necessity, become less extreme in the other years. In other words, the average incomes of the base-year income classes will be less divergent in other years than in the base year (as long as the coefficient of variation for the entire distribution does not increase over time).

The underlying reason for the necessity of this result is that the average transitory component during the base year for any upper or lower income class of that year is not equal to zero because the base-year transitory component helped to determine the base-year income classes into which individuals were grouped. More specifically, even non-correlation between the permanent and transitory components tends to lead to positive average transitory components in the upper income classes and to negative average transitory components in the lower income classes in the base year. However, the average transitory component for all income classes during other years will be zero, according to the random law. This is so because the base-year grouping is entirely random with respect to the transitory components of other years, since the direction and incidence of the transitory factors, by definition, are not constant from one year to another. The conclusion is then that, even if the average permanent components for the extreme incomes actually show no convergence from one year to another, the random movement of the transitory factors alone would, of neces-

18. A transitory component may be defined as that part of an observed value which is attributable to random forces that are not likely to repeat themselves from one year to another.

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sity, produce an apparent convergence which is really a statistical illusion.[19]

In the text, we have just inferred divergence (i.e., convergence, looking back from 1940) in terms of the value of farm products per worker for our two groups of counties from the changes in group rank sums during 1900-40.[20] (Nothing essential is changed in the argument by using group rank sums rather than group averages.) The question is then: Is our inference fallacious insofar as there may be important transitory components in our value series? At the outset, let us point out that the classical cases of regression fallacy refer to the grouping of individuals into income classes. Our grouping is that of counties, each of which contains a distribution of individual farm workers' income. Undoubtedly, in all counties, some farmers enjoyed temporarily high incomes in that year; others suffered temporarily low incomes. There can be a multitude of reasons for these transitory movements in individual incomes: sickness, personal disaster, the timeliness of individual production decision, and animal diseases. If the distribution of the transitory income component for individuals is random or alike in each county, it would be of no consequence to the counties' relative standings, since their averages (in farm income per worker) will either remain unchanged or be affected to the same relative extent by the transitory component. Only those transitory forces that affect different counties in different manners are capable of introducing regression fallacy. This stipulation immediately removes most of the common causes of transitory income variations. Among the causes that could meet the stipulation the most likely candidates are those connected with weather and variations in commodity prices. However, in view of the homogeneity of the type of farming in the area before 1940, we may promptly dismiss commodity prices as a possible cause of transitory income variations at the county level. With respect to the elements, even here, the smallness of the study area makes them rather unlikely candidates.[21] In short, it seems plausible

19. For a fuller discussion of the problem, see Milton Friedman and Simon Kuznets, *Income from Independent Professional Practice* (New York: National Bureau of Economic Research, 1945), pp. 325-33. Hereafter cited as *Professional Practice*.

20. Elsewhere in later chapters, we have adopted the more meaningful practice of saying that the developed and underdeveloped groups of counties did not differ significantly in terms of a particular dependent variable in 1900 but that they did so in 1940. Although the words convergence and divergence are not used to express whether the two groups have become more or less different over time, the regression fallacy is still a relevant problem in this case.

21. This statement should not be taken to mean that differential crop yield variability cannot take place within a small area. In fact, as shown in Chapter VII below,

to hold that transitory income variations at the county level could not have been very important, particularly in the Southern Piedmont. Nonetheless, we are prepared not to dismiss the issue at this juncture.

Suppose now that our county data on gross farm income per worker did contain important transitory components, does our earlier inference of group convergence and divergence involve regression fallacy? The answer, it appears, is still in the negative. Our classification of developed and underdeveloped counties is made on the basis of value added by manufacture per capita in 1940. This classification is essentially random with respect to the transitory components contained in the farm income series or any other series.[22] This would be true in any year, including the base year, 1940. The observed divergence during 1900-40 in farm income per worker of the developed and underdeveloped groups in no way constitutes a statistical illusion, since the average transitory components of both groups may be expected to be zero in both 1900 and 1940. This, of course, means that the observed trend represents the actual trend in the value of permanent component. Insofar as the number of counties is small in each group, the offsetting between counties of their individual transitory components may not be perfect within each group. However, the residuals may be expected to be small and random so that they do not predetermine group convergence (looking back to 1900 from the base year, 1940).

Another consideration is that while it is true that—if the county farm income data of 1940 did contain important transitory components and if the classification of the developed and underdeveloped groups of counties was not random with respect to these transitory components in 1940 but was random in all other years—these factors alone would predetermine group convergence between 1940 and any other year; nonetheless, this proposition is true only when the observations are over two points in time. When one has a number of points in time, the group trend obtained will still be valid—since the average transitory component for both groups may be expected to be zero for all years other than 1940—although the group trend will have to be computed independent of the 1940 value. Any group convergence observed over several points in time not involving the base year must be considered

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during the crop year of 1949 several area counties suffered extremely low cotton and peach yields while others realized relatively normal yields.

22. The only possible exception would be where the transitory components of both the farm income and value added series are correlated. There is, however, no necessary reason why the transitory forces, taken as a group, should have affected the agricultural and nonagricultural sector of each county in like manner.

as representing a true convergence in the permanent component. Thus, from the data in Table 6, there can be little doubt that the period 1860-1900 showed a convergent movement in per-worker farm income between the two groups of counties, and the modern period after 1900 showed a divergent movement, even if we grant for the time being (1) the presence of important transitory income components in the observed gross farm income data for the various counties in 1940 and (2) the non-randomness of these components within each group in the base year. The convergence and divergence just noted are also consistent with the changes, presented earlier in this and the previous chapters, in the coefficient of variation for all twenty-one counties—a measure that is not subject to the regression pitfall.

A second point in connection with the implications of the transitory value component is this: Assuming that the census data on value added by manufacture contained important transitory components, does this destroy the meaningfulness of our classification of the developed and underdeveloped counties? More specifically, is it not possible that some of the developed counties were among the six top-ranking counties in value added per capita in 1940 only temporarily and that some of the underdeveloped counties were likewise among the lowest-ranking six only temporarily? In reply, we point out that the validity of our conclusions concerning the relationship between the industrial-urban development, as an independent variable, and the numerous socio-economic indexes, as dependent variables, is not contingent upon all of our developed and underdeveloped counties having the *extreme* values in terms of the permanent component contained in the value added series. Minimally, our classification is meaningful if it is accurate enough to permit us to say that all the counties in the developed group were in a more advanced (in a real sense) stage of development than those in the underdeveloped group.

In this respect, the discarding of the nine intermediate counties leaves very little doubt that our classification can easily meet this minimum condition. In terms of observed value added by manufacture in 1940 (the basis of our classification), the discarding of the intermediate counties widens the difference to $77.00 between the lowest-ranking developed county, Anderson ($132), and the top-ranking underdeveloped county, Jackson ($55.00). In our opinion, the probability of this difference being explained altogether by the transitory component is remote indeed. Therefore, we may conclude with reasonable certitude that the grouping of the counties is meaningful even if there were im-

portant transitory components in the value added series. This is another way of saying that our rapid method actually amounts to a crude but desirable way of eliminating the influences of the transitory forces from our grouping in the absence of more satisfactory alternatives.[23] The presence of the transitory components does constitute, however, yet another argument, in addition to those already presented in this section, that the relative positions of the counties within each group should not be given too much weight.

<div align="center">GROUP BEHAVIOR BEFORE 1900</div>

Earlier, we have contrasted the behavior of all twenty-one area counties before 1900 with that after 1900. We may recall that the period 1860-1900 was one of convergent movement, that 1900 marked the point of near-long-run equilibrium, and that the period 1900-40 was one of divergent movement. It may now be illuminating to contrast the behavior of the developed and underdeveloped groups before and after 1900. Such a contrast may also enable us to gain some insight into the nature of the relationship between farm income and industrial development. Thus far, we have established that there is a statistical relationship. The relationship may be causal, or it may be the consequence of a third factor (or factors) which is related, directly or indirectly, to both farm income and industrial development.

Let us first examine the comparative trend in farm income per worker. Unfortunately, census returns on value of farm products were not available until 1870, so that, for the pre-Civil War period, we shall rely on the value of farm capital, assuming it bears some relationship to the value of farm products. In view of the normally high correlation between per-worker value of farm products and per-worker value of farm capital, this appears to be a fair assumption. The com-

23. Ideally, the influences of the transitory components contained in a series can be eliminated either by averaging the data for each individual (or county) over a number of consecutive years or by using the ingenious Friedman-Kuznets method (*Professional Practice*, p. 331). Where the transitory components are known to be important in a series, as in the case of personal and family incomes, it may be imperative to allow for them before one proceeds with orthodox correlation and regression techniques, if these components tend to create net biases, as they do in statistical consumption functions, and if one is to avoid regression fallacy. (See for instance George J. Stigler's criticism of the Ducoff-Hagood study on differential farm labor productivity and farm size in "Labor Productivity and Size of Farm: A Statistical Pitfall," *Journal of Farm Economics*, XXVIII, No. 3 [August, 1946], 321-25.) However, both methods of eliminating transitory components require data over a number of consecutive years. Either method is then out of the question so far as our study is concerned, since our chief source is the decennial censuses and since the averaging of decennial data may distort the *real* growth trend.

parative per-worker income trend, as measured by rank sums, for the two groups of counties, is shown in Table 6. The rank total for both groups is seventy-eight. Since the counties are ranked in descending order, the smaller group rank sum indicates relatively higher per-worker income for the group. One glance at the table shows that, during 1860-1900, the two groups of counties were steadily moving together in per-worker farm income, finally reaching equality in 1900. This is consistent with our earlier findings with respect to the entire study area.[24] After 1900, the two groups began to move apart again

TABLE 6.   Gross farm income per worker, relatives (21-county average = 100) and rank orders, developed and underdeveloped counties, 1860-1940

County	GROSS FARM INCOME PER WORKER, RELATIVES (STUDY AREA AVERAGE = 100)[a]									
	1860[b]		1880[c]		1900[c]		1930[c]		1940[d]	
Developed:										
York..........	116%	1	118%	2	103%	5	95%	8	103%	6
Greenville......	106	3	89	11	98	9	108	5	105	5
Spartanburg....	96	4	96	8	100	8	124	2	126	1
Barrow........	66	10	104	7	96	11	135	1	110	4
Lancaster......	115	2	127	1	104	4	82	11	113	3
Anderson.......	95	5	110	5	112	2	110	3	121	2
Averages..........	99%	25	107%	34	102%	39	109%	30	113%	21
Underdeveloped:										
Jackson........	80%	7½	110%	5	113%	1	109%	4	92%	8
Gwinnett.......	57	11	111	3	105	3	100	6	85	11
Franklin.......	71	9	90	10	93	12	88	10	91	9
Hart..........	80	7½	92	9	102	6	96	7	98	7
Madison.......	92	6	110	5	97	10	91	9	88	10
Banks.........	44	12	80	12	101	7	78	12	80	12
Averages..........	71%	53	99%	44	102%	39	94%	48	89%	57
Level of Signifi- cance of Dif- ferences........	P = .03		Not Signif.		Not Signif.		Not Signif.		P < .01	

    [a]The twenty-one-county averages are $793 for 1860, $176 for 1880, $216 for 1900, $541 for 1930, and $359 for 1940.
    [b]Actually value of farm capital per worker.
    [c]Computed from Table 3, Columns 1, 3, and 4.
    [d]Computed from Table 5.

with the developed group more than recovering its earlier superior income position. In 1860, its rank sum was 25; in 1880, 34; in 1900, 39. After the latter year, this sum decreased to 30 by 1930 and a decade later dropped to the lowest possible total of 21.

In our opinion, this drastic reversal in the comparative income trend of the two groups since 1900 can be explained only by the intervention of some new force or forces that are strictly twentieth-century phenomena. In other words, unequal prior conditions before 1900—some

    24. See Chapter II above.

of which will be taken up immediately below—are unlikely explanations for the reversal in comparative income trend. Under our basic hypothesis, the new intervening force that accounts for the observed income divergence since 1900 was industrial development. This hypothesis, we have found, is not inconsistent with our empirical findings. To be sure, there may be other forces that appear to be partial explanations of modern income differentials in agriculture. Among them we may mention county differences in soil capability, capital resources, rural transportation, personal capacity and preference pattern of the farm population, and prices paid and received by farmers. As we shall show in later chapters, these differences are either insignificant or are, in themselves, the consequences of a differential industrial development. It appears reasonable to assert that industrial development is causally related to farm income.

For comparative group trends in other socio-economic indexes, only the pre-industrial period will be presented, since the modern period, 1900-40, will be taken up in later chapters. The body of information contained in various censuses varies widely over time. The selection of relevant indexes for comparisons over time is therefore limited, and the time period placed under observation is not always comparable. Nonetheless, as we shall see shortly, among the socio-economic indexes introduced, there is a substantial agreement in one respect, i.e., they almost without exception point to the unmistakable, convergent movement among the two groups of counties during 1850-1900. In later chapters, however, the reader will note that the period after 1900 is one characterized by strong divergent movements that show increasing lags on the part of the underdeveloped counties. This reversal in comparative group trends before and after 1900 again argues well for attributing recent divergences to some twentieth-century phenomenon (or phenomena). Under our basic hypothesis, this phenomenon is the industrial development, or, more specifically, the uneven pattern of industrial development. The resulting changes in numerous socio-economic forces in response to this pattern constitute, in fact, the mechanism through which industrial development creates farm income differentials. This proposition will be set forth in a series of related hypotheses, the testing of which is reserved for later chapters.

Earlier we showed that, in terms of farm income per worker, the comparative group trend was convergent before 1900 in contrast to the divergent trend after 1900. Table 7 indicates that the same convergent movement is apparent in a number of other agricultural in-

TABLE 7.   Comparative agricultural indexes before 1900 expressed in group rank sums[a]

Index Group	A.							
	Value of Farm Capital per Worker		Cotton Production per 1000 a.i.l.[b]		Average Farm Size[c]		Value of Farm per Acre	
	1860	1900	1860	1900	1860	1900	1860	1900
Developed..........	25	32	31	37	29½	36½	22½	30
Underdeveloped.....	53	46	47	41	48½	41½	55½	48

Index Group	B.					
	Cotton Yield per Acre		Corn Yield per Acre		Rate of Tenancy	
	1880	1900	1880	1900	1880	1900
Developed..........	31½	43	40	41½	26½	35
Underdeveloped......	46½	35	38	36½	51½	43

[a] Computed from census data.
[b] Per 1,000 acres of improved land in farms.
[c] In terms of improved acreage rather than total acreage.

dexes before 1900. With the exception of corn yield per acre, the movement of the two groups of counties toward equality (rank sum of 39) is unmistakable in all other cases. During 1860-1900, the rank sum of the developed group increased from 25 to 32 in value of farm capital per worker, from 32 to 37 in cotton production per 1,000 acres of improved land in farms, from 29½ to 36½ in average farm size, and from 22½ to 30 in value of farm per acre. Again, during 1880-1900, this rank sum increased from 31½ to 43 in cotton yield per acre and from 26½ to 35 in the rate of tenancy. Similar descriptions of the changes in the rank sum of the underdeveloped group would be superfluous, since the changes in the two group rank sums are necessarily compensatory.

TABLE 8.   Comparative social and manufacturing indexes before 1900 expressed in group rank sums[a]

Index Group	NET RELATIVE MIGRATION[b]		PER CENT MALE POPULATION 21+		MEAN FAMILY SIZE[c]		VALUE ADDED BY MFRE. PER CAPITA	
	1850-1860	1900-1910	1850	1900	1850	1900	1860	1900
Developed........	30½	34	23	39½	44½	40	23	23
Underdeveloped...	47½	44	55	38½	33½	38	55	55

[a] Computed from census data.
[b] Net in- (+) or out-migration (−) as percentages of the original population at the beginning of the period.   Counties are ranked in descending order, i.e., the county with the greatest net in-migration (or the smallest net out-migration) is given the rank of 1.
[c] For the white and free-Negro population only in 1850; for the entire population in 1900.

Table 8 presents comparative social and manufacturing indexes for the two groups of counties during 1850-1900. With respect to net relative migration, the smaller rank sum of the developed group indicates that the group, in relation to the underdeveloped group, had received greater net relative in-migration or suffered smaller net relative out-migration. As a matter of fact, during both 1850-60 and 1900-10, both groups experienced net out-migration, but the developed counties as a group lost fewer people relative to their original population than the underdeveloped group. The increase in the former group's rank sum between the two periods from 30½ to 34 indicates, however, that group differentials in migration had narrowed. This convergence in group characteristics is also evident elsewhere. In terms of both the proportion of male population aged twenty-one and over and the mean family size, the movement of rank sums was toward the sum of 39 during 1850-1900. The rank sum of the developed group rose from 23 to 39½ in relative adult male population; at the same time, it fell from 44½ to 40 in mean family size. These figures indicate that, while the developed group had distinctly higher relative adult population and lower mean family size in 1850 than the underdeveloped group, the two groups had become virtually indistinguishable by 1900 in these respects.

Between 1860 and 1900, both groups of counties showed a nearly fourfold increase in value added by manufacture per capita. This fact is borne out by the comparative rank sums of the two groups during that period. Table 8 indicates that there was no change in their rank sums, that of the developed group being 23 in both 1860 and 1900 and that of the underdeveloped group 55. Despite their nearly fourfold increases in value added during 1850-1900, both groups remained essentially pre-industrial. In 1900, per-capita value added by manufacture was only $25 for the developed group and $6 for the underdeveloped group.

From the above sections, we have seen that, in the absence of substantial industrial development during 1850-1900, there was a general convergent movement among the two groups of counties not only in terms of their gross farm income per worker but in terms of their unequal prior conditions as measured by our various socio-economic indexes. The disappearance of the initial income differences between our groups is undoubtedly the result of the operations of long-run equilibrating forces. The process of long-run adjustment lies in basic factor (and product) movements between areas. That

such factor movements were operative in our study area during 1850-1900 can be seen from the developed group's greater net relative in-migration (or smaller net relative out-migration) and from the convergence in per-worker farm capital between the two groups. From this it follows that a plausible explanation of persistent, increasing income differentials must lie in a development that either serves to successfully impede factor movements that are essential to any long-run adjustment process or is sufficiently dynamic to counter the workings of the equilibrating forces. It also follows that a given difference, such as the uneven spread of cotton before the Civil War, does not appear to be capable of sustaining, much less widening, income differences over time when confronted with equilibrating movements of labor and capital, imperfect though they are. It is against this background that later (after 1900) divergences in farm income and other socio-economic indexes become truly meaningful. It is also against this background that we shall formulate our related hypotheses designed to answer the query: How does unequal industrial development bring about persistent and increasing income differentials in agriculture between various communities?

BASIC HYPOTHESIS—EXPLANATION OF PERSISTENT INCOME DISPARITY

Like the period before 1900, the decades after 1900 saw important factor movements in the Southern Piedmont. Unlike the earlier period, the modern era is characterized by the inability of these equilibrating movements to dampen the existing agricultural income differentials between counties. This phenomenon we attribute to the dynamic nature of the area's industrial-urban development whose disequilibrating impact consistently outstripped the equilibrating effect of factor transfers. The reason for the insufficient factor movements undoubtedly lies in fundamental market impediments which give rise to segmented local markets of unequal efficiency. Our basic proposition is then as follows: That the income effects of the highly uneven, local industrial-urban development are transmitted to local agriculture through its impact upon local factor and product markets. In this connection, we shall pay particular attention to Schultz's "impact theory," which argues that the factor and product markets function with varying degrees of imperfections in different areas and that there is a definite relationship between the degree of market imperfections and the degree of local industrial-urban development.

To ascertain the interactions between local industrial-urban de-

velopment and local agriculture, we shall formulate a number of related hypotheses in later chapters with respect to the characteristics of local factor and product markets. These will then be subjected to intensive empirical and historical investigations to determine the extent to which market efficiencies are influenced by local industrial-urban development and the manner with which differential market performance affects local agricultural organizations in terms of both the input and enterprise (product) combinations. It is the purpose of the following chapters to establish in detail the mechanism through which differential industrial-urban development influences the level of farm income.

RACE COMPOSITION OF FARM POPULATION AND FARM INCOME

In Chapter II, we have seen that initial differences in race composition between counties were the consequence of the uneven spread of cotton before the Civil War. Cotton was the causal force behind the rise of plantations and the popularization of the institution of slavery in the Southern Piedmont. For the study area as a whole, the rank correlation between the proportion of farm population slave (Negro) and cotton production per 1,000 acres of improved land in farms produced a coefficient of $+0.909$ in 1850. In the years after the Civil War, migration and gradual elimination of the initially uneven cotton culture, however, failed to narrow the initial differences in

TABLE 9. Percentage of Negro farm population and rank, 1860-1940[a]

Counties	1860[b]		1900[b]		1940[c]	
Developed Group:						
York.................	47.3	2	55.8	1	54.1	1
Greenville.............	33.2	5	33.8	4	25.3	5½
Spartanburg..........	31.1	8	31.2	6	28.9	4
Barrow...............	31.5	7	27.0	9	21.8	7
Lancaster.............	48.7	1	49.8	2	42.3	2
Anderson.............	37.5	3	43.3	3	35.9	3
Average and Rank Sum...	38.2	26	40.2	25	34.7	22½
Underdeveloped Group:						
Jackson..............	31.6	6	31.6	5	17.0	9
Gwinnett.............	20.0	11	16.2	12	7.6	12
Franklin.............	18.3	12	23.8	10	14.3	10
Hart................	25.0	9	28.7	8	25.2	5½
Madison.............	33.9	4	29.4	7	17.8	8
Banks...............	23.3	10	19.9	11	7.9	11
Average and Rank Sum...	25.4	52	24.8	53	15.0	55½
Level of significance of group difference.......	$P = .04$		$P = .03$		$P < .01$	

[a] Computed from *United States Census, 1860,* V. I, *Population; ibid., 1900,* V. I, *Population* Part I; *ibid., 1940, Population,* V. II.
[b] Farm population taken to mean rural population. For 1860, this meant total population since no county had urban population.
[c] Farm population taken to mean rural-farm population.

race composition between the various area counties. Between 1850 and 1900, the difference in race composition of the farm population between the developed and the underdeveloped groups of counties had remained virtually constant. In 1860, the developed group had a substantially higher proportion of farm population Negro, 38.2 per cent, as compared with 25.4 for the underdeveloped group. In 1900, the proportion of Negro farm population was 40.2 per cent for the developed group and 24.8 per cent for the underdeveloped group. In 1940, Negroes accounted for 34.7 per cent of the developed group's farm population and 15.0 per cent of the underdeveloped group's.

From the above data, we conclude that the group difference in race composition of the farm population between the developed and underdeveloped counties has been persistent and significant. What has been the effect of this difference upon the level of farm income per worker between the two groups of counties? Evidently, the income effect of local industrial development on agriculture cannot be accurately defined without first finding the answer to this question. It is to the latter question that we now turn our attention before we bring this chapter to a close. It is generally accepted that institutional barriers discriminating against the Negroes place them at a disadvantage in their competitive position as entrepreneurs in agriculture for productive services or in their competitive position as agricultural wage laborers for farm employment. Both of these situations would tend to depress per-worker farm income, one by lowering the ratio of capital to labor in the farm firm and the other by lowering the wage rate to which the buyer of labor services, in his effort to maximize profits, will equate labor's marginal value product.

Under these circumstances, ideally, income comparisons between counties or groups should be made separately for whites and Negroes. This means that, in order to establish the superiority of County A over County B with respect to farm income per worker, we need only to show that A's farm incomes both per white worker and per Negro worker are higher than B's respective averages. It is clear that A's farm income per worker of both races may well be below B's if Negroes constitute a substantially higher proportion of the total farm population in A than in B. However, separate comparisons of this type require data that are not available. The best one can do in this regard is to introduce the relative importance of the Negro farm population as an additional independent variable (value added by manufacture per capita being the independent variable already introduced) and to

assess its effect upon farm income per worker of all races by means of statistical techniques. More specifically, we are interested in finding out what would be the net relationship between farm income per worker of all races and value added by manufacture per capita if the proportion of farm population Negro is statistically held constant. Surprisingly enough, in terms of 1940 data this net relationship is virtually identical to the gross relationship between the same variables. Although the relationship between farm income per worker of all races and percent farm population Negro is clearly discernible in a gross sense, it disappears when allowance is made for variations in industrial-urban development among counties.[25] This suggests that percent farm population Negro exerts no real effect upon farm income and that its variability among counties in no way influences the relationship observed between farm income and industrial-urban development.

. This finding is startling indeed in view of certain well-known facts. Undoubtedly, Negro farm laborers received lower wages in the South than their white co-workers. Likewise, Negro farm operators had, in general, fewer acres and less capital to work with than white operators. In 1940, the average size of Negro-operated farms was only 51 acres in the developed group and 56 acres in the underdeveloped group

TABLE 10.   Number of farms, land in farms, and average farm size by race of operators, 1940[a]

Counties	NUMBER OF OPERATORS OR FARMS		ACRES OF LAND IN FARMS		AVERAGE FARM SIZE	
	Negro	White	Negro	White	Negro	White
Developed Group:						
York	1,884	1,964	105,430	230,751	56.0	117.5
Greenville	1,219	4,388	46,824	246,227	38.4	56.1
Spartanburg	1,640	5,121	72,230	312,917	44.0	61.1
Barrow	212	1,246	12,538	81,956	59.1	65.8
Lancaster	946	1,516	76,430	168,235	80.8	111.0
Anderson	1,937	4,493	83,729	327,290	43.2	72.8
Total or Average	7,838	18,728	397,181	1,367,376	53.6[b]	80.7[b]
Underdeveloped Group:						
Jackson	294	1,929	18,413	158,460	62.6	82.1
Gwinnett	189	3,120	11,781	209,747	62.3	67.2
Franklin	255	1,884	11,733	139,172	46.0	73.9
Hart	481	1,827	21,559	127,752	44.8	69.9
Madison	234	1,642	16,409	136,039	70.1	82.8
Banks	83	1,287	5,732	112,307	69.1	87.3
Total or Average	1,536	11,689	85,627	883,477	59.2[c]	77.2[c]

[a] Compiled or computed from *United States Census, 1940, Agriculture*, V. I, Part 3, County Table (supplemental) II.
[b] Unweighted averages.   The weighted averages are 50.7 acres and 73.0 acres.
[c] Unweighted averages.   The weighted averages are 55.7 acres and 75.6 acres.

25. These findings were based on Ezekiel's rapid graphic method of estimating net relationships. (See Mordecai Ezekiel, *Methods of Correlation Analysis* [2nd ed.; New

as compared with 73 and 76 acres respectively for white-operated farms (Table 10). In both groups of counties Negro operators made their living on farms about 70 per cent as large as those operated by white farmers. Both these situations—lower wages and relatively uneconomic farm units—would tend to depress the average value productivity of labor of which gross farm income (value of farm products sold, traded, or consumed on farms) per worker is our measure. Let us at this point examine the proposition further.

1. Lower wage rate of Negro farm laborers may actually increase average value product of labor (hence, farm income per worker), if the rate is sufficiently high so that it equates the marginal value product of labor of a farm firm at a point to the left of the point of maximum average value product. But this is quite impossible even in the short run, since the value of a farm firm's total product would, under these circumstances, fail to cover its total wage bill (a variable cost). Therefore, lower wage rates of Negro farm laborers will tend to depress farm income per worker. In the Southern Piedmont, however, the number of wage laborers has been traditionally small in relation to the total number of farm workers,[26] so that differential average wage rates between counties—which resulted from their unequal relative Negro population—probably had little effect upon the level of their per-worker farm income.

2. Relatively uneconomic farm units of the Negro operators will, other things being equal, also tend to depress farm income per worker. However, all other things are not equal. For instance, the low imputed value of the labor of the Negro operators and their unpaid family workers—such low valuation arises from institutional barriers which restrict better paying nonfarm jobs to the whites—and the sheer necessity of eking out a subsistence from their undersized farms may well push the application of their available unpaid family labor to a point where the marginal value product of labor is very near to zero. The high rate of sharecropping among the Negroes lends further support to the argument, since sharecroppers are discouraged from accepting off-farm employment by their landlords. Does this mean that per-worker farm income will be lowered? The answer is in the negative as long as farm firms rely on their unpaid family labor force. In such a case, maximum farm income *per available (family) worker* is reached

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York: John Wiley and Sons, 1941], pp. 268-99.) Although the method is approximate and intended for exploratory purposes, the results are in this case sufficiently definitive as to make the efficient Pearsonian procedure unwarranted.

26. *Infra,* Chapter VI, pp. 182-83.

only when the total product is maximized under the given family labor. Where the available family labor force is large in relation to farm size, this may mean pushing the marginal productivity of labor to zero. The answer to the above question would be in the affirmative if by farm income per worker we mean income or average productivity *per unit of labor input.* When per-worker income is so viewed, this would be true regardless of whether the farm firm relies upon unpaid family labor or hired labor or both. The definition of farm labor force used in this work represents not so much the actual labor input as the available labor force in agriculture. These considerations may well explain then why, even though the Negroes worked with fewer non-human resources in agriculture, the unequal distribution of their numbers has failed to show any appreciable influence upon per-worker farm incomes of the Piedmont counties in 1940.

LOCAL PRODUCT MARKETS AND DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT, 1900-40

THE PURPOSE of this and the following chapters is to identify the mechanism through which local industrial development affects the level of local farm income via its influences upon the organization of local agriculture and the level of prices paid and prices received by local farmers. More specifically, we are interested in finding out in detail the effect of the uneven pattern of local industrial development upon the manner with which local factor and product markets function. To this end, we shall introduce a large number of variables that are relevant to the understanding of the performances of these markets. We shall then attempt to establish the extent to which these variables are related to the pattern of local industrialization. In so doing, we shall resort to the rapid rank method of indicating group differences explained in Chapter III. The variables will be selected on the basis of their relevance to the testing of our specific hypotheses. These hypotheses may be grouped under three broad headings: (1) those related to the product markets, (2) those related to the labor market, and (3) those related to the capital market. The specific hypotheses related to the product markets will be taken up first in this chapter.

RELATIONSHIP BETWEEN INDUSTRIALIZATION AND URBANIZATION

Hypothesis: That one of the secondary developments of industrialization is urbanization. This hypothesis is quite consistent with Colin Clark's thesis on the processes of economic progress.[1] According to this thesis, the processes of economic development can be typically depicted by gradual shifts of the center of economic activities first

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1. *The Conditions of Economic Progress* (2nd ed.; London, Macmillan and Co., 1951), Ch. IX.

from the primary industries to the secondary industries, then from the secondary industries to the tertiary industries whose concentration gives rise to urban centers. This is saying that, given sufficient time, urbanization will follow as a secondary development of industrialization. Nonetheless, it is perhaps desirable to examine this hypothesis in the light of available statistics with respect to the Southern Piedmont.

Because of the discontinuity inherent in per cent of population urban as an index of urbanization and the general lack of data of a more suitable nature, we have chosen population density as the measure of urban development. In 1850, the developed group had a population density of 24.8 inhabitants per square mile and a rank sum of 23. In the same year, the underdeveloped group reported 21.4 persons per square mile with a rank total of 55. By 1900, population density more than doubled in both groups, reaching 64.4 in the developed group and 52.1 in the underdeveloped group. In terms of group rank sums, however, again we find during this pre-industrial period a convergent movement, though slight, among the two groups, these sums having moved from 23 to 25 and from 55 to 53 respectively. After 1900, with the advent of industrial development, a reversal in comparative group trends was once more noticeable. Between 1900 and 1940, population density nearly doubled (from 64.4 to 111.6) in the developed group, while it remained virtually unchanged (from 52.1 to 55.0) in the underdeveloped group. In the latter year, the rank sum reached a new

TABLE 11. Population density—inhabitants per square mile—and rank, 1850, 1900, and 1940[a]

Counties	1850		1900		1940	
Developed Group:						
York.................	22.1	6	60.9	4	85.6	4
Greenville...........	25.5	3	67.8	3	173.1	1
Spartanburg..........	26.6	2	79.0	1	153.9	2
Barrow..............	25.3	4	58.7	5	76.4	5
Lancaster...........	21.8	7	48.2	10	66.6	6½
Anderson............	27.7	1	71.9	2	114.3	3
Average and rank sum....	24.8	23	64.4	25	111.6	21½
Underdeveloped Group:						
Jackson.............	21.3	10	54.9	8	59.6	9
Gwinnett............	23.4	5	53.2	9	66.6	6½
Franklin............	21.4	9	55.5	7	58.0	10
Hart................	21.6	8	56.4	6	60.4	8
Madison.............	20.3	12	47.1	11	47.8	11
Banks...............	20.5	11	45.7	12	37.8	12
Average and rank sum....	21.4	55	52.1	53	55.0	56½
Significance level of group differences...........	P = 0.01		P = 0.03		P < 0.01	

[a]Computed from *United States Census, 1850* (1 vol.); *ibid.*, *1900*, V. II, *Population;* and *ibid.*. *1940, Population,* V. I. All data adjusted for boundary changes, for details see Appendix I.

low of only 21½ for the industrially advanced group of counties (Table 11). In the same year, this group also reported a substantially higher proportion (33 per cent) of its total number employed in tertiary industries[2] than the underdeveloped group (21 per cent). In terms of group rank sums—23 and 55 respectively for the two groups —these differences are statistically highly significant.

Our hypothesis that industrialization gives rise to urbanization as a secondary development appears to be quite consistent with our empirical findings. The industrial development that has come to characterize our developed counties since 1900 may well be looked upon as a complex of industrial-urban development; and all subsequent developments secondary to the urban development may be attributed indirectly to the industrial development.

RELATIONSHIP BETWEEN INDUSTRIAL-URBAN DEVELOPMENT AND THE EFFICIENCY OF MARKETING FACILITIES

Hypothesis: That as a result of the industrial-urban development in their midst the developed counties have acquired better rural roads and more efficient marketing facilities. By marketing facilities we mean (1) the facilities for the assembling and disposal of farm products, (2) the facilities for the distribution of agricultural inputs, and (3) the facilities for the distribution of goods and services consumed by farm families. The principal conclusion to be drawn from this hypothesis, if consistent with empirical findings, is that farmers in the developed counties probably enjoyed higher prices received, lower prices paid, and greater alternatives in their purchases of inputs and consumer goods and in their disposition of farm products, as a result of the more efficient road system and marketing facilities at their disposal. This means that, even if farmers in the developed counties realized no higher physical product per worker and enjoyed no saving in real cost of production, their money farm incomes would have been higher and money costs lower than those in the underdeveloped counties. Moreover, their level of living would have been still higher than the level of their net incomes indicated because of lower prices paid by them for goods and services consumed.

Efficiency of marketing facilities can, perhaps, be best described in terms of the degree of competitiveness, the extent to which external and internal economies are operative, and the particular marketing practices used. Competitiveness and external economies may be looked

2. Include all industries other than agriculture, forestry, fisheries, mining, construction, and manufacturing. Data from Table 2.

upon as a function of the geographical concentration of existing marketing facilities within each county. Internal economies, on the other hand, are a function of firm size. Since it is unlikely that firms in the study area had grown sufficiently large to be unwieldy, we may be justified in saying that a positive relationship in general held true between firm size and the degree of internal economies. The relationship between marketing practices and efficiency is clear without elaboration.

To test the first part of the hypothesis, we rely on per cent of farms located on all-weather (hard surfaced, gravel, and shell) roads as the index of rural road development. In 1940, the developed counties, with 94 per cent of their farms reporting, had 29.1 per cent of all reporting farms on all-weather roads; while the underdeveloped counties, with 95 per cent of their farms reporting, showed only 9.5 per cent of all reporting farms on such roads. In terms of group rank sums, the developed group with a total of 22 clearly indicates that its rural road development was significantly superior to that of the underdeveloped group (Table 12).

In order to apply a rigorous test to the second part of the hypothesis, we should, strictly speaking, examine the efficiency of the marketing facilities with respect to each of the following distributing and assembling functions: (1) the distribution of agricultural inputs, (2) the distribution of goods and services consumed by farm families, and (3) the assembling of agricultural output. An accurate tripartite classification of this type would be difficult to obtain in practice. There are four obvious reasons why this is so: (1) the meagerness of census data, (2) the fact that many, if not most, firms serve mixed functions, for instance, a general store is at once engaged in the assembling of certain farm products and the distribution of consumer goods and certain farm inputs, (3) the fact that many goods, in themselves, are at the same time a consumer good and a producer good, and (4) the fact that existing marketing facilities are shared by farm and nonfarm residents as well.

Under the circumstances, the best one can do is either to assume uniform efficiency in all three distributing and assembling functions or to group *roughly* marketing establishments according to each of the three functions and then to examine the efficiency of each group separately. We have chosen the latter alternative even though the grouping will be extremely crude. There is little doubt, after having scrutinized the list of wholesale establishments in the *Census of Busi-*

TABLE 12. Per cent farms on all-weather roads, 1940; per cent retail establishments classified as general stores, number of establishments per 1,000 population and value of sales per establishment by major market function, 1939[a]

Counties	% Farms on All-Weather Roads[b]		% All Retail Establ. Classified as General Stores		ESTABLISHMENTS THAT INCORPORATED THE FUNCTION OF — Distributing Farm Inputs[c] No. Estab. Per 1,000 R-F. Pop.[d]		Distributing Farm Inputs Annual Sales Per Estab. (000)		ESTABLISHMENTS THAT INCORPORATED THE FUNCTION OF — Assembling Farm Products[e] No. Estab. Per 1,000 Pop.		Assembling Farm Products Annual Sales Per Estab. (000)		Distributing Farm-Consumed Goods and Services[f] No. Estab. Per 1,000 Pop.		Distributing Farm-Consumed Goods and Services Annual Sales Per Estab. (000)	
	val	rank	val	rank	val	rank	val	rank	val	rank	val	rank	val	rank	val	rank
Developed:																
York	19.7	5	2.4	10	5.6	7	22.6	4	.70	4	170.2	6	10.1	3	13.9	3
Greenville	35.6	2	1.9	12	11.2	1	33.8	1	.95	1	383.7	1	10.8	3½	18.8	1
Spartanburg	26.6	3	5.1	6	8.6	3	30.7	2	.74	2½	270.1	2	8.4	7	17.0	2
Barrow	13.6	7	2.9	9	6.8	5	12.1	9	.69	5	62.8	9½	10.0	4	9.1	6½
Lancaster	23.9	4	3.8	8	4.6	3	24.9	3	.27	10	182.2	5	7.5	9	12.3	4
Anderson	37.3	1	3.9	7	8.8	2	17.5	6	.37	9	213.3	3	9.8	5	11.5	5
Averages[h] and rank sums	26.1	22	3.3	52	7.6	27	23.6	25	.62	31½	213.7	26½	9.4	29½	13.8	21½
Underdeveloped:																
Jackson	8.1	10	6.0	5	5.8	6	15.7	7	.75	2½	83.1	8	8.4	7	8.0	8
Gwinnett	9.8	8	13.1	3	8.0	4	14.1	8	.52	7	92.2	7	8.4	7	4.3	10
Franklin	7.2	11	2.3	11	4.1	10	19.2	5	.45	8	210.6	8	10.8	1½	5.8	9
Hart	15.3	6	12.2	4	3.3	8	9.3	11	.58	6	62.8	9½	4.3	12	9.2	6½
Madison	8.4	9	12.4	1	5.2	1	11.1	10	0	11¼	.....	11¼	5.6	10	2.9	11
Banks	6.6	12	18.0	2	3.0	2	4.6	12	0	11¼	.....	11¼	4.4	11	2.6	12
Averages[h] and rank sums	9.2	56	12.3	26	4.9	51	12.3	53	.38	46½	112.2[g]		7.0	48½	5.5	56½
Sign. level of group differences	P<0.01		P=0.04		P=0.05		P=0.03		Not Significant		P=0.04[i]		Not Significant		P<0.01	
Massachusetts	78.8		0.3		87.1		38.2		1.4		374.5		17.2		20.3	
Ohio	88.4		0.9		21.7		30.9		1.4		274.4		15.1		18.3	
U.S.	49.2		2.2		14.6		28.7		1.5		275.5		15.0		16.6	

[a] Computed from *United States Census of Business, 1940*, V. I, *Retail Trade*, Part 3, Table 15; V. II, *Wholesale Trade*, Table 13; V. III, *Service Establishments*, Table 2; and from *United States Census, 1940, Agriculture*, V. I, Part 3, County Table X.

[b] All-weather roads include all hard-surfaced, gravel, and shell roads, but exclude improved dirt roads.

[c] Include retail establishments that fall in the following census groups: automotive, filling stations, lumber-building-hardware, feed-garden-farm supplies, and general stores.

[d] Number of establishments per 1,000 rural-farm population.—except in the case of Massachusetts and Ohio where urban-farm population is included as well because of its relatively greater importance in these two states. Rural-farm population is used in the denominator instead of total population on the ground that the farm population probably had rather easy access to all stores in this group in 1939, even though many were located in urban places. If total population were used, the developed group would have somewhat fewer stores per 1,000 population (2.88) than the underdeveloped group (3.83). Elsewhere in this table, "per 1,000 population" refers to total population. This switch is justified on the ground that the other two functional groups of establishments contain relatively more firms that specialize in services designed exclusively for nonfarm enterprises.

[e] Include "assemblers of farm products" and all other wholesale establishments.

[f] Include all retail establishments other than those included in c and all "service" establishments.

[g] Unweighted average of Jackson, Gwinnett, Franklin, and Hart only.

[h] Unweighted averages. The corresponding weighted averages—which are comparable to the averages of the selected states and the nation as a whole—are (reading across) 29.1%, 3.3%, 8.2, $26.6, 0.82, $275.1, 9.6, and $15.6 for the developed group and 9.5%, 10.9%, 5.3, $13.6, 0.45, $101.5, 7.4, and $5.7 for the underdeveloped group.

[i] Wilcoxon's rapid substitute for variance analysis is not applicable where the two groups are of unequal size. Thus, the level of significance is determined by using variance analysis.

ness, that the bulk of farm products is assembled at the wholesale level. The function of assembling farm products is assigned to the entire wholesale industry, although preferably it should be assigned to the "assemblers of farm products." However, the census gives only summary data on a county basis without breakdown by type of wholesale establishments. The distribution of farm inputs is considered the function of those retail stores from which farmers normally purchase most of their supplies. These include stores in the following census groups: automotive, filling stations, lumber-building-hardware, feed-garden-farm supplies, and general store. The distribution of goods and services consumed by farm families is taken to be the function of all the other types of retail stores and all the service establishments as defined in the *Census of Business of 1940*.

To establish the relative efficiency of the existing marketing facilities in the developed and underdeveloped counties, we shall require relevant indexes, subject to the limitations of available census data, to measure (1) internal economies of the firms in our various counties, (2) external economies and the competitiveness within each marketing area, taken to be co-extensive with each county, and (3) the particular marketing practices used in each county. This is indeed a tall order in relation to the type and amount of statistics available. Nonetheless, we believe that the following indexes will throw some light on the relative efficiency of the area counties' marketing facilities:

a. average value of annual sales per establishment as a measure of firm size, hence the degree of internal economies

b. number of establishments per 1,000 population, taken in conjunction with average value of annual sales per establishment and population density, as a measure of the degree of concentration of marketing facilities in a given area, hence the degree of external economies and competitiveness

c. per cent of all retail establishments classified as general stores as a measure of existing county differences in marketing practices.

In 1940, with respect to establishments in all three major marketing functions—the distribution of farm inputs, the assembling of farm products, and the distribution of goods and services consumed by farm families—the developed group of counties reported significantly larger firm units, as measured by average annual sales per establishment, than the underdeveloped group. In the developed counties, average annual sales per establishment engaged in distributing farm inputs was $26,600, the average per establishment engaged in assembling farm

products $275,100, and the average per establishment engaged in distributing goods and services consumed by farm families $15,600. In the underdeveloped group, on the other hand, the same establishments reported average annual sales of only $13,600, $101,500, and $5,700 respectively (Table 12). These group differences, stated in terms of rank sums, are all significant at P = 0.05 or better. Even recognizing the crudeness of our indexes, we feel reasonably certain that there is a relationship between the pattern of industrial-urban development and the average size (hence, the degree of internal economies) of the firms engaged in the distribution and assembling of farm inputs, output, and consumption items.

On a per-1,000-population basis, the developed counties reported in 1940 substantially larger numbers of establishments in all three functional groups than the underdeveloped, although these differences were significant only in the case of the establishments engaged in distributing farm inputs (Table 12). The actual differences in relative geographical concentration of the existing marketing facilities would be much greater than the above differences indicate if one takes into account (1) the significantly greater population density (Table 11); and (2) the significantly greater per-establishment average value of sales (Table 12) in the developed counties. There is probably little doubt that, with respect to all three functional groups of marketing facilities, the developed counties enjoyed much greater—probably significantly so—concentration of such facilities in 1940. This indicates that establishments in these counties in all likelihood were more competitive and enjoyed greater external economies. Both of these phenomena may well have resulted in lower prices paid and higher prices received by the farmers of the developed counties. The latter counties' better road system would also have tended to further intensify price competition among marketing establishments, since the farmers in these counties had not only more alternatives in deciding whom they should patronize but easier access to them as well.

Finally, Table 12 presents per cent of retail establishments classified as general stores. Since the general stores are undoubtedly among the least efficient merchandising units, this index is used here to measure the efficiency of our counties' marketing practices. In 1940, only 3 per cent of all retail establishments were classified as general stores in the developed counties, while 11 per cent were so reported in the underdeveloped counties. This difference in group averages is signifi-

cant. It appears that the developed group of counties enjoyed more efficient marketing practices.

In summary, we may state that, in terms of all four determinants of efficiency—internal economies, competitiveness, external economies, and marketing practices—the marketing facilities of the developed counties in all three functional groups appear to be significantly and substantially superior to those of the underdeveloped counties in 1940. We may assert that there is a relationship between the degree of local industrial-urban development and the efficiency and availability of local marketing facilities engaged in distributing farm inputs and farm-consumed goods and services and in assembling farm products. This finding, though not rigorous in view of the crudeness of the available data, is not inconsistent with the second part of the above hypothesis.

It would be highly desirable to test this hypothesis further by examining its consequences as reflected by the relative levels of prices paid and prices received by farmers in our two groups of counties. The presumption here is that the farmers in the developed group of counties should have enjoyed lower prices paid and higher prices received than their counterparts in the underdeveloped group by virtue of the existing differences, qualitative and quantitative, in the marketing facilities of the two groups. Price data of this nature are unfortunately not available; although in terms of the county unit prices,[3] used by the Bureau of the Census to arrive at the value of farm products, the developed counties did show somewhat higher prices received in 1940 than the underdeveloped counties. These differences, however, were small—in the case of cotton, average county unit prices for the developed and underdeveloped groups were $57.70 and $57.00 per bale respectively—and it is doubtful if these prices accurately reflected the level of average prices received in various counties, since the quality of cotton[4] as well as the average weight of the bale may have varied from county to county.

Before we bring this section to a close, we may well point out that the observed relationship between the degree of industrial-urban development and the efficiency and availability of local marketing facilities appears to hold true not only in the Piedmont study area but be-

3. These prices are obtained by dividing census value of each farm product by its enumerated physical quantity.
4. Thus, machine-picked cotton commands a lower price than hand-picked cotton. In 1950, this price differential was 2.68 cents per pound (or $13.40 per bale) in South Carolina. (See C. P. Butler and H. L. Streetman, *Economics of Mechanical Cotton Picking in South Carolina,* South Carolina Experiment Station Bulletin, No. 399 [January, 1952], p. 23.)

tween larger geographical units as well. Table 12 shows that, in terms of the indexes cited earlier, our so-called developed counties were really underdeveloped as compared with Massachusetts, Ohio, or even the United States as a whole.

RELATIONSHIP BETWEEN INDUSTRIAL-URBAN DEVELOPMENT AND ENTERPRISE COMBINATION IN AGRICULTURE

Hypothesis: That the growth of urban centers creates new demand for certain farm products, but that, because of the imperfections in the market for farm products and distance barriers particularly with respect to perishable products, favorable, income-raising opportunities for readjustment in the enterprise combination of farm firms are largely limited to farmers in the developed counties.

The relationship between the growth of urban centers and the development of truck, dairy, and specialty farming, for instance, is well known. It is also well-known that shifts of this type in farm enterprise combinations have a positive income effect upon local agriculture. Let us now proceed to examine whether differential rates of industrial-urban development in the Southern Piedmont have in effect led to different enterprise combinations in our developed and underdeveloped counties. In Table 13, we present per cent distribution of the value of farm products sold, traded, or consumed on farms by source of income. In 1940 (actually 1939-40), field crops accounted for about the same proportion of total gross farm income in the developed (56 per cent) and the underdeveloped (55 per cent) groups. Farm consumption of farm products as a source of income was relatively higher in the underdeveloped group—34 per cent as compared with 27 per cent in the developed group despite the latter group's higher rate of part-time and residential farming. This seems to indicate that in the developed counties as a group, farming was more commercialized despite the relatively non-commercial nature of their numerous part-time and residential farms. In contrast, the underdeveloped counties, by and large, appear to have leaned more heavily toward a self-sufficient, subsistence type of agriculture.

In 1940, sales of dairy products, vegetables, horticultural specialties, and poultry and its products amounted to over 10 per cent of total gross farm income in the developed group but less than 7 per cent in the underdeveloped group. This difference is significant at the conventional 5 per cent level. The composition of this group is based on the fact that the farm products therein included are probably more

TABLE 13. Per cent distribution of value of farm products sold, traded, or consumed on farms by source of income and rank, 1940[a]

Counties	Per Cent Distribution of Value of Farm Products by Source of Income							
	Field Crops		Farm Products Consumed on Farms		Dairy, Vege-table, Poultry and Products, and Horticul-tural Specialties		Others[b]	
Developed:								
York	52.0	8	25.1	9	14.6	2	8.3	3
Greenville	51.7	9	26.7	8	16.8	1	4.8	5
Spartanburg	50.6	10	24.6	10	8.8	4	16.0	1
Barrow	58.3	4	32.3	5	6.8	7	2.6	10
Lancaster	58.2	5	31.0	6	6.2	8	4.6	6
Anderson	66.7	2	23.4	11	7.5	5	2.4	11
Average and Rank Sum[c]	56.3	38	27.2	49	10.1	27	6.4	36
Underdeveloped:								
Jackson	53.8	7	30.0	7	7.3	6	8.9	2
Gwinnett	44.7	11	38.2	2	13.3	3	3.8	7
Franklin	58.1	6	33.5	4	5.6	10	2.8	9
Hart	70.8	1	21.6	12	5.5	11	2.1	12
Madison	59.1	3	33.9	3	4.1	12	2.9	8
Banks	41.3	12	44.8	1	5.7	9	8.2	4
Average and Rank Sum[c]	54.6	40	33.7	29	6.9	51	4.8	42
Level of Significance of Group Differences	Not Significant		Not Significant (P=0.08[d])		Significant at P=0.05		Not Significant	

[a] Compiled or computed from *United States Census, 1940, Agriculture*, V. II, Pt. 2, County Table XVII.
[b] Includes forest products, fruits and nuts, and livestock (excluding poultry) and livestock products (excluding dairy and poultry products).
[c] Unweighted averages.
[d] Approximate.

sensitive to the influences of local industrial-urban development than the others. The remaining gross farm incomes—6 per cent of the total in the developed group and 5 per cent in the underdeveloped group—was accounted for by sales of fruits and nuts, forest products, and live-stock (excluding poultry), and livestock products (excluding dairy and poultry products).

Table 14 presents data on per cent distribution of farms by their major source of income. These data, in general, appear to be quite consistent with those in Table 13. In 1940, as a per cent of all farms reporting some value of farm products, the number of dairy, poultry, truck, and horticultural specialties farms was significantly greater (P equal to about 0.03) in the developed group than in the underde-veloped. In both groups of counties, the number of such farms was relatively unimportant, accounting for only 1.9 and 0.9 per cent of the respective total numbers of reporting farms of the two groups. Group differences with respect to the relative importance of the other three classes of farms also appear to lend support to our earlier findings.

The developed group reported relatively fewer farms with farm consumption as a major source of income and relatively more farms with field crops and "other" farm products as major sources of income. However, these group differences are not significant.

TABLE 14.   Per cent distribution of farms by major source of income and rank, 1940[a]

Counties	PER CENT FARMS[b] WHOSE MAJOR SOURCE OF INCOME WAS FROM							
	Field Crops		Farm Consumption		Dairy, Vegetable, Poultry and Products, and Horticultural Specialties		Others[c]	
Developed:								
York....................	72.2	6	23.8	8	2.5	2	1.5	2½
Greenville..............	67.0	10	29.0	3	2.7	1	1.3	4
Spartanburg............	73.5	4	21.0	9	1.7	5	3.8	1
Barrow.................	73.3	5	24.4	7	2.0	3	0.3	10
Lancaster..............	71.1	8	27.0	6	1.0	8	0.9	6
Anderson...............	87.4	2	10.8	11	1.5	6	0.3	10
Average and Rank Sum[e].....	74.1	35	22.7	44	1.9	25	1.3	33½
Underdeveloped:								
Jackson................	69.7	9	28.2	4	1.1	7	1.0	5
Gwinnett...............	53.1	11	44.4	2	1.9	4	0.6	7½
Franklin...............	78.8	3	20.4	10	0.5	11	0.3	10
Hart...................	94.8	1	4.3	12	0.8	9½	0.1	12
Madison................	71.6	7	27.8	5	[d]	12	0.6	7½
Banks..................	38.9	12	58.8	1	0.8	9½	1.5	2½
Average and Rank Sum[e].....	67.8	43	30.7	34	0.9	53	0.7	44½
Level of Significance of Group Differences...............	Not significant		Not significant		Significant at P = 0.03		Not significant	

[a] Computed from *United States Census, 1940, Agriculture*, V. II, Pt. 2, County Table XIX.
[b] Excludes farms that were unclassified or had no value of products sold, traded, or consumed on farms during 1939-40.
[c] Includes forest products, fruits and nuts, and livestock (excluding poultry), and livestock products (excluding dairy and poultry products).
[d] Less than .01.
[e] Unweighted averages.

Next, we shall examine if differential rates of industrial-urban development have influenced the pattern of land use in our two groups of counties. In Table 15, we present per cent distribution of "improved" land in farms by land uses for 1900 and 1940. The concept of "improved" land was discontinued by the Bureau of the Census after 1920. For 1940, we have defined "improved" land to include all cropland (harvested, failure, idle, or fallow) and plowable pastures. In 1900, the proportion of total improved land devoted to each of the following crops and land uses—cotton, corn, oats, wheat, hay, and "other uses"—showed virtually no differences between the developed and underdeveloped groups of counties. During 1900-40, relative cotton acreages showed a 39 per cent decline in both groups of counties. Dur-

ing the same period, relative corn and wheat acreages also declined somewhat in both groups. On the other hand, relative oats, hay, and other improved acreages showed important increases, particularly the latter two. With the exception of hay acreages, these changes were of rather comparable magnitudes in both the developed and underdeveloped groups of counties. By 1940, relative hay acreage alone showed a significant group difference. In that year, the developed group reported 6.9 per cent of its counties' improved land in hay as compared with 4.9 per cent for the underdeveloped group. This difference—significant at the 5 per cent level—probably reflects a significant group difference in the relative importance of dairy farming. It appears to be quite consistent with our earlier findings.

In short, the data in Table 15 seem to indicate that differential rates of industrial-urban development in the Southern Piedmont did not appreciably affect the enterprise combination of its agriculture with respect to the basic field crops. However, other significant differences, in addition to that with respect to relative hay acreages would, perhaps, have been uncovered if finer breakdowns were available under the "other uses" category.

Finally, we shall attempt to discover whether industrial-urban development, through its influence upon local demand for farm products, affects the form in which a particular farm product may be marketed. Specifically, we are concerned with the fluid milk situation. This farm product may reach the market in any one of the following principal forms: fluid milk, farm-churned butter, or butterfat (cream). Pricewise, allowing for appropriate conversion ratios between the three alternatives, the first one is more attractive than the other two. Our question, then, is this: Does the higher rate of industrial-urban development of the developed counties permit their farmers to market relatively more of their milk output in the form of fluid milk? Data in Table 16 clearly indicate that the developed counties in 1940 sold about three times as much fluid milk relative to their total milk output as did the underdeveloped counties. In that year, the developed group marketed 15 per cent of its milk output as fluid milk; the corresponding figure for the underdeveloped group was only 5 per cent. This difference is significant at the $P = 0.02$ level.

This finding, however, is not conclusive, for one can argue that the above difference may be explained by the relatively greater farm consumption of milk and milk products in the underdeveloped group rather than by its insufficient market for fluid milk. To clear up this

TABLE 15. Per cent distribution of improved land in farms by land uses, 1900 and 1940[a]

PER CENT IMPROVED LAND IN FARMS IN

County	Cotton		Corn		Wheat		Oats		Hay		Other Uses				
												1940			
	1900	1940	1900	1940	1900	1940	1900	1940	1900	1940	1900	Total	Idle or Fallow	Plowable Pasture	Miscellaneous
Developed:															
York	39.6	19.0	28.2	20.1	8.2	2.9	3.2	5.4	2.1	8.1	18.7	44.6	14.3	20.2	10.1
Greenville	35.7	25.4	32.5	26.2	6.7	6.4	2.5	4.0	1.6	7.8	21.1	30.2	15.2	7.0	8.0
Spartanburg	39.1	27.7	30.8	25.4	8.3	6.4	3.4	4.0	1.4	4.6	16.9	32.0	7.2	11.5	13.3
Barrow	37.6	26.8	28.8	28.5	6.9	6.5	2.0	4.3	1.7	5.7	23.0	28.1	8.9	8.6	10.6
Lancaster	41.7	18.5	28.4	24.2	3.7	4.8	5.2	4.3	2.1	6.8	18.8	41.4	12.9	21.1	7.4
Anderson	50.2	31.1	23.7	21.2	7.0	7.8	3.6	10.3	1.8	8.4	13.7	21.2	7.5	10.2	3.5
Average (unweighted)	40.6	24.7	28.8	24.3	6.8	5.8	3.3	5.4	1.8	6.9	18.7	32.9	11.0	13.1	8.8
Rank Sums	38	35	40	42½	41	33	29	39	37½	27	42½	41	39	41	41
Underdeveloped:															
Jackson	39.5	23.8	27.1	22.2	7.2	4.8	2.4	4.2	2.4	8.1	21.4	37.0	13.4	14.0	9.6
Gwinnett	27.8	20.8	31.4	32.2	6.9	2.9	1.4	1.2	1.0	4.8	31.5	38.0	13.4	14.8	9.8
Franklin	40.4	25.0	31.6	24.5	6.3	5.1	1.7	8.2	1.9	3.9	15.1	32.3	12.6	10.6	9.6
Hart	48.4	29.4	27.0	23.6	6.9	6.0	1.7	10.1	1.4	4.4	14.6	26.5	5.2	13.1	8.2
Madison	40.7	25.0	28.6	26.6	7.8	9.8	2.1	7.2	0.9	5.1	19.9	26.4	7.4	9.8	9.2
Banks	36.1	17.4	30.5	26.2	6.2	2.8	3.7	4.0	2.4	3.1	21.1	46.5	16.6	18.8	11.1
Average (unweighted)	38.8	23.7	29.4	25.9	7.3	5.3	2.2	5.8	1.7	4.9	20.6	34.4	11.4	13.4	9.6
Rank Sums	40	43	38	35½	37	45	49	39	40½	51	35½	37	39	37	37
Level of Significance of Group Differences	Not significant		Not significant		Not significant		Not significant		P = .05		Not signif.	Not signif.	Not signif.	Not signif.	Not signif.

[a] Computed from *United States Census, 1900,* V. IV, *Agriculture,* and from *ibid., 1940, Agriculture,* V. I, Pt. 3, County Tables I, VI, and VII. All 1900 data have been adjusted for county boundary changes during 1900–40, for details on adjustment, see Appendix I.

TABLE 16. Per cent milk output sold as fluid milk; production of milk and quantity of fluid milk, farm-churned butter, and cream sold per cow or heifer milked, 1940[a]

County	Per Cent Milk Output Sold as Fluid Milk		Per Cow or Heifer Milked							
			Production of Milk (gal.)		Fluid Milk Sold (gal.)		Farm-Churned Butter Sold (lbs.)		Cream Butter-fat Sold (lbs.)	
Developed:										
York................	18.0	2	425	11	76	3	22	6	3.8	6
Greenville...........	27.4	1	477	4	131	1	24	5	4.8	3
Spartanburg.........	17.9	3	487	3	87	2	26	4	0.6	12
Barrow..............	5.3	8	537	1	28	6½	33	3	1.5	9
Lancaster...........	7.1	6	401	12	28	6½	13	11	4.7	4½
Anderson............	12.4	4	446	7	55	5	34	2	1.2	11
Av. and Rank Sums[b]....	14.7	24	462	38	68	24	25	31	2.8	45½
Underdeveloped:										
Jackson.............	5.7	7	448	6	26	8	20	8	2.7	7
Gwinnett............	11.5	5	502	2	58	4	49	1	1.3	10
Franklin............	2.2	12	433	10	9	12	16	10	2.3	8
Hart................	4.5	9	461	5	21	9	18	9	5.0	2
Madison.............	3.3	11	444	8	14	11	21	7	10.4	1
Banks...............	4.1	10	440	9	18	10	11	12	4.7	4½
Av. and Rank Sums[b]....	5.2	54	455	40	24	54	23	47	4.4	32½
Level of Significance of Group Differences....	P = 0.02		Not significant		P = 0.02		Not significant		Not significant	

[a] Computed from *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Table IV.
[b] Unweighted group averages.

point, let us compare the composition of dairy products sold in the two groups of counties. Aggregate data on fluid milk, butter, and butterfat sold have been put on a per-cow-milked basis to allow for differences in county size. These data (Table 16) show that both groups of counties sold comparable quantities of farm-churned butter and cream, but that the developed group sold significantly greater quantities of fluid milk.[5] The conclusion then is that farmers in the developed counties were indeed able to market a greater proportion of their milk output in the most profitable form.

SUMMARY

Before we bring this chapter to a close, let us briefly summarize our findings. The results of our investigations seem to be consistent with the following propositions:

1. That urbanization in the Southern Piedmont was a secondary development of industrialization and that, consequently, all subsequent developments secondary to the urban development may be attributed indirectly to the industrial development.

5. Data also show that the productivity of cows milked was almost identical in both groups of counties.

2. That there was a relationship between the degree of industrial-urban development and the availability and efficiency of local marketing facilities (including roads) for the distribution of farm inputs and farm-consumed goods and services and for the assembling of farm output.

3. That industrial-urban development by creating new demand for certain farm products—particularly, dairy products, truck crops, poultry, and horticultural specialties—has made available to nearby farmers income-raising opportunities for readjustment in the enterprise (product) combinations of their farm firms. (However, the effect of such differential readjustment opportunities upon farm income between the developed and underdeveloped group of counties was probably small, since the value of those farm products sensitive to the market influences of industrial-urban development accounted for no more than 17 per cent of the total of all farm products in any county).[6]

4. That industrial-urban development, also through its influence upon the demand for farm products, has made available to nearby farmers greater opportunities for disposing of their output under forms that were relatively more attractive price-wise. (The ability of the farmers in the developed counties to market a significantly higher proportion of their milk output as fluid milk rather than as farm-churned butter or cream is a case in point).

6. Table 13, Column 3.

LOCAL CAPITAL MARKETS AND DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT, 1900-40

INTRODUCTION

FOR A NUMBER OF REASONS, farmers in the Old Cotton Belt have been heavily dependent upon production loans. Among the plausible reasons, the more important are perhaps the presence of monoculture in the area and the persistent low income of its farmers. According to one study on credit problems faced by Georgia cotton growers, farms that used no credit reported substantially lower proportions of their total sales from cotton than credit-using farms of comparable size. This indicates that the degree of a farmer's dependence upon agricultural credit seems to be related positively with the degree of his dependence upon a single cash crop (cotton). The study also found that the average value of farm products for all users of short-term credit was only about half as high as the average for all non-users.[1] This points out quite clearly the relationship between the level of income of a farm firm and its dependence upon agricultural credit.

Whatever may be the reasons, the important question is how dependent were Southern cotton growers upon agricultural credit? According to a sample survey conducted in South Carolina in 1937, among the farmers who found it necessary to borrow in that year, 20 per cent of owners and part-owners and 37 per cent of tenants had no cash on hand when the season began. For those who reported some cash on hand at the beginning of the 1937 crop season, the average holding was only $294 for the owners and part-owners and a mere $114 for the tenants. Yet, average fertilizer expenditures alone came to

1. Arthur N. Moore, J. K. Giles, and R. C. Campbell, *Credit Problems of Georgia Cotton Farmers*, Georgia Agricultural Experiment Station Bulletin, No. 153 (June, 1929), pp. 16-18. Hereafter cited as *Credit Problems*.

$228 in that year. Since Piedmont farmers typically had little or no income during the crop-growing season for lack of such agricultural enterprises as livestock, dairy, and poultry, the above sample statistics point to their heavy reliance upon production credit.[2] It is reasonable to suppose that the relative efficiency of the capital market in a given county exerted considerable influence upon the county's current income level. For our purposes, a relevant question is then whether the differential pattern of local industrial-urban development among the area counties had influenced local capital market performances, hence, county farm incomes.

In later analyses, banking data will be used as primary measures of capital market efficiency. Undoubtedly, these data give only a partial view of the total capital market, since they do not reflect the operations of non-bank private lenders in agriculture. Because of the steady decline in the relative importance of these lenders (primarily, merchants and landlords) in the Piedmont, banking data may be expected to serve adequately as an indicator of market characteristics among counties, particularly in the more recent years.[3] While banking data also fail to reflect the operations of government-sponsored lending agencies in agriculture, separate data pertaining to production credit associations and Federal Land Banks will be presented to ascertain if their operations served to narrow or widen county differences in market efficiency. Special attention may be called at this juncture to the operations of the Farmers Home Administration. Insofar as this agency (formerly known as the Farm Security Administration) was brought into being with the express idea of making credit available to those farmers who have no access to the normal credit channels, its operations may well be expected to narrow existing county differences in this regard. However, the scope of its operations has been limited in comparison to that of the production credit associations and Federal Land Banks, so that it is not at all clear as to what has been the net effect of government participation in agricultural credit. This question will engage our attention in a later section.

Thus far, we have called attention to the fact that Southern cotton growers were heavily dependent upon short-term production loans. Be-

2. W. T. Ferrier, *Short-term Credit for Agricultural Production in South Carolina*, South Carolina Agricultural Experiment Station Bulletin, No. 327 (June, 1940), pp. 12-13.

3. For evidence bearing on the decline of non-bank private lenders, see my Ph.D. thesis, "An Analysis of Southern Economic Development with Particular Reference to Agriculture: Upper Southern Piedmont, 1900-1940," Vanderbilt University, 1955, pp. 170-74. Hereafter cited as "Southern Economic Development."

cause of their typically low income and under-capitalized farm units, their dependence upon long-term credit for reorganization purposes had also been great. The relative efficiency of the area counties' local capital markets may be expected to have influenced significantly the counties' relative income level in the long run. An efficient capital market, from a short-run point of view, is one which permits farmers to acquire sufficient short-term capital inputs so as to equate rates of returns from capital in agriculture and prevailing interest rates (under given fixed resources). From a long-run point of view, it is one which permits internal farm reorganization under changing tastes and technology. These changing conditions may mean shifts in the optimum scale as well as shifts in product.[4] Needless to say, all capital markets serving agriculture are more or less inefficient. Although it is difficult to measure county variations in market efficiency directly or precisely, some indirect inferences about them are nevertheless possible on the basis of limited available data.[5]

DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT AND BANK DEPOSITS PER CAPITA

Before we formulate our hypothesis with respect to industrial-urban development and the growth of bank deposits, it is perhaps appropriate to explain briefly the role of bank deposits in a modern economy. First of all, demand deposits have been the most important form of money in the twentieth century, financing about 90 per cent of the total dollar volume of the nation's monetary transactions in recent years. Secondly, bank deposits reflect the net movement of capital in and out of an area. Importation of capital into an area causes increases in local bank deposits. Exportation of capital by depositors results in decreased bank deposits in the area. Exportation of capital by banks, while having no direct effect on local bank deposits, nonetheless reduces the ability of banks to create bank deposits (money) locally. Thirdly, bank deposits may reflect changes in the level of local income, other things (e.g., personal hoarding) remaining equal. Finally, primary demand deposits, under the fractional reserve system, constitute the major source of bank reserves that determine a bank's ability to lend, i.e., to create (secondary) demand deposits. The role played by

4. Broadly speaking, an inefficient capital market is one which imposes external capital rationing. Apart from external capital rationing, internal capital rationing, imposed by the farm operator himself in the face of uncertainty, may also prevent the attainment of equilibrium positions, either short- or long-run.

5. For a more detailed description of the nature of agricultural finance in the Old Cotton Belt, see my thesis, "Southern Economic Development," Ch. V.

capital and surplus funds of the bank in this regard is strictly second-ary.

From the above, it appears plausible to posit the following proposi-tions: (a) capital movements and changes in local income level are the major factors that account for variations in the volume of local bank deposits, and (b) the volume of local bank deposits, through their effect upon the availability of agricultural credit, is an important determinant of the rate of local capital formation in agriculture. These two propositions as applied to the Piedmont study area will form the bases for a series of hypotheses to which empirical tests will be duly applied in later sections.

Hypothesis: That, as a result of local industrial-urban development which represented an initial influx of outside capital[6] and subsequent growth of local employment and income, the developed counties have shown increasingly greater (primary) bank deposits per capita as compared with those of the underdeveloped counties.

Table 17 presents per-capita bank deposits from 1900 to 1950 for the developed and underdeveloped groups of counties. The data are taken from published financial statements of the individual banks of the study area. In this connection, we have used the balance sheets as of December 31 of each year rather than the mid-year statements, although both are available. This was done with the view of eliminat-ing some (perhaps most) of the secondary demand deposits from total deposits. This follows since in the single-crop cotton counties the bulk of short-term loans is normally made in March and repaid in October and November.[7] The data of Table 17 constitute a crude measure of the differential lending capacity (relative to population, hence probably demand) of the banks in our area counties. These data have also been deflated by the BLS wholesale price index to elimi-nate the influence of widely different price levels upon the trend of group (absolute) differences in per-capita bank deposits.

While bank deposits per capita are significantly different between the developed and underdeveloped counties in all years, the level of significance has increased over time (Table 17). Likewise, the absolute difference between the two groups has increased enormously. In 1900, the group difference was only $11.00 although it was already signifi-cant at the 2 per cent level. By 1940, this difference had widened to

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6. In the Southern Piedmont, local industrial development (predominantly textile) was fostered almost exclusively by Northern capital, often in the form of transplanted New England factories.

7. See my thesis, "Southern Economic Development," p. 164.

TABLE 17. Total bank deposits per capita deflated by BLS wholesale price index (1926 = 100), December 31, 1900-50[a]

Counties	1900		1905[b]		1910		1920		1930		1940		1950[c]		Increases 1900-40	
Developed:																
York	$13	4	$37	3	$52	3	$114	3	$166	2	$148	2	$197	2	$135	2
Greenville	29	1	61	1	85	1	135	1	201	1	209	1	302	1	180	1
Spartanburg	18	2	41	2	50	4½	95	5	123	3	109	3	185	3	91	3
Barrow	6	7½	31	5	54	2	127	2	76	6	65	6	121	7	59	6
Lancaster	8	6	21	6	50	4½	82	6	89	4	83	5	147	5	75	5
Anderson	17	3	34	4	48	6	105	4	82	5	102	4	166	4	85	4
Average and Rank Sum:	$15	23½	$38	21	$57	21	$110	21	$123	21	$119	21	$186	22	$104	21
Underdeveloped:																
Jackson	$9	5	$15	7	$28	7½	$66	9	$65	9	$46	9	$140	6	$37	9
Gwinnett	5	9	9	11	28	7½	68	8	73	7	63	7	103	9	58	7
Franklin	0	11½	14	8	27	9	75	7	67	8	54	8	113	8	54	8
Hart	6	7½	11	9½	15	12	56	10	26	10	18	10	72	10	12	11
Madison	0	11½	11	9½	21	10	50	11	14	11	35	11	56	11	35	10
Banks	3	10	7	12	20	11	33	12	0	12	0	12	0	12	−3	12
Average and Rank Sum:	$4	54½	$11	57	$23	57	$58	57	$41	57	$36	57	$81	56	$32	57
Group Difference	$11		$27		$34		$52		$82		$83		$105		$72	
Level of Significance	P=0.015		P<0.01		P<0.01		P<0.01		P<0.01		P<0.01		P<0.01		P<0.01	

[a] Computed from data of Appendix III, Table 49 and Table 47. Bank deposits—which include both demand and time deposits since no differentiation was made in earlier published data— have been deflated by the following BLS indexes (1926 = 100): 56.1 for 1900, 60.1 for 1905, 70.4 for 1910, 154.4 for 1920, 86.4 for 1930, 78.6 for 1940, and 158.6 for 1950.

[b] Population for 1905 was assumed to be the average of 1900 and 1910 population. The year 1905 was included in the table because of the somewhat doubtful quality of the 1900 data.

[c] If savings and loan association capital is included in bank deposits (since it may be considered as time deposits), the above 1950 data become: York $228, Greenville $368, Spartanburg $208, Barrow $161, Lancaster $188, Anderson $238, and the developed group $232, Jackson $159, Gwinnett $117, Franklin $113, Hart $72.00, Madison $56.00, Banks $0.00, and the underdeveloped group $86.00.
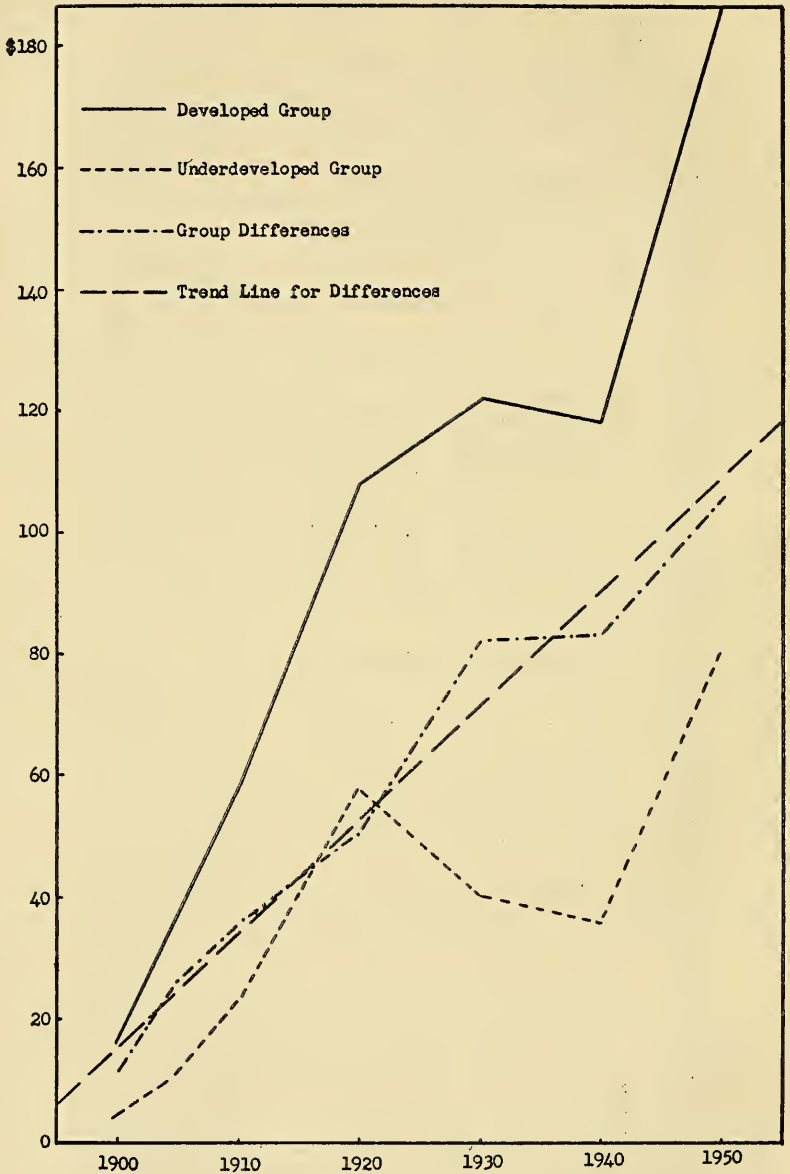
CHART 2. Bank Deposits Per Capita, 1900-50
(Data Deflated by BLS Wholesale Price Index).

$83.00 and, by 1950, to $105. The trend line in Chart 3 indicates that, between 1900 and 1950, the rate of increase in group differences has been $1.90 per year.[8] Since the data for 1950 were included only for the purpose of constructing a more reliable trend and since 1900-40 is the period now under consideration it is desirable to compare the growth of bank deposits per capita in the individual counties during that period. Table 17 shows that all of the developed counties had experienced greater absolute increases[9] in per-capita bank deposits than any of the underdeveloped counties. The hypothesis that differential rate of industrial-urban development leads to differential growth of bank deposits per capita appears to be quite consistent with our empirical evidence.

It may be well to insert at this juncture that the differential per-capita bank deposits noted above actually understate the real differences in the potential lending ability possessed by the banking facilities of our various counties. This follows from the fact that the developed counties, apart from having significantly higher per-capita bank deposits, also reported substantially higher proportions of their banks as members of the Federal Reserve System. In 1940, of the twenty-five banks[10] in the developed counties twelve were national banks, while in the underdeveloped counties all but four out of a total of sixteen banks were non-member state banks. This means that banks of the developed counties, even given the same reserve position, had on the whole a greater ability to expand bank credit, since a greater proportion of them had access to the rediscount facilities of the Federal Reserve Banks. While it is true that all commercial banks were eligible for rediscount with the Federal Intermediate Credit Banks, the allowable margin on eligible agricultural papers had been so narrow that few commercial banks in Georgia and South Carolina ever deemed it profitable to increase their farm loans by rediscounting with the FICB of Columbia.[11]

8. Because of the amazing regularity of the data, the trend line was plotted by inspection. Its estimated equation is: $Y = 15 + 1.9t$; origin 1900, unit $t = 1$ year.

9. Absolute rather than relative increases are used because of the widely different values in the base year. In fact, two counties had no bank deposits in 1900. When the base values are greatly different, the use of relative changes results in misleading growth rates.

10. Excluding cash depositories whose limited function was restricted almost exclusively to accepting deposits. Data from *Rand McNally's Bankers' Directory*.

11. From 1933 to 1940, commercial banks and certain other miscellaneous eligible institutions accounted for only 0.81 per cent of all loans and discounts granted by the FICB of Columbia in Georgia and South Carolina. The bulk of FICB loans and discounts went to local production credit associations (about 75 per cent). Data from

SHORT- AND INTERMEDIATE-TERM LOANS AND CAPITAL OUTLAY IN THE
DEVELOPED AND UNDERDEVELOPED COUNTIES

Hypothesis: That, because of the imperfection of local capital markets, the relatively greater lending ability, as measured by bank (primary) deposits per capita, of the banks in the developed counties has by and large benefited only the nearby farm-borrowers, resulting in more short- and intermediate-term farm loans per farm worker in the developed counties.

Before we present our empirical findings, let us first consider some preliminaries. First of all, apart from direct farm loans, other bank loans may be extended to local farm supply dealers and merchants, enabling them to grant credit in turn to their farm customers. Farm loans then represent only a part of the total credit that local banks make available to agriculture. Secondly, our county data on bank loans to farmers represent loans extended to farmers by the banks in each county rather than loans received by the farmers in each county from various banks. Evidently, for our purposes, it is the second type of data that we should have, since the first type includes loans to farmers outside of the county in which the lending bank is located. Fortunately, it is well known that local rural bankers do not serve local and more distant agricultural borrowers with the same readiness. This is particularly true in Southern low-income rural areas where few farm operators have well-established credit ratings that enable them to borrow from more distant lenders. Under these circumstances, Southern country bankers conduct their loan business largely on a personal basis that precludes borrowing by more distant farmers. Furthermore, it is a coincidence that, in all the study area counties, the county seats which contain the bulk of banking facilities are centrally located, so that nearby farmers served include predominantly county residents alone.[12] We believe that our data on bank loans per farm worker comprise essentially loans contracted between banks and farm borrowers of the same county.

In Table 18 we present on a per-worker basis the amount of short- and intermediate-term bank loans to agriculture for 1950.[13] In that

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Farm Credit Administration, *Quarterly Report on Loans and Discounts* (December 31, 1940), pp. 4-5.

12. In cases where banks are located on or very near the county lines, we have made appropriate, though somewhat arbitrary, adjustments. See, for instance, footnote d of Table 18.

13. Although 1940 is the terminal year under consideration, the failure of the Georgia Department of Banking to maintain old records has forced us to make use of more recent data (see footnote d, Table 18).

year outstanding non-real-estate (short- and intermediate-term) bank loans amounted to an average of $73.00 per farm worker in the developed group of counties as compared with only $27.00 in the underdeveloped group. This group difference is statistically significant at about the .001 level. Given a relatively similar type of farming in both groups of counties, it cannot be said that such a difference may be attributed wholly to differences in the production function, hence, demand. Nor can it be said that the above difference in per-worker farm

TABLE 18.   Short- and intermediate-term farm loans per farm worker, 1940 and 1950[a]

County	SHORT- AND INTERMEDIATE-TERM LOANS								
	Bank Loans 1950[b]		PCA Loans				Total[c] 1950		PCA Loans as % of the Totals
			1940		1950				
Developed:									
York.	$ 83	3	$14	5	$ 56	6	$139	2	40%	9
Greenville.	90	1	10	9	34	9	124	5	27	12
Spartanburg.	60	5	13	6½	37	8	97	8	38	10½
Barrow.	84	2	38	1	224	1	308	1	73	3
Lancaster.	51	6	11	8	59	5	110	7	54	5
Anderson.	67	4	13	6½	54	7	121	6	45	7
Group Averages and Rank Sums:.	$ 73[e]	21	$17	36	$ 77[e]	36	$150	29[e]	46%	46½
Underdeveloped:									
Jackson.	$ 43[d]	7	$21	2	$ 86	3	$129	4	67%	4
Gwinnett.	30	10	8	10	31	10	61	10	51	6
Franklin.	21	11	16	4	61	4	82	9	74	2
Hart.	4	12	20	3	130	2	134	3	97	1
Madison.	34[d]	8	5	12	24	11	58	11	41	8
Banks.	32[d]	9	7	11	19	12	51	12	38	10½
Group Averages and Rank Sums:.	$ 27[e]	57	$13	42	$ 59[e]	42	$ 86	49[e]	61%	31½
Level of Significance of Group Differences. . . .	P <0.01		Not significant		Not significant		Not signif. (P =0.08)		Not significant	
Georgia.	$ 86		$18		$ 92		$178		52%	
South Carolina.	40		19		71		111		64	
Ohio.	324		34		159		482		33	
Massachusetts.	161		32		91		252		36	
U.S.	422		37		141		563		25	

[a] Computed from data in Appendix III, Table 50, *infra*, and from data (number of farm workers) in *United States Census, 1950, Population*, Series P-B, No. 1, Table 56 and Nos. 11, 21, 35, and 40, Table 30.

[b] Only 1950 loan data are available for the counties of the study area. The Georgia Department of Banking has only recent records on its files. Data include CCC-guaranteed loans.

[c] The totals actually consist of non-comparable components. Bank data represent loans outstanding on December 31, 1950; whereas PCA data pertain to loans closed (i.e., extended) during the year. Inasmuch as December represents the low point in loans outstanding and as the average loan term is less than a year (the rate of turnover is greater than one), the above data understate bank loans relative to PCA loans.

[d] Because of the location of the city of Commerce, Jackson County, it is assumed that only half of the loans extended by the Commerce banks went to farmers of Jackson County. The other half is allocated equally to Banks and Madison counties.

[e] If a more refined definition of farm workers, developed in Chapter VIII below, is used instead in arriving at the per worker ratio for 1950, the corresponding group averages (rank sums in parentheses) become: for bank loans, $62 (21) for the developed counties and $22 (57) for the underdeveloped counties; for PCA loans, $65 (35) and $47 (43) respectively; and for total bank and PCA loans, $127 (27) and $69 (51) respectively. The latter group difference is significant at the 5 per cent level. In contrast, the corresponding difference in the table is not significant.

loans reflects greater financial independence of the farmers in the underdeveloped counties, for their farm income, as was shown earlier, was significantly lower than that of the farmers in the developed counties. It appears that the fact that the farmers of the developed counties received on the average nearly three times as much in bank loans as those of the underdeveloped counties is a clear symptom of the imperfect manner in which local capital markets functioned. Our hypothesis is then quite consistent with the data of Table 18. The magnitude of regional differences also tends to support the validity of our hypothesis.

Hypothesis: That the federal and federally-sponsored lending agencies, because of the necessity of applying strict banking standards in their effort to meet the Congressional stipulation of self-support, have failed to equalize geographical differences in the availability of short- and intermediate-term private credit in agriculture.

Available data on PCA loans closed (mostly short-term loans) indicate that for both 1940 and 1950 the developed counties received more loans per farm worker than the underdeveloped counties, although the differences were rather minor. In absolute terms, this means that the lending policy of local PCA's actually widened absolute group differences in farm loans per worker. In 1950, total PCA and bank (short- and intermediate-term) loans averaged $150 per farm worker in the developed group and $86.00 in the underdeveloped group—or a difference of $64.00 as compared with a difference of $46.00 in terms of bank loans alone (Table 18). On a relative basis, PCA loans bulked larger in the underdeveloped counties, accounting for 61 per cent of the total in 1950. In the developed counties, the average was only 46 per cent. Since the majority of PCA loans averaged no more than $300-$400 in the cotton counties and since the cost of PCA loans was higher than that of bank loans for amounts under $800,[14] it follows that the weighted average credit cost must have been higher in the

14. According to Nielson, "it becomes economical to borrow [from PCA's rather than, say, commercial banks] only amounts of $800 or more." At the same time, the PCA's follow strict bankability standards much as the commercial banks do. (A. E. Nielson, *Production Credit for Southern Cotton Growers* [New York: King's Crown Press, 1946], pp. 152-54 and 158. Hereafter cited as *Production Credit.*) Another striking fact lies in that Lange, Forster, and Kenyon, in an intensive study of the costs of production credit in North Carolina, found that PCA loans cost on an average $9.60 per $100 as compared with $6.19 per $100 for commercial banks. (N. Gunnar Lange, G. W. Forster, and B. W. Kenyon, Jr., *The Cost of Production Credit*, North Carolina Agricultural Experiment Station Bulletin, No. 80 [1944], p. 22.)

underdeveloped counties, even if bank rates were comparable in both groups of counties.[15]

As pointed out in the footnotes of Table 18, our data on bank and PCA loans are actually not comparable. Bank data pertain to loans outstanding on December 31, 1950; whereas PCA data are for total loans closed during 1950. Since in the one-crop cotton counties loans outstanding reach their low point in December and since even at their peak[16] loans outstanding fall short of loans closed in a given year (i.e., the rate of turnover is greater than one), our data on bank loans understate the importance of bank loans relative to PCA loans. Although the average total farm loans per worker in Table 18 do not differ significantly ($P = 0.08$) between the two groups of counties, the difference will become significant at the conventional 5 per cent level, if bank loans are adjusted upward by as little as 12 per cent in all counties. If a more refined definition of farm workers, developed in Chapter VII below, is used instead in arriving at the 1950 per-worker ratios, the group difference in total loans per worker would be significant even without such an adjustment.[17] It appears then that our hypothesis is not inconsistent with our empirical findings.

Thus far we have dealt only with one government-sponsored short- and intermediate-term lending agency, PCA. To be sure, it was the most important of all the public lenders in the cotton states both because of its permanence and the magnitude of its operations. It was also practically the sole user of FICB rediscount facilities in Georgia and South Carolina.[18] Past geographical patterns of the lending operations of the Emergency Crop and Feed Loan Office and the Farm Security Administration (now the Farmers Home Administration) indicate that the underdeveloped counties, because of their low farm income and equity and the lack of "normal" credit facilities, had probably received more loans per worker from these federal agencies than the developed counties.[19] This follows from the eligibility requirement

15. Although we have no conclusive empirical evidence of higher bank rates in the capital-short underdeveloped counties, logic and fragmentary evidence argue for the probability of such a situation. Both Nielsen and Moore mentioned low bank rates in and near Atlanta and Greenville by virtue of the concentration of bank deposits in these cities. (Nielsen, *Production Credit*, p. 82, and Moore, et al., *Credit Problems,* Table 12 and p. 26.)

16. Non-real-estate bank loans to farmers outstanding on December 31, 1939, were only 63 per cent as high as the amount outstanding on June 30, 1940, in South Carolina and Georgia (BAE, *Agricultural Finance Review*, November, 1940, p. 94).

17. See footnote e, Table 18.

18. See Nielsen, *Production Credit*, Table 22, pp. 144-51.

19. Our correspondence with the FHA state offices of Georgia and South Carolina

that limited loans to only those farmers unable to obtain credit from the "established sources at reasonable rates." In view of the restricted scale of operations of the above agencies, it is virtually certain that on balance short- and intermediate-term farm loans from all sources per farm worker were substantially and significantly higher in the developed counties.

Hypothesis: That, as a result of greater bank deposits per capita and, consequently, of greater short- and intermediate-term farm loans per farm worker in the developed counties, farmers of these counties had been able to apply more short- and intermediate-term capital per worker than those of the underdeveloped counties.

There are no generally-accepted definitions of short and intermediate term as applied either to loans or to capital. For our purposes, short-term capital is defined to include such outlays as annual expenditures on gasoline, oil, feed, fertilizer, liming materials, and taxes on

TABLE 19.   Short- and intermediate-term capital outlay per farm worker, 1940[a]

Counties	SHORT-TERM[b]		INTERMEDIATE-TERM[c]		TOTAL	
	Total	Per Worker[d]	Total	Per Worker[d]	Total	Per Worker[d]
Developed:						
York..............	$ 636,242	$ 93 4	$ 2,088,248	$ 306 1	$ 2,724,490	$ 399 1
Greenville........	909,856	95 3	2,616,270	273 3	3,526,126	368 3
Spartanburg......	1,188,891	101 1	3,122,151	266 4	4,311,042	367 4
Barrow..........	216,052	86 5½	664,171	263 5	880,223	349 5
Lancaster........	379,902	86 5½	1,106,045	251 6	1,485,947	337 6
Anderson........	1,156,373	100 2	3,223,344	278 2	4,379,717	378 2
Av. and Rank Sum...	$4,487,316	$ 93 21	$12,820,229	$ 273 21	$17,307,545	$ 366 21
Underdeveloped:						
Jackson..........	$ 332,864	$ 80 7	$ 931,203	$ 224 9	$ 1,264,067	$ 304 8
Gwinnett.........	428,790	75 10	1,239,564	216 11	1,668,354	291 10
Franklin.........	292,573	77 9	927,334	243 7	1,219,907	320 7
Hart.............	349,084	78 8	1,003,925	225 8	1,353,009	303 9
Madison.........	253,389	69 11	785,629	214 12	1,039,018	283 11
Banks...........	134,462	59 12	508,919	222 10	643,381	281 12
Av. and Rank Sum...	$1,791,162	$ 73 57	$ 5,396,574	$ 224 57	$ 7,187,736	$ 297 57
Level of Significance..	P < 0.01		P < 0.01		P < 0.01	
	(in thousands)		(in thousands)		(in thousands)	
Ohio..............	$ 83,968	$268	$ 277,775	$ 885	$ 361,743	$1,153
Massachusetts........	31,001	970	36,653	1,147	67,654	2,117
U.S................	2,384,524	256	7,613,240	815	9,997,764	1,070

[a] Compiled and computed from Text Table 22 and *United States Census, 1940, Agriculture.*
[b] Includes annual outlays on gasoline, oil, feed, fertilizer, liming materials, and property taxes.
[c] Includes inventories in livestock and farm equipment.
[d] Farm worker as defined in Table 4, fn. d; data from the last column of Appendix III, Table 48.

elicited the answer that county data are not available for either 1940 or 1950. For data bearing on the regional pattern of operations of these agencies, see my thesis, "Southern Economic Development," Tables 17 through 20.

personal property and farm real estate (including land and service buildings only). Intermediate-term capital comprises all non-real-estate farm inventories including livestock and machinery and implements. In 1940, all of the developed counties reported more short-term capital per farm worker than any of the underdeveloped counties (Table 19). In that year, the ratio of short-term capital to labor averaged $93.00 per worker in the developed counties, as compared with an average application of short-term capital of only $73.00 per worker in the underdeveloped counties. This difference is statistically highly significant.

With respect to intermediate-term capital, again all of the developed counties had more capital per worker in 1940 than any of the underdeveloped counties (Table 19). The average for the developed group was $273 per farm worker as compared with $224 for the underdeveloped group. This difference of $49.00 is highly significant. In terms of all short- and intermediate-term capital,[20] the average farm worker of the developed counties had at his disposal $366 worth of capital in 1940; a worker of the underdeveloped counties only $297.

It is interesting to note that, while in all respects the developed group reported significantly more capital per worker than the underdeveloped group, both groups showed averages considerably below those for Ohio, Massachusetts, and the nation as a whole. In 1940, the amount of short- and intermediate-term capital per farm worker averaged $1,097-$2,117 in the United States, Ohio, and Massachusetts. These averages are roughly three to six times as great as that of the developed area counties.[21] Once again we see striking evidence of the relative backwardness of our so-called developed counties in terms of many meaningful socio-economic indices.

LONG-TERM LOANS AND CAPITAL FORMATION
IN THE DEVELOPED AND UNDERDEVELOPED COUNTIES

Findings in the preceding section suggest that industrial-urban development tended to improve the performance of local capital markets in a way that resulted in increased short-term farm loans and capital per worker employed in agriculture. Were there similar influences

20. The writer realizes that it is difficult to defend the aggregation of inventory and flow items. The basic defect lies in that these items have different lives. The addition of inventory items of non-comparable life, which is frequently done without being challenged, is no less a violation of the principle.

21. It is undoubtedly true that a part of the regional differences in the capital-labor ratio can be explained by existing differences in the type of farming, hence, the production function. Any difference so explained, of course, is not indicative of market imperfections.

upon long-term farm loans and capital accumulation in agriculture? Since a good part of farm mortgage loans was granted by lenders whose operations were nation-wide or region-wide in scope, differences in local capital markets might have had little or no effect in these regards.

The answer to this question appears to be affirmative. Data in Table 20 indicate that in 1950, on a per-worker basis, long-term farm real estate loans held by private operating banks were significantly

TABLE 20.　Long-term farm loans per farm worker by agency and interest rate, 1940 and 1950[a]

County	Bank Loans 1950[b]		FLB Loans[c] 1940		FLB Loans[c] 1950[d]		Total[e] 1950		FLB Loans as % of the Totals		Average Mortgage Interest Rate, 1940[g]	
Developed:												
York	$ 48	4	$166	2	$ 80	7	$128	5	63%	9	4.6	10
Greenville	68	2	153	3	122	2½	190	1	64	8	4.9	5½
Spartanburg	36	6½	184	1	122	2½	158	3	77	6	4.8	8
Barrow	59	3	79	11	71	8	130	4	55	11	5.0	8
Lancaster	36	6½	100	6	52	11	88	10	59	10	4.5	11½
Anderson	42	5	117	4	132	1	174	2	76	7	4.5	11½
Average and Rank Sum	$ 48[h]	27	$133	27	$ 97[h]	32	$145[h]	25	66%	51	4.7	49½
Underdeveloped:												
Jackson	$ 21[f]	8	$113	5	$ 90	5	$111	8	81%	4½	4.9	5½
Gwinnett	73	1	86	9	51	11	124	6	41	12	5.3	2
Franklin	14	10	97	7	59	9	73	11	81	4½	4.7	9
Hart	17	9	82	10	106	4	123	7	86	3	4.9	5½
Madison	13[f]	11	90	8	89	6	102	9	87	1½	4.9	5½
Banks	8[f]	12	77	12	53	11	61	12	87	1½	5.4	1
Average and Rank Sum	$ 24[h]	51	$ 91	51	$ 75[h]	46	$ 99[h]	53	77%	27	5.0	28½
Level of Significance	P=0.05		P=0.05		Not signif.		P=0.03		P=0.05		Not signif. (P=0.07)	
Georgia	$ 83		$ 93		$ 71		$154		46%		5.0	
South Carolina	31		93		61		92		55		4.9	
Ohio	376		232		93		469		20		4.6	
Massachusetts	239		344		184		423		43		4.5	
U.S.	146		283		144		290		50		4.6	

[a] Computed from data in Appendix IV, Table 57, *infra*, and from data (number of farm workers) in *United States Census, 1950, Population*, Series P-B No. 1, Table 56 and Nos. 11, 21, 35, and 40, Tables 30.

[b] Only 1950 loan data are available for the counties of the study area.　The Georgia Department of Banking has only recent records on its files.

[c] Include FLB loans and LB Commissioner loans (i.e., loans made by the FLB's on behalf of the LB Commissioner but held actually by the Federal Farm Mortgage Corporation).

[d] Actually loans outstanding on December 31, 1951, except for state and U.S. data which are outstanding on December 31, 1950.　The FLB of Columbia was not able to furnish us with the 1950 data for counties.　However, the 1951 data are very close to the 1950 data as indicated by a comparison of state and U.S. totals for the two years.

[e] Sum of bank and FLB long-term loans outstanding on December 31.

[f] Because of the location of the city of Commerce, Jackson County, it is assumed that only half of the loans extended by the Commerce banks went to farmers of Jackson County.　The other half is allocated equally to Banks and Madison counties.

[g] From *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Table VIII.

[h] If a more refined definition of farm workers, developed in Chapter VII below, is used instead (of the census occupation data) in the 1950 per-worker ratios, the corresponding group averages (with rank sums in parentheses) become: for bank loans, $41 (26) for the developed group and $20 (52) for the underdeveloped group; for FLB loans $82 (30) and $59 (48) respectively; and for total loans, $123 (24) and $79 (54) respectively.

higher in the developed counties than in the underdeveloped counties. The averages for the two groups of counties were $48.00 and $24.00 respectively.[22] In the same year, the developed group received $22.00 more in loans per worker from the Federal Land Bank of Columbia than did the underdeveloped group. FLB loans per worker were also significantly higher (by $42.00) in 1940 in the developed counties. Just as in the case of short- and intermediate-term loans, federal participation in long-term farm credit failed to offset county differences in capital market efficiency brought about by differential industrial-urban development among counties.

Other federal and federally-sponsored long-term lending agencies were relatively unimportant both in 1940 and 1950. With the exception of FSA (now FHA), no other agency appeared to show any tendency to equalize existing geographical differences in long-term credit facilities.[23] Insofar as FSA loans were granted on the basis of present need for reorganization rather than present equity or income, it is probable that the capital-short counties of the underdeveloped group received more long-term loans per worker from this source than did the developed group.[24] Because of the limited scope of FSA operations, it is improbable that the inclusion of these loans would have materially changed the picture.

The greater abundance of long-term farm loans in the developed counties also appears to be accompanied by relatively lower mortgage interest rates. In 1940, census farm mortgage interest averaged 4.7 per cent in the developed counties as compared with 5 per cent for the underdeveloped counties. This difference, however, is not quite significant (Table 20). But the lack of significance (and by the same token the observed difference itself) may be attributable to the unusual nature of these census statistics. Average mortgage interest rates reported by the census represent the unweighted average contract rate on all outstanding mortgages contracted at various points in time. Hence, they do not reflect the going rates at a given time in various counties. It is quite possible for the census average interest rate to

22. Including FLB and LB Commissioner loans, both extended by the FLB's. The latter loans, however, were held by the Federal Farm Mortgage Corporation.

23. See my thesis, "Southern Economic Development," Chapter V, Table 20.

24. Tenant-purchase loans were, under a Congressional stipulation, to be distributed according to each state's farm population and rate of tenancy, the decline of which had been significantly greater in the developed counties since 1900. But the distribution within the state was far less certain. Some counties had never received this type of loan.

vary little from county to county even when the prevailing rates were widely different among counties at all points in time. This could well be the case if the composition of outstanding mortgages with respect to contract dates varies among counties and if prevailing interest rates have not remained constant over time.

Finally we shall examine the hypothesized relationship between industrial-urban development and capital market efficiency in the light of observed county differentials in the growth of farm capital per worker during 1900-40. In view of widely different base-year values among counties, Table 21 makes use of absolute rather than relative increases. To be sure, comparative absolute growths are meaningful only if there have been no important price level changes. This means that the value series should be deflated by appropriate price indices. Unfortunately, there are no satisfactory deflators for the value series on farm land, buildings, machinery, implements, and livestock, whose quality as well as composition have undergone important changes during recent decades.

If the BLS wholesale price index, used earlier as a deflator of bank deposits, may be tolerated as a crude indicator of price changes in the above value series, then we may safely dismiss the implications of price changes during 1900-40 in this part of the analysis. Because of the relatively minor price increases (about 40 per cent according to the BLS index) during that period in comparison to the actual increases in the value of all farm capital in all the area counties (100 per cent and up), we found that the adjustment of our value series for price changes did not affect the significance level of the group differences shown in Table 21. At any rate, absolute growth figures presented in the table are shown largely for the sake of presentation. The validity of later inferences concerning the relationship between differential industrial-urban dvelopment and differential rate of capital formation in agriculture will rest upon the fact that, with respect to all value series, group differences are statistically not significant in 1900 but highly significant in 1940. This cannot be explained by price changes of any magnitude.[25] Differential rate of capital formation can then be inferred from the changes in the level of significance of group differences.

In 1900, the value of farm land and buildings averaged $531 per worker in the developed counties as compared with $425 in the underdeveloped. This difference of $106 is, however, not statistically signifi-

25. If price changes were the only factor behind observed increases in our value series, the level of significance of group differences would have remained identical in 1900 and 1940.

TABLE 21.　Growth of farm capital per farm worker by type, 1900-40[a]

County	Value of Land and Buildings Per Worker[b] 1900	1940	Abs. Increases	Value of Implements and Machinery Per Worker[b] 1900	1940	Abs. Increases	Value of Livestock Per Worker[b] 1900	1940	Abs. Increases	Total Value of Farm Capital Per Worker[b] 1900	1940	Abs. Increases
Developed:												
York	5 $502	4 $1,396	3 $894	4½ $25	1 $110	1 $85	3 $80	1 $196	1 $116	5 $607	4 $1,702	3 $1,095
Greenville	2 653	1 1,716	1 1,063	1 32	3 99	4 67	2 81	5 174	7 93	2 766	1 1,989	1 1,223
Spartanburg	3 597	2 1,580	2 983	9 22	4 95	3 73	4½ 77	5 171	6 94	3 696	2 1,846	2 1,150
Barrow	10 388	5 1,276	4 888	9 22	5 87	5 65	10 71	3½ 176	3 105	10 481	5 1,539	4 1,058
Lancaster	11 375	6 1,162	5 787	9 22	6½ 70	7 48	7 76	3½ 182	2 106	11 473	6 1,414	5 941
Anderson	1 669	3 1,435	6 766	2 28	2 102	2 74	7 76	3½ 176	5 100	1 773	3 1,713	6 940
Group Averages and Rank Sums:	32 $531	21 $1,428	21 $897	34½ $25	21½ $94	22 $69	33½ $77	22 $179	24 $102	32 $633	21 $1,701	21 $1,068
Underdeveloped:												
Jackson	4 $518	4 $989	10 $471	3 $26	8½ $64	9 $38	1 $86	11 $160	12 $74	4 $630	7 $1,213	11 $583
Gwinnett	12 317	12 909	7 592	6½ 24	12 52	12 28	4½ 77	9 164	10 87	12 418	10 1,125	7 707
Franklin	9 421	8 964	8 543	12 20	6½ 70	6 50	11½ 70	6 173	4 103	9 511	8 1,207	8 696
Hart	8 425	9 912	9 487	6½ 24	8½ 64	8 40	11½ 70	10 161	9 91	8 519	9 1,137	9 618
Madison	6 442	10 910	11 468	4½ 25	10 62	10 37	9 72	12 152	11 80	6 539	11 1,124	10 585
Banks	7 428	12 801	12 373	11 21	11 54	11 33	7 76	8 168	8 92	7 525	12 1,023	12 498
Group Averages and Rank Sums:	46 $425	57 $914	57 $489	43½ $23	56½ $61	56 $38	44½ $75	56 $163	54 $88	48 $523	57 $1,138	57 $615
Level of Significance:	Not signif.	P <0.01	P <0.01	Not signif.	P <0.01	P <0.01	Not signif.	P <0.01	P =0.02	Not signif.	P <0.01	P <0.01
Ohio	$2,501	$4,602	$2,101	$ 88	$383	$295	$304	$504	$200	$2,893	$5,489	$2,596
Massachusetts	2,374	6,633	4,259	133	530	397	240	626	386	2,747	7,789	5,042
U.S.	1,592	3,690	2,098	72	336	264	295	499	204	1,959	4,525	2,566

[a] Computed from Appendix III, Table 48 and *United States Census, 1900* and *1940, Agriculture.*
[b] Number of farm workers of 1900 for the selected states and the U.S. from *United States Census, 1900,* V. II, *Population,* Part II, Table 92.

cant (Table 21). In terms of rank sum, the developed group had a sum of 32 in 1900. Between 1900 and 1940, the value of farm land and buildings per worker increased by $897 in the developed group but by only $489 in the underdeveloped. This difference in growth is highly significant. By 1940, the developed group showed significantly higher value of farm land and buildings per worker, its rank sum having declined from 32 to 21, which is the lowest possible sum with $N = 6$.

Table 21 shows that data on other forms of farm capital yield similar results. In 1900, on a per-worker basis, with respect to both implements and machinery and livestock, the two groups of counties had almost exactly the same value. Although in both cases the developed group reported slightly higher (by 3-9 per cent) averages, the small group differences are far from significant. By 1940, however, again the developed group showed substantially higher (by 10-54 per cent) averages than the underdeveloped group. The differences—$33.00 in value of equipment per worker and $16.00 in value of livestock per worker—are both highly significant. In terms of all farm capital, the developed counties as a group showed in 1900 an average value per worker ($633) only 21 per cent above the average ($523) for the underdeveloped counties. The difference of $110 is not statistically significant. Four decades later, capital formation, together with labor force adjustments, had increased the average value of all farm capital per worker to $1,701 in the developed counties and $1,138 in the underdeveloped counties. With the developed counties showing an average half again as high as that of the underdeveloped counties in 1940, the group difference ($563) became not only substantial but highly significant.

DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT AND
NET INCOME AND LABOR PRODUCTIVITY IN AGRICULTURE

Thus far, findings in this chapter tend to support the conclusion that the developed counties, as a result of their greater industrial-urban development since 1900, had enjoyed increasingly more efficient capital markets. What sort of consequences might one expect from this? One consequence would be differential agricultural labor productivity between the developed and underdeveloped counties. We have already seen that gross farm income per worker had become significantly higher by 1940 in the developed counties. County differences in both gross farm income and capital per worker may be attributable to county differences in the type of farming. Although available data suggest that the latter differences had been small (see Chapter IV), it is nonethe-

less well to examine the conclusion about differential capital market performances in the light of observed county differences in net farm income, net labor returns, and the rate of net returns to land and nonland capital.

Net income from agriculture, as we define it here, is the net income from agricultural activities to *all* owners of the factors of production used in agriculture. More specifically, it is the sum of net operator income (which includes returns to family labor and owned assets), wages paid, net rent to landlords not on farms,[26] farm mortgage interest, and interest on non-real-estate debt. Approached from a different viewpoint, it is the difference between the gross income from agriculture (excluding government payments), as represented by the value of farm products sold, traded, or consumed on farms, and all production expenses, including depreciation expenses and taxes paid on all farm property (except dwellings) personal and real, but excluding wages paid, net rent paid, and interest paid. This concept, although seldom used in income studies, has much to commend it from an analytical standpoint relative to the perhaps more familiar welfare concepts of income to persons on farms from agriculture and income to agriculture from all sources (including incomes to persons in agriculture from the nonagricultural sectors of the economy).[27]

The mechanics by which net income from agriculture is functionally distributed among the factors of production employed in agriculture is set out in detail in Appendix II. The method adopted here is essentially that worked out by D. Gale Johnson.[28] The results are presented in Table 22. Briefly, the method may be summarized as follows:

a. Net return to land is calculated on the basis of estimated gross cash rent on all farm land and buildings less depreciation and real-estate taxes levied. The net rent so calculated is then diminished by that part attributable to farm dwellings. Net rent on farm dwellings for our purposes is considered a consumption item.

b. Net return to capital is determined by imputing rates of return to farm non-real-estate capital (farm inventories of implements, ma-

26. Landlords on farms are included among farm operators.

27. Net income from agriculture as defined here is very similar to the concept used by D. Gale Johnson in his "Allocation of Agricultural Income," *Journal of Farm Economics,* XXX (November, 1948), 724-25. For details on actual computations, see Appendix II below.

28. Actually Method A in his "Allocation of Agricultural Income," *op. cit.,* p. 726.

TABLE 22. Net income from agriculture and imputed net returns to factors of production, 1940[a]

Items	York	Greenville	Spartanburg	Barrow	Lancaster	Anderson	Total for Developed Counties
A. Computation of "Net" Income from Agriculture:							
Gross Income from Agriculture[b]	2,539,878	3,620,896	5,303,955	997,542	1,788,712	5,033,466	19,284,449
Less:							
Depreciation on Service Buildings[d]	60,527	97,946	103,876	20,605	32,818	92,700	408,472
Depreciation on Equipment	74,864	94,654	111,377	22,029	30,626	117,911	451,461
Gasoline, Oil, etc.	38,849	45,989	69,870	9,116	29,196	101,319	294,339
Feed Purchased	104,523	218,925	120,335	20,422	32,767	58,504	555,476
Livestock Purchased	85,482	42,018	73,079	23,625	45,197	80,494	349,895
Fertilizers Purchased	305,174	459,193	716,479	141,991	219,554	761,956	2,604,347
Liming Materials	4,966	2,279	10,933	305	1,401	3,012	22,896
Taxes on Land and Service Buildings[d]	66,007	107,088	150,868	14,761	35,806	112,508	487,038
Taxes on Farm Personal Property	31,241	34,364	47,327	5,832	15,981	38,580	173,325
Total Production Expenses	771,633	1,102,456	1,404,144	258,686	443,346	1,366,984	5,347,249
"Net" Income from Agriculture[b]	1,768,245	2,518,440	3,899,811	738,856	1,345,366	3,666,482	13,937,200
B. Computation of Net Returns to Factors:							
I. Net Returns to Capital:							
a. Land and Service Buildings							
Gross Rent on Land and All Buildings[e]	360,254	785,730	940,718	186,091	251,468	866,320	3,390,551
Less:							
Depreciation on Dwellings[d]	83,144	134,546	157,906	33,940	48,443	157,483	615,462
Taxes on Land and All Buildings[d]	87,080	138,535	197,730	20,878	48,583	152,657	645,463
Depreciation on Service Buildings[d]	60,527	97,946	103,876	20,605	32,818	92,700	408,472
Net Rent on Land and All Buildings	129,503	414,703	481,206	110,668	121,624	463,480	1,721,184
Net Rent on Land and Service Buildings[d]	98,163	320,565	367,539	78,242	89,637	341,585	1,295,731
b. Equipment and Livestock							
Imputed Interest Rate	5.0%	5.3%	5.2%	5.4%	4.9%	4.9%	5.1%
Net Return	104,412	138,662	162,352	35,865	54,196	157,944	653,431
c. Total Net Returns to All Capital	202,575	459,227	529,891	114,107	143,833	499,529	1,949,162
II. Net Residual Returns to Labor	1,565,670	2,059,213	3,369,920	624,749	1,201,533	3,166,953	11,988,038

TABLE 22—Continued

Items	Jackson	Gwinnett	Franklin	Hart	Madison	Banks	Total for Underdeveloped Counties
A. Computation of "Net" Income from Agriculture:							
Gross Income from Agriculture[e]	1,376,916	1,759,747	1,249,206	1,565,741	1,168,382	653,633	7,773,625
Less:							
Depreciation on Service Buildings[d]	26,284	30,664	25,315	21,191	20,027	11,291	134,772
Depreciation on Equipment	26,441	29,673	26,751	28,539	22,679	12,407	146,490
Gasoline, Oil, etc.	22,933	28,147	26,947	23,862	21,492	5,495	128,876
Feed Purchased	37,971	87,591	22,264	16,157	8,915	10,413	183,311
Livestock Purchased	34,571	39,778	20,192	20,492	16,133	15,316	146,482
Fertilizers Purchased	195,576	210,548	178,077	245,157	175,864	83,839	1,089,061
Liming Materials	590	498	0	192	1,201	185	2,666
Taxes on Land and Service Buildings[d]	22,723	42,028	25,207	24,760	17,456	12,571	144,745
Taxes on Farm Personal Property	18,500	20,200	19,886	18,464	12,328	6,643	96,021
Total Production Expenses	385,589	489,127	344,639	398,814	296,095	158,160	2,072,424
"Net" Income from Agriculture[e]	991,327	1,270,620	904,567	1,166,927	872,287	495,473	5,701,201
B. Computation of Net Returns to Factors:							
I. Net Returns to Capital:							
a. Land and Service Buildings							
Gross Rent on Land and All Buildings[e]	245,051	320,119	223,466	299,346	197,540	109,306	1,394,828
Less:							
Depreciation on Dwellings[d]	41,368	49,242	35,273	34,203	32,488	16,035	208,609
Taxes on Land and All Buildings[d]	31,516	56,949	34,342	32,281	23,913	16,607	195,608
Depreciation on Service Buildings[d]	26,284	30,664	25,315	21,191	20,027	11,291	134,772
Net Rent on Land and All Buildings[d]	145,883	183,264	128,536	211,671	121,112	65,373	855,839
Net Rent on Land and Service Buildings[d]	105,182	135,249	94,345	162,352	88,412	49,487	635,027
b. Equipment and Livestock							
Imputed Interest Rate	5.3%	5.8%	5.1%	5.3%	5.3%	5.9%	5.4%
Net Return	49,354	71,895	47,294	53,208	41,638	30,026	293,415
c. Total Net Returns to All Capital	154,536	207,144	141,639	215,560	130,050	79,513	928,442
II. Net Residual Returns to Labor	836,791	1,063,476	762,928	951,367	742,237	415,960	4,772,759

Table 22—*Continued*

Items	Georgia (000)	South Carolina (000)	Ohio (000)	Massachusetts (000)	U.S. (000)
A. Computation of "Net" Income from Agriculture:					
Gross Income from Agriculture[c]	165,956	110,749	294,664	68,449	7,813,645
Less:					
Depreciation on Service Buildings[d]	3,111	2,115	17,359	3,290	282,820
Depreciation on Equipment	3,566	2,420	12,021	1,661	306,019
Gasoline, Oil, etc.	3,456	1,968	11,055	2,133	323,239
Feed Purchased	6,368	2,250	26,149	19,438	732,117
Livestock Purchased	3,174	1,358	21,796	2,880	670,446
Fertilizers Purchased	18,648	15,145	11,175	2,036	217,602
Liming Materials	99	141	[b]	[b]	[b]
Taxes on Land and Service Buildings[d]	2,825	2,505	11,837	3,699	349,668
Taxes on Farm Personal Property	1,728	988	1,956	815	91,452
Total Production Expenses	42,975	28,890	113,348	35,952	2,973,363
"Net" Income from Agriculture[c]	122,981	81,859	181,316	32,497	4,840,282
B. Computation of Net Returns to Factors:					
I. Net Returns to Capital:					
a. Land and Service Buildings					
Gross Rent on Land and All Buildings[e]	30,358	20,885	73,351	11,322	1,826,746
Less:					
Depreciation on Dwellings[d]	3,912	2,811	12,080	2,473	204,904
Taxes on Land and All Buildings[d]	3,650	3,257	15,412	5,368	420,780
Depreciation on Service Buildings[d]	3,111	2,115	17,359	3,290	282,820
Net Rent on Land All Buildings	19,685	12,702	28,500	290	918,242
Net Rent on Land and Service Buildings[d]	15,236	9,768	21,888	199	763,059
b. Equipment and Livestock					
Imputed Interest Rate	5.4%	5.3%	5.0%	4.9%	5.0%
Net Return	6,353	3,571	13,889	1,796	380,662
c. Total Net Returns to All Capital	21,589	13,339	35,777	1,995	1,143,721
II. Net Residual Returns to Labor	101,392	68,520	145,539	30,502	3,696,561

[a] For details on the method of computations and the sources of materials, see Appendix II.
[b] Included in fertilizers purchased.
[c] Excludes government payments and rental value of farm dwellings.
[d] Based on estimated 1940 value of service buildings and dwellings.
[e] Excludes landlord's share of government payments.

chinery, and livestock)[29] equal to the *adjusted* census unweighted average contract mortgage interest rates for the area counties. The value of non-real-estate farm inventories is then multiplied by the latter interest rates.

TABLE 23.   Gross and net income from agriculture and net returns to factors of production, 1939-40[a]

	Per Farm Worker[b]				Per $100 of Value[e]	
	Gross Farm Income[d]	Net Farm Income[e]	Net Return to Labor[e]	Net Return to All Capital[d]	Net Return to Land[f]	Net Return to All Capital[d]
Developed:						
York............	$372 6	$259 6	$229 5	$ 30 12	$1.36 12	$2.18 12
Greenville.........	378 5	263 5	215 6	48 1½	2.52 10	3.00 10
Spartanburg........	453 1	333 1	288 1	45 3½	2.60 9	3.07 9
Barrow.............	395 4	293 4	248 4	45 3½	3.44 7	3.88 7
Lancaster..........	407 3	306 3	273 2½	33 11	2.38 11	2.95 11
Anderson..........	434 2	316 2	273 2½	43 5	2.79 8	3.23 8
Group Averages and Rank Sums:........	$407 21	$295 21	$254 21	$ 41 36½	$2.52 57	$3.05 57
Underdeveloped:						
Jackson............	$331 8	$238 8½	$201 9	$ 37 6½	$3.54 4	$3.96 5
Gwinnett..........	306 11	221 11	185 11	36 8½	3.51 5	4.07 3
Franklin............	328 9	237 10	200 10	37 6½	3.50 6	3.91 6
Hart..............	351 7	261 7	213 7	48 1½	5.20 1	5.22 1
Madison...........	318 10	238 8½	202 8	36 8½	3.62 2	4.03 4
Banks.............	286 12	216 12	182 12	34 10	3.56 3	4.19 2
Group Averages and Rank Sums:........	$320 57	$235 57	$197 57	$ 38 41½	$3.82 21	$4.23 21
Level of Significance of Group Differences:...	<0.01	<0.01	<0.01	Not signif.	<0.01	<0.01
Ohio.................	$939	$578	$464	$114	$2.00	$2.58
U.S.................	836	518	395[h]	123	2.73	3.22

[a] Aggregate data from Table 22.
[b] Data from Appendix III, Table 48, Column 7.
[e] Excludes government payments and rental value of farm dwellings.
[d] Includes net returns to land and service buildings and farm non-real-estate inventories.   Net returns to land, unlike BAE and Johnson's estimates, exclude landlord's share of government payment and net returns to dwellings.
[e] Value data from *United States Census, 1940, Agriculture.*
[f] Net returns to land and service buildings, as defined in d, divided by the value, in hundreds of dollars, of land and service buildings in agriculture.
[g] Net returns to all capital, as defined in d, divided by the value, in hundreds of dollars, of land, of service buildings and non-real-estate farm inventories.
[h] It is interesting to note how close our U.S. estimate approximates D. Gale Johnson's $385. See his article "Functioning of the Labor Market," *Journal of Farm Economics,* XXXIII, No. 1 (February, 1951), Table 1, 78.

29. There is no general agreement among economists as to whether imputable interest on current production expenses (excluding depreciations which are non-current) should be treated as an expense item or as a return to factor. In this study, it is conveniently left out of consideration altogether because of its unsettled status. To this extent, labor return which is obtained as a residual tends to be overstated. This actually constitutes an offsetting error in view of the fact that our net income, as we have defined and computed it, has a downward bias even when this item is excluded from the expense list. At any rate, the item is sufficiently minor so that its inclusion either as an expense or as a factor return is not likely to affect the relative standings of our counties in terms of either net income per worker or net labor return per worker.

c. Net return to labor is obtained as a residual after the deduction of net returns to land (including service buildings) and non-land capital from the total net income.

So much for definitions and procedures, we shall now turn our attention to a comparison of net farm incomes and labor returns between the two groups of counties. On a net basis, farm incomes averaged $295 per worker in the developed group in 1940 as compared with $235 in the underdeveloped group (Table 23). In the same year, the former group ($254) also reported significantly higher net labor returns per farm worker than the latter group ($197). (For the sake of perspective, we may note in passing that the average farm worker's net income or labor return from agriculture even in the developed counties amounted to little more than half of that of Ohio.) Data in Table 23 also show that net agricultural rent (on land and service buildings only) was significantly lower in the developed counties, averaging $2.52 per $100 of value for the group as compared with $3.82 for the underdeveloped group. If a combined rate of net returns to all capital is computed on the basis of net cash rent and interest rate by disregarding the difference between land and non-land capital, we obtain an average rate of $3.05 for the developed counties and $4.23 for the underdeveloped counties. This difference of $1.18 is highly significant statistically. These results are in accordance with the expected consequences of differential capital market efficiency between the two groups of counties.

This conclusion is subject to the consideration that certain forces apparently unrelated to local capital markets probably contributed to county differentials in the rate of returns to nonhuman resources. The underdeveloped counties' greater population pressure upon land, resulting from the lack of alternative employment opportunities, may explain partially the higher agricultural rent in these counties in 1940. This follows since, unlike rent, which is influenced by current conditions, land values are determined by anticipated future returns. To prospective landlords, the anticipated income flow was likely unfavorable because of the extensive past out-migration of the farm people, hence its probable continuation, from the underdeveloped counties. Under these circumstances, land values would have remained low relative to rent, whose level, unlike that of land prices, was sensitive to the high current population pressure of the underdeveloped counties. Finally, differential rent in 1940 can be explained in part by the fact that the competition (active and anticipated) from nonagricultural users

for existing agricultural land was more intense in the developed counties. This of course resulted in increased land values. Agricultural rent probably rose less rapidly since it is not influenced by anticipated nonagricultural demand for land. This situation would have depressed agricultural rent per $100 of value in the developed counties.

It now remains to point out that net agricultural rent as estimated from 1940 census data on cash rent appears to be unduly low in relation both to the census average mortgage interest rate and to D. Gale Johnson's estimate of net rent per $100 of value.[30] Apart from possible errors arising from the relative unreliability of census cash rent data for the Piedmont and the South in general,[31] there are several other seemingly plausible explanations. Low agricultural rent in 1940 (actually 1939-40) relative to the farm mortgage interest rate—which has been notoriously inflexible over time—may be largely attributable to the relatively depressed state in which agriculture found itself in that year. Since the rent is expressed as a rate per $100 of value rather than as a rate per acre, this explanation implies that land values, like farm mortgage interest, were less sensitive to short-run variations in farm prices than rent.[32] Low agricultural rent in relation to farm mortgage interest can also be partly accounted for (1) by the fact that our rental estimates do not represent the total returns to landlords in 1940 since landlords' share of government payments is excluded and (2) by the fact that, because of certain intangible returns arising from the prestige and social status attached to land ownership, net rent tends in the long run to fall below farm mortgage interest by the "cost of ownership."[33]

The disparity between our estimates and Johnson's (which are based on BAE data) lies partly in the fact that the BAE estimates of total rent include not only cash and non-cash rent but landlords' share of government payments as well. Since landlords with non-cash renters, particularly those with sharecroppers, normally participate, to varying degrees, in the management of their tenants' farm enterprises and assume part of the risks involved, the BAE estimates include then not only the agricultural rent proper but also returns to management

30. "Allocation of Agricultural Income," *op. cit.*, p. 732. For 1940, net rent was $5.70 for the nation and, for 1939, $5.50.

31. This arises from the fact that in the South few tenant farm operators were cash renters.

32. See, for instance, Johnson, "Allocation of Agricultural Income," *op. cit.*, pp. 727 and 730.

33. For a lucid discussion and statistical proof, see *ibid.*, pp. 731-35.

and risk-bearing. To this extent, our estimates may be theoretically superior from the standpoint of functional distribution of income.

DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT AND TENANCY

In the following sections, we shall endeavor to determine whether differential industrial-urban development, through its influences upon local capital markets, had also left its impact upon certain other specific development aspects, namely, the rate of investment in land and the human agent and the rate of farm tenancy.

Let us first take up tenancy. The proposition involved may be stated in the form of the following hypothesis.

Hypothesis: That in the developed counties, because of their more efficient capital markets and higher operator incomes and returns to labor, the rate of farm tenancy had shown greater declines than in the underdeveloped counties.

Findings in the preceding sections have shown that the developed counties indeed possessed more efficient local capital markets and enjoyed higher farm incomes and returns to labor per farm worker. Table 24 further indicates that the differences between the two groups of counties in terms of farm incomes and returns to labor per farm operator were statistically significant, though less striking than the differences in per-worker farm incomes and labor returns. In 1940, on a per-farm operator basis, gross and net farm incomes and net labor returns averaged $714, $518, and $447 respectively in the developed counties, as compared with $586, $431, and $361 in the underdeveloped counties. The respective group differences of $128, $87.00, and $86.00 are all statistically significant at the 1-3 per cent levels. The differences in operator farm incomes understate the actual differences in total operator incomes, since farm families in the developed counties had higher supplementary incomes from nonagricultural sources. In 1940, taking into account all farm operators, we find that farm operators in the developed counties worked on the average thirty days off-farm on nonfarm jobs, those in the underdeveloped counties only seventeen days. This group difference is statistically significant (Table 24). Prevailing nonfarm wage rates also appear to be higher in the developed counties. For instance, annual manufacturing wages averaged $703 per wage earner in the developed counties in 1940 but only $559 in the underdeveloped.[34]

From the above, there can be little doubt that total operator farm incomes as well as total farm family incomes from all sources ranged

34. Computed from *United States Census, 1940, Manufactures,* II.

TABLE 24. Farm income and net return to labor per farm operator, part-time nonfarm employment, 1940, and changes in the rate of tenancy, 1900-40

County	PER FARM OPERATOR, 1940[a]			No. Days Worked on Nonfarm Jobs Per Operator[b]		CHANGES IN % FARMS TENANT-OPERATED, 1900-40[c]			
	Gross Farm Income	Net Farm Income	Net Return to Labor			White		Negro	
Developed:									
York..............	$ 660 6	$460 7	$407 6	35	2	−4.1	3	−4.8	7
Greenville.........	646 7	449 8	367 9	33	3	−9.2	2	−5.6	4
Spartanburg.......	784 1	577 1	498 1	30	4	−1.9	4	−5.1	6
Barrow............	684 4	507 4	428 4	19	8	6.6	10	−6.5	2
Lancaster.........	727 3	546 3	488 3	38	1	−10.0	1	−9.2	1
Anderson..........	783 2	570 2	493 2	24	6	3.1	7	−1.3	12
Group Averages and Rank Sums.........	$ 714 23	$518 25	$447 25	30	24	−2.6	27	−5.4	32
Underdeveloped:									
Jackson...........	$ 619 9	$446 9	$376 8	19	8	8.5	12	−6.4	3
Gwinnett..........	532 11	384 11	321 11	26	5	4.8	8	−2.3	10
Franklin...........	584 10	423 10	357 10	17	10	1.2	6	−2.2	11
Hart..............	678 5	506 5	412 5	8	12	7.0	11	−3.2	9
Madison...........	623 8	465 6	396 7	13	11	6.2	9	−5.3	5
Banks.............	477 12	362 12	304 12	19	8	0.3	5	−4.7	8
Group Averages and Rank Sums.........	$ 586 55	$431 53	$361 53	17	54	4.7	51	−4.0	46
Level of Significance of Group Differences:...	P = 0.01	P = 0.03	P = 0.03	P = 0.02		P = 0.05		Not signif.	
Ohio...............	$1,260	$776	$623	49		−1.1		−6.1	
U.S................	1,282	794	606	34		4.8		−1.0	

[a] Computed from data in Table 22 and *United States Census, 1940, Agriculture,* I, County Table I.
[b] Computed from *ibid.,* County Tables I and IX.
[c] Computed from *ibid.,* and *United States Census, 1900, Agriculture.*

substantially and significantly higher in the developed group of counties. That it is the availability of long-term farm credit and the level of family income (through its influence upon the family's ability to borrow and to save) that determine a tenant's ability to become owner-operator is clear without elaboration. It is then not surprising that the rate of tenancy, for both white and Negro operators, should have declined more rapidly in the developed counties. During 1900-40, for white operators, the rate of tenancy decreased from 52.5 to 49.9 per cent in the developed counties—a decline of 2.6 per cent. On the other hand, this rate showed an increase in the underdeveloped counties over the same period from 58.4 to 63.1 per cent—an increase of 4.7 per cent. This group difference in the changes in the percentage of farms tenant-operated is significant at the conventional 5 per cent level.[35] For Negro operators, both groups of counties reported some decreases in their rate of tenancy. But here again, the developed industrial-urban counties enjoyed greater declines as a group, although the group difference is not statistically significant.

35. Data from Table 24 and *United States Census,* 1900-40, *Agriculture.*

From the above, it appears justifiable to conclude that our hypothesis is not inconsistent with the available empirical evidence. The relative insensitivity of the rate of Negro tenancy to industrial-urban development also seems to support the sub-hypothesis that, because of the traditional institutional barriers against Negroes, the beneficial effects of industrial-urban development—which was modest even in the developed counties—upon local capital markets have been sufficiently great to reach only the white tenants, leaving the Negro tenants largely unaffected. The reader may well wonder how one might explain the greater declines in the rate of tenancy shown by Negro operators in virtually all counties. The answer, of course, lies in the fact that Negro tenants had left agriculture through out-migration, voluntarily or otherwise, in far greater relative numbers than their white counterparts during 1900-40.[36] It is undoubtedly true that out-migration of Negro tenants from the South had been a more important factor behind the reductions in the rate of Negro tenancy in the South than changes in operator status from tenant to owner.

DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT AND RATE OF INVESTMENT IN THE HUMAN AGENT

We have just seen that, partly because of their more efficient local capital markets and partly because of the higher income level of their farm families, the developed counties had been able to show more substantial reductions in the rate of tenancy during 1900-40. That tenancy, insofar as it means primarily sharecropping in the South, has important implications with respect to economic development is clear from our rather detailed discussions of the problem in Chapter II. That education, i.e., investment in the human agent, also plays an important role in economic development by promoting labor productivity and by creating "superior" wants and greater awareness of economic opportunities is equally well-known to students of development problems. It is to the rate of investment in the human agent that we shall now turn our attention.

Hypothesis: That the developed counties, because of their more efficient local capital markets and higher per-capita income,[37] had shown higher rates of investment in the human agent.

In Table 25, we present data on government cost payments (by

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36. See data on migration during 1900-40 (Chapter VI, below).

37. This follows from the fact that the developed counties had not only higher family (farm and nonfarm) incomes but also somewhat smaller average family size. (See, for instance, the 1930 census statistics on families.)

TABLE 25. Investment in human agent, 1902, 1930-32, 1940[a]

County	Government Cost Payments for Schools Per Person 5-20[b]				Instructional Expenditures Per Pupil Enrolled, 1930[c]				Median School Years Completed 1940[d]		Subscriptions Per 100 Persons, 1930[e]			
	1902		1932		White		Negro				Daily Newspapers		15 National Magazines	
Developed:														
York	$1.60	9	$19.1	2	$37.7	2	$7.70	2	7.1	5½	10.4	3	8.5	3½
Greenville	2.47	1	26.6	1	41.1	1	9.37	1	7.6	1	16.7	1	13.8	1
Spartanburg	2.01	2	16.6	4	36.4	3	7.50	3	7.1	5½	9.6	4	10.5	2
Barrow	1.73	4	14.3	8	16.6	10	4.38	11	7.5	2	5.6	6	6.2	5
Lancaster	1.50	11	16.1	5	32.6	5	7.18	4	6.7	11	2.9	9	3.6	9½
Anderson	1.33	12	18.9	3	33.6	4	6.61	6	7.1	7½	10.8	2	8.5	3½
Group Averages and Rank Sums	$1.77	39	$18.6	23	$33.0	25	$7.12	27	7.2	32½	9.3	25	8.5	24½
Underdeveloped:														
Jackson	$1.70	6	$15.6	6	$20.1	8	$6.28	8	6.9	9	4.3	7	5.1	6
Gwinnett	1.67	7	13.8	9	14.5	11	6.62	5	7.2	4	5.8	5	3.9	8
Franklin	1.84	3	12.6	10	18.9	9	4.20	12	7.3	3	3.4	8	4.6	7
Hart	1.63	10	14.4	7	23.6	6	6.59	7	7.1	7½	2.0	11½	3.6	9½
Madison	1.57	8	11.6	11	20.2	7	4.75	10	6.4	12	2.6	10	2.2	11
Banks	1.72	5	8.9	12	10.4	12	5.31	9	6.9	10	2.0	11½	1.7	12
Group Averages and Rank Sums	$1.69	39	$12.8	55	$18.0	53	$5.63	51	7.0	45½	3.4	53	3.5	53½
Level of Significance	Not signif.		P=0.01		P=0.03		P=0.05		Not signif.		P=0.03		P=0.025	
Ohio	$12.38		$60.2		—[f]		—[f]		8.6		—[f]		—[f]	
Massachusetts	16.30		68.2		—		—		9.0		—		—	
U.S.	8.44		39.2		—		—		8.4		—		—	

[a] More recent data on cost payments for schools, instructional expenditures per pupil enrolled, and magazine and newspaper subscriptions are unfortunately not readily available.

[b] Compiled from *United States Census, Wealth, Debt, and Taxation, 1902*, Part III, Tables 10, 15, and 21 and from *ibid.*, 1932, Table 3. For 1902, county data as reported by the Census include only county disbursements and exclude all payments, if any, made by lower divisions. In Georgia and South Carolina, non-county payments were insignificant. However, in Massachusetts, Ohio, and the nation as a whole, non-county payments constituted the bulk of the totals. For this reason, the above averages for Ohio, Massachusetts, and the U.S. include payments made by all local units. If only county payments were included, these averages become: for Ohio $0.006, for Massachusetts $0.19, and for the U.S. $1.33. For 1932, data include payments by all local units, counties, cities, school districts, etc.

[c] Compiled from Charles S. Johnson, *Statistical Atlas of Southern Counties* (Chapel Hill: University of North Carolina Press, 1941).

[d] Compiled from *United States Census, 1940, Population*, V. II, State Tables 30 and 31 and County Table 21. Data pertain to persons of 25 years of age and over.

[e] Compiled from Johnson, *Statistical Atlas of Southern Counties*.

[f] Not available.

counties and lower divisions) for schools, instructional expenditures, newspaper and magazine subscriptions, and median school years completed for 1900-40. For the school year of 1902, both groups of counties reported almost identical government cost payments for schools per school-age person. The rank sum for both groups was thirty-nine, indicating no difference between the two groups in this respect. By 1932, however, the average ($18.60) for the developed counties was fully half again as large as that ($12.80) for the underdeveloped counties. In terms of rank sums, the total for the developed group was only twenty-three, indicating a significance level of the group difference of $P = 0.01$.[38]

These findings are supported by data on actual outlays per pupil enrolled for 1930. In that year, instructional expenditures per pupil averaged substantially higher in the developed counties for both the white ($33.00) and Negro ($7.10) than in the underdeveloped counties ($18.00 and $5.60 respectively). The probabilities that these differences may be explained by chance occurrences are only 0.03 to 0.05 respectively. Therefore, they may be considered significant (Table 25).

Also in 1930, the residents of the developed counties, in addition, appeared to spend more per capita on daily newspapers and national magazines. In the underdeveloped counties the rate of subscriptions was only 3.4 per 100 persons for daily newspapers and 3.5 for 15 leading national magazines. In the developed counties, the comparable figures were 9.3 and 8.5 respectively. The differences, as Table 25 indicates, are statistically significant. The above measures of investment in the human agent indicate that the developed counties have indeed invested more in their human agent since their acquisition of substantial industrial-urban development around 1900.

This statement, however, requires further explanation in the light of seemingly contradictory census data on median school years completed by persons of twenty-five years of age and over. In 1940, the median[39] for the developed group of counties was 7.2, only slightly

38. A scrutiny of state educational policies of Georgia and South Carolina rules out the possibility of the above significant differences being explained by differences in state policies since 1902, rather than by differential industrial-urban development within the study area. (See my *Economic Development of the South—Upper Southern Piedmont*, Progress Report USP-IV [mimeographed, Vanderbilt University, December, 1953], Chapter XXI.) At this point it may be well to remind readers that, through a geographical coincidence, all but one of the developed counties are in South Carolina and all six underdeveloped counties are in Georgia, hence, the necessity of ruling out the possible implications of differential state educational policies since 1902.

39. More precisely, the unweighted average of the county medians.

higher than that, 7.0, for the underdeveloped group. This group dif-
ference is far from significant. In an effort to reconcile the apparent
discrepancy between our measures of investment in the human agent,
which show significant group differences, and census returns on median
school years completed, which indicate only a slight and non-signifi-
cant group difference, we offer the following explanations. First of
all, census data on median school years completed say nothing about
the quality of education in our various counties. A year's education
in one county school or district may not be comparable to a year's
education in another. Secondly, the same census data are not standard-
ized for county variations in the race composition of their populations.
Since the Negroes seldom receive the same quality and quantity of
education as the white and since the developed counties had substan-
tially larger numbers of Negroes relative to total population, it follows
that the group differences in median school years completed would
have been much more substantial had separate data been available for
the white and Negroes. Thirdly, probable net out-migration from the
underdeveloped counties to the developed counties[40] may also have
served to dampen the sharpness of the group difference in this regard.
Finally, since the census data on school years completed pertain to all
persons aged twenty-five or more, they are influenced by conditions
prevailing in relatively distant past periods during which little differ-
ence in the rate of investment in the human agent existed between
our two groups of counties. Therefore, they do not reflect fully recent
county differences occasioned by the differential pattern of industrial-
urban development.

One other comment appears to be in order. Elsewhere in this
chapter, we have been concerned with the impact of differential per-
formance of local capital markets upon agriculture. But the data
presented thus far in this section pertain to both the farm and non-
farm segments of each county. The validity of our findings, insofar
as they are implicitly extended to mean that the developed counties
have had higher rates of investment in the human agent *in agriculture*,
assumes that what was true of the whole was also true of its component
parts. This assumption, dubious as it may sound taken by itself, is
probably quite valid in the light of our earlier findings with respect
to the interrelationships between industrial-urban development and
agriculture.

40. See *infra,* Chapter VI.

DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT AND RATE
OF INVESTMENT IN LAND

Hypothesis: That, because of their less efficient local capital markets, their higher rate of tenancy, and the lower level of income of their farm families, the underdeveloped counties were forced to invest less or disinvest more in land than the developed counties.

In Table 26, we present data on the weighted average soil capability class for our several counties. Soil capability, as used by soil scientists, is a combined measure of erosion hazards and the inherent quality of soil. Erosion hazards taken into account in this measure may be man-made as a result of sustained disinvestment in land or may be nature-determined. Land of the highest soil capability is given a classification of one, thus, the lower the weighted average soil capability class of a county, the higher the soil capability of its land. According to the recent data made available to us through the cooperation of the Soil Conservation Services of Georgia and South Carolina, the developed counties reported an average soil capability class of 3.01 as compared with 3.62 for the underdeveloped counties. This difference, though seemingly minor, is highly significant ($P = 0.01$).

Whether this finding indicates higher past rates of investment (or lower rates of disinvestment) in land in the developed counties depends on other supporting pieces of evidence. In Chapter II, we have already presented arguments for the relative homogeneity of the study area's land in terms of its natural attributes.[41] This fact, though not rigorously established, argues well for our thesis on differential rates of investment in land, when taken in conjunction with the soil capability data. This thesis is also consistent with the following facts, most of which have already been established.

Differential yield trends in the two groups of counties during 1900-40

Data in Table 26 indicate that with respect to all five major crops (cotton, corn, oats, wheat, and hay), the developed counties have shown substantially greater increases (or smaller decreases) than did the underdeveloped counties. In 1900, the former counties reported lower cotton and corn yields than the latter counties and about identical hay and wheat yields. But by 1940, all four crop yields were materially higher in the developed counties and three (cotton, corn, and wheat) significantly so. As for oats yield, the developed counties had significantly higher yields in both 1900 and 1940. The degree of significance

41. *Supra,* pp. 44-46.

TABLE 26. Soil capability index, 1950, and crop yields, 1900-40

County	Weighted Average Soil Capability Class[a]	CROP YIELD PER ACRE[b]									
		Cotton (bales) 1900	Cotton (bales) 1940	Corn (bushels) 1900	Corn (bushels) 1940	Wheat (bushels) 1900	Wheat (bushels) 1940	Oats (bushels) 1900	Oats (bushels) 1940	Hay (tons) 1900	Hay (tons) 1940
Developed:											
York	3.00 (3)	.35 (11)	.66 (5½)	8.59 (11)	13.97 (11)	4.88 (3)	11.79 (12)	7.6 (3)	22.5 (3)	.915 (11)	.938 (4)
Greenville	3.06 (4)	.38 (7½)	.76 (1)	9.78 (7)	15.79 (7)	5.90 (1)	12.51 (2)	7.1 (4)	22.7 (4)	1.178 (2)	.855 (6½)
Spartanburg	2.75 (1)	.40 (4)	.69 (4)	9.92 (6)	12.68 (6)	5.13 (5)	11.78 (9)	6.2 (9)	20.4 (9)	1.147 (4)	.886 (5)
Barrow	3.13 (6)	.38 (7½)	.60 (7)	9.12 (9)	8.66 (9)	5.55 (11)	10.69 (5)	6.3 (8)	18.7 (8)	1.070 (8)	.702 (12)
Lancaster	2.94 (2)	.42 (3)	.73 (3)	10.76 (3)	13.63 (3)	4.89 (4)	10.23 (11)	9.7 (1)	20.0 (1)	.881 (12)	1.010 (1)
Anderson	3.16 (7)	.35 (11)	.74 (2)	10.19 (5)	14.04 (5)	6.88 (2)	13.25 (1)	8.7 (2)	25.7 (2)	1.221 (1)	.855 (6½)
Group Averages and Rank Sums	3.01 (23)	.38 (44)	.70 (22½)	9.73 (41)	13.13 (41)	5.54 (26)	11.71 (24)	7.6 (27)	21.7 (27)	1.069 (25)	.874 (35)
Underdeveloped:											
Jackson	3.86 (10)	.39 (5½)	.48 (11)	8.57 (12)	10.21 (12)	5.53 (6)	10.64 (7)	5.2 (10)	18.5 (10)	1.046 (9)	.720 (11)
Gwinnett	3.36 (9)	.43 (1½)	.50 (10)	11.29 (2)	7.70 (2)	5.30 (12)	8.51 (12)	6.5 (6½)	15.5 (6½)	1.148 (3)	.939 (3)
Franklin	3.93 (11)	.39 (5½)	.56 (9)	10.59 (4)	9.29 (4)	4.92 (8)	9.64 (9)	5.1 (11)	16.9 (11)	1.093 (6)	.740 (9)
Hart	3.11 (5)	.35 (11)	.66 (5½)	9.31 (8)	10.05 (8)	5.41 (7)	11.23 (5)	6.5 (6½)	21.5 (6½)	.978 (10)	.769 (8)
Madison	3.21 (8)	.37 (9)	.59 (8)	8.96 (10)	9.05 (10)	5.67 (9)	9.43 (11)	6.9 (5)	19.3 (5)	1.104 (5)	.726 (10)
Banks	4.25 (12)	.43 (1½)	.47 (12)	12.69 (1)	8.87 (1)	5.77 (10)	9.62 (10)	5.0 (12)	13.1 (12)	1.085 (7)	.944 (2)
Group Averages and Rank Sums	3.62 (55)	.39 (34)	.54 (55½)	10.24 (37)	9.20 (37)	5.43 (52)	9.85 (54)	5.9 (51)	17.5 (51)	1.076 (53)	.806 (43)
Level of Significance of Group Differences	P = .01	Not signif.	P = .01	Not signif.	P = .04	Not signif.	P = .02	P = .05	P = .03	Not signif.	Not signif.
Ohio	[c]	[d]	[d]	39.74	49.34	15.70	19.93	37.7	32.3	1.179	1.392
U.S.	[c]	.39	.50	28.09	29.90	12.52	14.03	31.9	29.1	1.214	1.249

[a] Weighted by the number of acres in each soil capability class. Data compiled from information supplied by the State Offices, Soil Conservation Service, Athens, Georgia, and Columbia, S.C. This index is computed exclusive of land in forest. If the latter land is included, the group averages become 3.74 for the developed group and 4.27 for the underdeveloped group. This difference is still statistically significant at the conventional 5 per cent level.

[b] Computed from *United States Census, 1900-40, Agriculture.*

[c] Not available.

[d] Not grown in the North.

was, however, higher in 1940. These statistical findings, taken by themselves, have little meaning, since crop yields are undoubtedly influenced by soil capability as well as by the intensity of the application of labor and capital per acre of cropland. Greater economic progress in agriculture in the developed counties, however, need not mean greater application of labor and capital per acre. Unfortunately, we are unable to devise empirical measures to determine the difference, if any, in the intensity of labor and capital application between the two groups of counties with respect to the five above-mentioned major crops, since the utilization of labor and capital is shared by all the enterprises of a farm firm.

Significantly more rapid declines in the rate of tenancy in the developed counties

The negative effects of tenancy—particularly if it takes the form of loose, short-term leasing as it does in the South under the popular sharecropping arrangement—upon investment in land are well known.[42] It is, then, reasonable to expect higher rates of investment in land to have taken place in the developed counties.

More efficient local capital markets and higher farm family incomes in the developed counties

Other things being equal, both these conditions should induce farmers of the developed counties to discount future incomes from investment in land less heavily than those of the underdeveloped counties. This again would lead one to expect higher rates of investment to have taken place in the developed counties.

From the above pieces of evidence, it appears plausible to conclude that the industrial-urban counties have, in all probability, invested relatively more in land during 1900-40 than the nonindustrial-rural counties, as suggested by the soil capability data in Table 26.

<div style="text-align:center">SUMMARY</div>

Empirical findings presented in this chapter appear to have substantiated the following propositions with respect to the interrelationships between local industrial-urban development and agriculture as established through imperfect local capital markets:

General Propositions

That the rate of local industrial-urban development was positively related to:

42. See, for instance, A. C. Pigou, *The Economics of Welfare* (4th ed.; London: Macmillan and Co., 1948), pp. 175-76.

1. The volume of local bank deposits per capita
2. The availability of bank and other credits to local agriculture
3. The total volume per farm worker of (private and public) farm loans of all terms
4. The rate of capital formation in local agriculture
5. The application of capital per farm worker
6. Hence, the level of income (gross and net) from agriculture and the rate of net return to labor and management per farm worker and the level of total farm family income.

Specific Propositions

A. That the rate of local industrial-urban development, while influencing the rate of capital formation in local agriculture in general, has wrought positive changes in the rate of the following specific forms of investment:

1. Investment in the human agent engaged in agriculture
2. Investment in local agricultural land
3. Investment in rural roads serving local agriculture (Chapter IV above).

B. In addition, that local industrial-urban development, working through the medium of imperfectly-functioning local capital markets, has also influenced the direction and the rate of changes in the percentage of farms tenant-operated.

LOCAL LABOR MARKETS AND DIFFERENTIAL INDUSTRIAL-URBAN DEVELOPMENT, 1900-40

INTRODUCTION

IN THE PRECEDING chapter, we have shown that, because of the positive relationship between local industrial-urban development and the efficiency of the imperfectly-functioning local capital markets, the developed counties have since 1900 enjoyed greater capital formation in agriculture, resulting in increasingly higher ratio of capital to labor and also increasingly higher net returns to labor in agriculture as compared with those of the underdeveloped counties. How did the movement of farm labor react under this state of increasing disequilibrium? A more direct question is this: Why has agricultural labor of the study area, as a potential equilibrating force, failed to move in sufficient numbers in such a direction as to offset the differential growths of capital and narrow, if not close, the gap in labor returns in agriculture?[1] The answer to this query obviously lies in the imperfect manner with which local labor markets functioned in the study area.

Actually, the incentive to population movement was not provided by differential labor returns from agriculture between the two groups of counties alone, but by their differential availability of nonfarm employment opportunities as well. Higher rewards to labor outside of the study area in either agriculture or industry likewise offered inducement for labor movements from both the developed and underdeveloped counties of the area. Appropriate labor movements in a friction-free market in response to any or all of the above three force should

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1. Labor returns from agriculture rather than total net farm income (per worker) are taken as the basis for population movement because the latter includes net returns to all factors of production in agriculture.

have tended to equalize labor returns in agriculture among our various counties.

The role played by the labor market in allowing differential labor returns in agriculture to persist rests on the following basic propositions, some of which we shall later set forth in the form of hypotheses. These propositions are:

A. *With respect to the inducement offered by differential nonfarm employment opportunities between counties:*[2]

1. In either the developed or underdeveloped counties nonagricultural labor earned higher returns than agricultural labor.

2. These differences in labor returns were attributable not so much to preferences for an agrarian way of life as to the fact that nonfarm jobs were rationed. That is, at the prevailing nonfarm wage rates, the number of available nonfarm jobs fell short of the demand for such jobs or, conversely, the supply of labor for nonfarm jobs exceeded the demand for it.

3. Available nonfarm jobs were probably rationed in favor of local residents, and this rationing, reinforced by certain forces,[3] largely limited the more abundant nonfarm employment opportunities of the developed counties to the (farm and nonfarm) residents of these counties.

4. The greater alternative employment opportunities offered their farmers by the developed counties have increased the opportunity cost of (or value imputed to) labor in agriculture, thereby "forcing" a reorganization of the farm firm by which labor productivity is increased to a level which covers the higher cost.

5. Although out-migration of people was a means, open to and used by the underdeveloped counties, of reaching into the more abundant job markets of the developed counties, it has not been sufficiently great to raise the opportunity cost of (and returns to) labor in agri-

2. Most of these propositions are taken from William H. Nicholls, "A Research Project on Southern Economic Development...," *op. cit.*, pp. 190-95.

3. These forces were (1) physical and economic limits placed upon commuting by geographical distance and by the relative paucity and low quality of the under-developed counties' rural roads and (2) actual decreases in the relative numbers of these counties' white owner-operators and their families to whom went the bulk of part-time nonfarm jobs. The relevance of the second factor stems from the fact that (a) under the South's dominant type of tenancy, sharecropping, landlords for good reasons tended to frown upon a tenant's taking time off to work on off-farm jobs and (b) nonfarm jobs which were by and large more remunerative were largely limited to the whites.

culture in the underdeveloped counties to a level comparable with that in the developed counties.

6. These observed differences in labor returns cannot yet be attributed primarily to county differences in personal capacities, or to county differences in preferences for leisure and a particular way of life, or to county differences in the age composition of the farm labor force.

7. The induced reorganization of agriculture, aided by their more efficient capital market and their more abundant nonfarm job opportunities, has already begun to take place in the developed counties along two lines: the enlargement of full-time farms and the development of part-time farming.

B. *With respect to the inducement offered by differential labor returns in agriculture between counties:*[4]

1. Differential agricultural wage rates have not been able to call forth sufficient movements of agricultural labor to equalize farm-labor returns between counties because of the insignificance of agricultural wage laborers as an occupational group and because of the seasonality of their employment in the cotton counties.

2. Despite the high tenancy rate and the insecurity of tenure (hence, the relatively high mobility of tenant labor within agriculture in the cotton counties), the movement of this agricultural labor between counties has not been sufficient to equalize farm-labor returns. A plausible explanation is that county differences in tenant-owned farm capital, given substance by an imperfect capital market characterized by external capital rationing, tended to perpetuate some differences in farm-labor returns.

3. Other impediments to the net movement of labor within agriculture from the underdeveloped to the developed counties may be found in (1) the adherence of farm operators to the traditional concept of an agricultural ladder, (2) the rigidity and uniformity of leasing terms in sharecropping contracts which destroy much of the effectiveness of the high mobility of the tenants from an adjustment standpoint, and (3) the relative immobility of owner-operators.

C. *With respect to the inducement offered by differential labor re-*

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4. Under conditions of nonfarm job rationing and non-competing labor groups, differential returns to farm and nonfarm labor may well persist. But within agriculture returns to labor might tend toward equality between the developed and underdeveloped counties, given sufficient labor transfers.

wards between the study area and areas outside of it in either agriculture or industry:

In this connection, we shall make no attempt to offer specific hypotheses, since an adequate treatment of this aspect of the problem would, of necessity, involve an analysis of regional differences in terms of population, culture, and type of farming that would lie beyond the scope of our small-area approach. Certain hypotheses pertaining to labor movement in the Southern Piedmont may be extended to explain immobility of labor on a regional basis. On the latter basis, the contrast between a rustic life in a Southern cotton county and a bustling urban life in a typical Northern industrial center will loom large indeed among the many causes of labor immobility. It suffices to say here that regional immobility of labor is a fact well known to all students interested in regional development problems and that distances, both geographical and cultural (the latter are in themselves largely a consequence of differential rates of economic development), undoubtedly constitute a key factor.

THE RESPONSE OF LOCAL LABOR MARKETS TO DIFFERENTIAL NONFARM EMPLOYMENT OPPORTUNITIES

The Rationing of Nonfarm Jobs as a Primary Cause of Differential Farm and Nonfarm Labor Returns

Hypothesis: That, in either the developed or underdeveloped counties, nonagricultural labor earned higher average returns than agricultural labor and that these differences in labor returns were attributable not so much to preferences for an agrarian way of life or possible differences in personal capacities between the farm and nonfarm labor as to the fact that nonfarm jobs were rationed.

In Table 27, we present comparative data on rewards to labor in agriculture and several major nonagricultural sources of employment for 1940 (actually 1939). The major nonagricultural industries included are manufacturing and retail, wholesale, and service industries. In 1940, in either developed or underdeveloped groups of counties, rewards to labor (average annual wages and salaries per worker) in the manufacturing and other nonagricultural industries were substantially higher (132-281 per cent) than in agriculture. Taking all four major nonagricultural industries into account, the average annual reward to labor was $680, as compared with an average (net residual labor returns) of $254 for the agricultural labor in the developed coun-

TABLE 27.   Estimated rate of labor returns by industry, 1940

County	ANNUAL RATE OF LABOR RETURNS[a] (PER WORKER)							
	in Nonagricultural Industries						in Agriculture[d]	
	Manufacturing[b]	Others[c]		All				
Developed:								
York..................	716	707	3½	714	3	229	5	
Greenville.............	760	860	1	789	1	215	6	
Spartanburg...........	696	802	2	719	2	288	1	
Barrow................	545	525	8	543	8	248	4	
Lancaster.............	645	696	5	653	5	273	2½	
Anderson..............	650	708	3½	662	4	273	2½	
Group Averages...........	669	716	23	680	23	254	21	
Underdeveloped:								
Jackson...............	568[e]	477	10	550	7	201	8½	
Gwinnett..............	568[e]	472	11	540	9	185	11	
Franklin..............	443	497	9	470	11	200	10	
Hart..................	568[e]	543	6	554	6	213	7	
Madison...............	[f]	534	7	534	10	202	8½	
Banks.................	[f]	227	12	227	12	182	12	
Group Averages...........	537[g]	458	55	479	55	197	57	
Level of Significance of Group Differences..............		P = .01		P = .01		P < .01		
Ohio.....................	1,358	1,148		1,274		464		
U.S......................	1,153	1,132		1,143		405		

[a]Labor returns in agriculture are computed as a residual after returns to non-labor factors of production are deducted from the estimated net income from agriculture.   Elsewhere, labor returns are taken to be commensurate with the average wage rates as computed from census enumerations on total payrolls and numbers of employed persons.
[b]Total wages paid divided by the average number of "wage earners" during the census year. Computed from *United States Census, 1940, Manufactures,* V. III, Table 2.
[c]Total pay rolls in the retail, wholesale, and services industries divided by the total number of employees, including all salaried workers and corporation executives, but not proprietors.   Computed from *United States Census of Business, 1940, Retail Trade, Wholesale Trade,* and *Service Establishments.*
[d]Data from Table 23.
[e]Payroll data were withheld by the Bureau of the Census "to avoid disclosures."   For the method of arriving at the above estimates, see footnote b of Table 1.
[f]No manufacturing reported.
[g]Simple mean based on the data of Jackson, Gwinnett, Franklin, and Hart.

ties. In the underdeveloped counties, the corresponding averages were $479 and $197 respectively.[5] Table 27 also indicates similar differences of comparable relative magnitudes in Ohio and the nation as a whole.

Despite the fact that our data are rather crude for the purpose at hand,[6] there can be little doubt that there were some real differences in agricultural and nonagricultural labor returns in 1940.[7] How do we

5. We may also note that, in terms of both agricultural and nonagricultural labor returns, the developed counties reported substantially and significantly higher averages than the underdeveloped counties.

6. For instance, census county wage and employment data for the nonagricultural industries fail to distinguish between full- and part-time workers and male and female workers. The method and its weaknesses underlying our estimates of farm labor force and labor returns have been presented in detail in Chapters III and V.

7. No significance test is made in support of our conclusion since it would be redundant in view of the fact that in all counties nonagricultural labor returns were higher

account for these differences? Possibly, the answer lies partly in certain qualitative differences between farm and nonfarm labor. That such differences did exist in 1940 in the study area can be seen from the data in Table 28. The net effect of these differences is not at all clear since, as we shall see later, they tend to offset one another in some respects.

In Table 28 we present comparative data on three qualitative aspects of the farm population and the nonfarm population[8] (or total population when separate data for the nonfarm population are either unobtainable or extremely bothersome to compute), median school years completed, and the age and race compositions of the population. These population characteristics are assumed to be representative of those of the farm and nonfarm labor forces. We shall also make comments on the sex composition of the persons employed in farm and nonfarm occupations. In terms of median school years completed, the farm population (aged twenty-five and over) of *all* counties reported lower medians in 1940 than the total population. The inference is then that the farm labor in general was significantly less well educated than the nonfarm labor. This difference may account for part of the observed differences in labor returns between the farm and nonfarm labor.

Differences in the race composition, as measured by per cent of population Negro, between the farm and nonfarm labor may explain some of the differences in labor returns. In this connection, our statement in no way implies differences in the natural ability of the Negro and the white. It is simply a recognition of the fact that prevailing institutional arrangements in this country, particularly in the South, as yet do not permit the Negro to earn a return to his labor comparable to that received by the white even if both performed similar tasks with equal competence. Other things being equal, the farm labor would have earned lower average returns than the nonfarm labor, if its ranks contained a relatively larger number of Negroes. In 1940, taking all counties as a group, their farm population indeed showed greater relative numbers of Negroes (24.8 per cent) than their nonfarm population (19.8 per cent). But the differences are by no means consistent from county to county. The Negro population was relatively heavier on farms in seven counties, while less heavy in five others. A significance test indicates that in our area counties the farm population

than agricultural labor returns. Although the differences are in money terms, adjustment for differences in farm and nonfarm costs of living will remove only a relatively small part of the total differences. See, for instance, Johnson's figures in his article "Functioning of the Labor Market," *op. cit.*, pp. 76-78.

8. For definitions, see footnote a of Table 28.

TABLE 28. Qualitative differences between the farm population and the nonfarm[a] or total population, 1940

County	Median School Years Completed, Population 25 and Over[b]		Per Cent Population Negro[c]		Difference, Farm-Nonfarm		Pop. 20-39 as Percentages of Pop. 20-59[d] — White Male		Difference		Negro Male	
	Farm Pop.	Total Pop.	Farm Pop.	Nonfarm Pop.	Value	Rank	Farm Pop.	Total Pop.	Value	Rank	Farm Pop.	Total Pop.
Anderson	6.7	7.1	35.9	19.5	16.4	10	61.1	65.9	—4.8	—9	68.9	69.5
Banks	6.8	6.9	7.9	5.5	2.4	4	61.3	61.5	—0.2	—1	65.3	69.6
Barrow	6.9	7.5	21.8	14.5	7.3	6	61.3	63.4	—2.1	—6	69.5	71.5
Franklin	7.0	7.3	14.3	15.3	—1.0	—1	59.6	60.7	—1.1	—4	65.5	68.6
Greenville	7.0	7.6	25.3	21.3	4.0	5	58.1	65.2	—7.1	—11	65.1	69.2
Gwinnett	6.9	7.2	7.6	18.1	—10.5	—9	60.4	62.6	—2.2	—7	62.6	68.8
Hart	6.7	7.1	25.2	27.4	—2.2	—3	62.2	61.7	0.5	3	66.3	66.3
Jackson	6.6	7.0	17.0	18.7	—1.7	—1	60.9	62.9	—2.0	—5	66.3	70.4
Lancaster	6.0	6.7	42.3	25.1	17.2	11	60.7	67.6	—6.9	—10	65.0	69.7
Madison	6.2	7.4	17.8	26.5	—8.7	—8	60.0	60.3	—0.3	—2	71.7	73.8
Spartanburg	6.4	7.1	28.9	21.5	7.4	7	60.5	65.2	—4.7	—8	65.3	69.0
York	5.8	7.1	53.4	23.7	29.7	12	57.6	65.9	—8.3	—12	67.4	69.0
Averages	6.6	7.1	24.8	19.8	5.0		60.3	63.6	—3.3		66.6	69.6
Lower Rank Total of Like Sign						—23				3		
Level of Significance	Highly Significant		Not Significant				P < .01				Highly Significant	

[a] Actually, by farm and nonfarm populations, we mean rural-farm and non-rural-farm populations. Since the urban-farm population was negligible in all counties, our simplified terminology does no violence to its real meaning.

[b] Compiled and computed from *United States Census, 1940, Population*, V, II, Pts. 2 and 6, Tables 21 and 27. For data on total population, we have taken simple means of census median statistics for males and females.

[c] Computed from *ibid.*,

[d] Computed from *ibid.*, Tables 22, 27 and 27a.

[e] Since there is no crossover in values between the farm and total populations (i.e., in all counties the farm population showed consistently lower or higher values), we have neither computed the differences nor assigned ranks to them. Were this unnecessary procedure followed, the lower rank total of like sign would of course have been zero, indicating a level of significance far exceeding that of P = .01.

did not differ significantly from the nonfarm population with respect to per cent of population Negro[9] (Table 28). Thus we may rule out this aspect of population characteristics as a possible explanation of differential labor returns between the farm and nonfarm labor.

Data on the age composition of the population in the productive age group, roughly defined as the 20-59 group, indicate that in 1940 significantly lower proportions of this population fell in the 20-39 age group among those living on farms. This was true of both the white and the Negro.[10] It is not at all certain as to what such a difference may mean with respect to differential labor returns in the farm and nonfarm sectors. In certain occupations, youth undoubtedly commands premium wages and salaries because of its higher productivity. In others where experience is an important factor, it is at a decided disadvantage. It is doubtful that the observed differences in the age composition of the farm and nonfarm labor can be an important explanation for differential labor rewards. Moreover, as Table 28 indicates, the age differences, though significant, are relatively minor.

Lastly, we shall examine the sex composition of the farm and nonfarm labor forces. A glance at available census occupation statistics by sex[11] shows that striking and undoubtedly significant differences in this respect were present in 1940. Females were relatively far less important among farmers, farm managers, and farm laborers, including both wage workers and unpaid family workers, than among persons

9. The test used is that adopted from Frank Wilcoxon (see his *Statistical Procedures*, pp. 5-6). It differs from the rapid method of testing used thus far in that in the earlier cases we were interested in ascertaining whether two groups of counties, totally different from the standpoint of a certain criterion (industrialization), behaved differently with respect to certain measurable aspects in a statistically significant manner; whereas in the present analysis we are interested in determining if two definable segments of the population *within each county* differed with respect to certain characteristics in a sufficiently consistent manner in all counties so that the observed differences may be termed significant. In the latter case, the "replicates" or observations are paired to each county; in the former they are unpaired. Another difference is that where the replicates are paired one may allow different test conditions.

The mechanics of applying the significance test under paired replicates is briefly as follows: (1) Obtain the algebraic difference between the members of each pair, i.e., between the farm and nonfarm populations of each county. (2) Assign ranks to these differences, ignoring the signs. (3) Give the ranks the same sign as the differences to which they correspond. (4) Obtain the rank totals of positive and negative ranks separately. (5) Take the smaller total and refer to Table II (*ibid.*, p. 13) to determine the level of significance. For N = 12, smaller rank totals of 7, 10, and 14 correspond to .01, .02, and .05 levels of significance.

10. Although only data on the male population are presented in Table 28, the age composition of the female population indicates similar significant differences between the farm and nonfarm segments of population both for the white and Negro.

11. *United States Census, 1940, Population*, II, Pts. 2 and 6, Table 23.

engaged in nonfarm occupations. Since customarily female workers receive lower returns than male workers on comparable jobs, the relatively smaller numbers of females in the ranks of agricultural workers should, other things being equal, give rise to higher average returns to the human agent in agriculture. This aspect then tends to offset the effect of the existing farm and nonfarm differences in educational attainment.

There are, to be sure, other qualitative aspects in which the farm and nonfarm labor may differ. Ethnical differences, it may be argued, could have led to some differences in labor returns. Even though the status of this argument is far from settled, we are, nonetheless, unwilling to prejudge the issue. Let us examine this aspect of population characteristics in the Southern Piedmont study area. The ethnic homogeneity of the American Negro is well known. With respect to the white population, our historical findings in Chapter II indicate that, ethnically speaking, it had been relatively homogeneous in the Southern Piedmont. Although there are no recent data to enable us to say something definitive about the present ethnical composition of the farm and nonfarm labor forces in the Southern Piedmont, we have, nevertheless, found no historical evidence indicating that, as the industrial-urban development proceeded apace, the employment of nonfarm labor has been ethnically selective (as distinguished from racial selectivity). While the proportion foreign-born was higher among the urban population (hence, the nonfarm labor) in 1940 than among the rural population (hence, the farm labor), it was too insignificant even in the study area's largest cities (less than one per cent)[12] to be reckoned with as a possible factor behind differential labor returns.

It may be further argued that industrial-urban development has created certain cultural barriers which separated the farm population from the nonfarm population and that such a separation has resulted in "higher" wants among the latter and "inferior" wants among the former.[13] The thesis that "inferior" wants lead to lower annual returns to the human agent and lower incomes is plausible enough.[14] But as applied to the farm and nonfarm segments of the individual Piedmont counties, its relevance is probably very limited. In geographi-

12. *Ibid.*, Table 31.

13. See, for instance, Schultz, "Reflections on Poverty...," *op. cit.*, pp. 13-14, footnote 24.

14. Under perfect markets, "lower" wants need not mean lower rates of returns to labor either on a hourly or daily basis. Instead, they will be reflected by the smaller number of days worked during a year which in effect means lower annual returns to labor and lower annual incomes.

cal units as small as typical counties in South Carolina and Georgia, the cultural barriers separating the farm and nonfarm populations of the same county cannot be very great in a general area where no major topographical barriers exist, where many of its farm residents are in daily contact with local centers of commercial and industrial activities by commuting to their part- or full-time nonfarm jobs, and where in its rural parts the nonfarm population is often fully as important as the farm population.

In the same general vein, a popular argument is that the returns to agricultural labor have been low because farmers put heavy premiums upon their particular way of life and willingly accepted low returns out of their own preferences. This again rests on fundamental cultural differences between farm and nonfarm people. One can perhaps conceive that the cultural distance between a bustling Northern industrial center like Chicago or Detroit and a rustic community in a Southern cotton county may be sufficient to deter many a Southern farmer from joining the great northward movement. But to explain local differences in farm and nonfarm labor returns within our individual counties, the above argument really amounts to the frequent saying that Southern farmers earn little because they hunt and fish as much as they do. This implies two things: (1) that these farmers could increase returns to their labor substantially by spending less time hunting and fishing and more time farming; (2) that farming alone can provide the necessary leisure for the desired amount of hunting and fishing and that farmers consequently would turn down alternative employment opportunities, though they yield higher returns.

It is our considered opinion that a true statement of the facts with respect to (1) is that most Southern farmers hunt and fish as much as they do because they have little else to do on their farms that is worthwhile. This need not mean that the marginal productivity of labor is already zero. What it does mean is that further applications of labor, though without cost, will not yield returns sufficient to justify the foregoing of hunting and fishing. If further applications of labor on their farms were to bring returns comparable to the prevailing nonfarm wage rates, perhaps Southern farmers would gladly abandon hunting and fishing altogether. With respect to (2) above, historically speaking, Southern farmers' alleged allegiance to their way of life and their antipathy toward nonfarm jobs have never been strong enough to hinder the mass movement of textile mills into the Southern Piedmont. Extensive research failed to uncover a single instance in numerous works

on Southern industrialization and textile mills after the Civil War where employers complained of "labor shortage." Recent labor surveys in the South, conducted preparatory to the inmovement of new industries, likewise failed to show evidence of farmers' unwillingness to take on industrial jobs. On the contrary, the usual experience is that the registration of prospective job applicants far exceeds the number of prospective jobs available.[15]

In conclusion, while it is impossible to quantify the net resultant effect of all the above factors—some of which have offsetting effects—upon differential farm and nonfarm labor returns, it appears reasonable to assert on the basis of our empirical and historical findings and intuitive arguments that the observed differences in labor reward in 1940 cannot yet be attributed *primarily* to these factors,[16] but rather to the fact that the nonfarm jobs were rationed.

The Nature of the Rationing of Nonfarm Jobs and Its Consequences

Hypothesis: That available nonfarm jobs were rationed in favor of local residents and that such a rationing—reinforced by the physical and economic limits placed upon commuting by geographical distances, by the relative paucity and low quality of the underdeveloped counties' rural roads, and by actual decreases in the relative numbers of these counties' white owner-operators to whom went the bulk of part-time nonfarm jobs—had largely limited the more abundant nonfarm employment opportunities of the developed counties to the (farm and nonfarm) residents of these counties.

An interesting question at this point is: Has it been the conscious policy of the employers in the Southern Piedmont to ration the available nonfarm jobs in favor of nearby farm and nonfarm residents? Although we have no empirical facts from which to draw definitive inferences, certain considerations indicate that such probably has been the policy of the employers. In the first place, from the standpoint of local communities of which local employers are leading members, it is undoubtedly desirable to keep as much locally-generated income,

15. Mr. Harold Miller, head of the Tennessee Planning Commission, personally related such instances at a Conference on Southern Economic Development held at Vanderbilt University, Nashville, Tennessee, in 1953.

16. Our conclusion appears to be quite consistent with findings in a recent study on "Origins and Relation to Agriculture of Industrial Workers in Kingsport, Tennessee" (*Journal of Farm Economics* [August, 1956], pp. 828-36). In this study, the author, Clopper Almon, Jr., found that on the basis of a sample survey of 700 workers in two East Tennessee industrial plants there was a clear indication that "men reared on the farm and men reared in the town make about equally good workers."

hence, spending, within the community. This is good for the community's business in general. From the standpoint of the employers, such a practice is also sound since its upshot will be an accelerated growth of the community, leading to better public and private services at lower[17] costs and more adequate local factor markets as businesses become more concentrated in the area. Nearby residents probably make for more stable and punctual workers. Being short-distance commuters, they have fewer road hazards to cope with along the way. On the basis of the above considerations, it is reasonable to suppose that the employers preferred local residents to prospective long-distance commuters.[18]

Apart from this, prospective long-distance commuters suffered other disadvantages. The time and cost required for commuting obviously placed a limit upon the distance beyond which it became uneconomical to commute. According to one fairly recent South Carolina labor market survey, thirty miles was the "maximum reasonable commuting distance to and from a job" in the Southern Piedmont.[19] The same survey found that 78.4 per cent of a new spinning mill's workers had their homes within a fifteen mile radius from the plant, and that about 50 per cent had a commuting distance of only six miles or less.[20] It is clear then that commuting distances played a very important role in limiting available nonfarm jobs to nearby farm and nonfarm residents.

However, the cost and time of commuting are not solely a function of physical distance alone. They are also influenced by such factors as the concentration and quality of available rural roads. Insofar as the development of rural roads in the underdeveloped counties was significantly inferior to that in the developed counties in 1940,[21] prospective commuters of the former counties suffered an additional disadvantage apart from the fact that most of the nonfarm jobs available in the area

17. The argument that large cities are the high service cost centers is valid only with respect to those over the "optimum" size. There can be no question that no city in the Southern Piedmont had exceeded this size in 1940. Greenville, the leading city in the area, had a population of only 34,743 in that year.

18. Dr. Fletcher Riggs of the Tennessee Valley Authority, in a comparative (farm) income study of a group of Upper East Tennessee Valley counties, found, after interviewing a number of personnel managers of the area's leading industries, that local residents to receive some preference.

19. J. M. Stepp and J. S. Plaxico, *The Labor Supply of a Rural Industry*, South Carolina Agricultural Experiment Station Bulletin, No. 376 (July, 1948), p. 22. This thirty mile limit is in agreement with the War Manpower Commission's finding of twenty-five to thirty miles as a "normal commuting range." (*Ibid.*, p. 20.)

20. *Ibid.*, p. 21.

21. *Supra*, Ch. IV.

were concentrated in the developed counties. Another factor tending to limit the more abundant nonfarm employment opportunities of the developed counties to their local residents is the actual decreases during 1900-40 in the underdeveloped counties' relative numbers of white owner-operators in agriculture in contrast to the increases experienced by the developed counties.[22] Since landlords traditionally frown upon off-farm work by members of the sharecropper families and since the more remunerative nonfarm jobs are usually open only to whites, the above differential growths of the number of white owner-operators tended to lessen the competition for the developed counties' nonfarm jobs from persons in the underdeveloped counties.

On the basis of the aforementioned considerations, one would expect that the more abundant nonfarm employment opportunities of the developed counties have been limited largely to the residents of these counties. Data in Table 29 suggest that such was the case in 1940. In that year, 70 per cent of the employed (aged fourteen and over) residing in the developed counties were in nonfarm occupations. For the underdeveloped counties, the comparable figure was 35 per cent. This difference is highly significant statistically. The greater nonfarm employment opportunities available in the developed counties also appear to have encouraged greater female participation in the civilian labor force in these counties. Of the developed counties' white female population aged fourteen and over, 30 per cent was in the labor force in 1940 as compared with only 15 per cent for the underdeveloped counties. With respect to Negro females, the difference in this respect was equally substantial between the two groups of counties. In both cases, the group difference is highly significant.[23]

A more interesting question is: Did the rural-farm populations of the developed and underdeveloped counties feel the impact of differential nonfarm employment opportunities in the two groups of counties in the same manner as the total population? The answer is in the positive. In 1940, of the developed counties' rural farm residents who were employed, 27 per cent were in nonagricultural occupations. In the underdeveloped counties, only 16 per cent were in such occupations. The difference is highly significant. Female participation in the labor force—which amounted to 21 per cent of the female rural-farm

22. *Supra*, Ch. V.

23. Male participation in the labor force did not appear to have been affected by unequal nonfarm employment opportunities in the two groups of counties. This is what one would expect since unequal opportunities serve largely to create differential underemployment of labor which is not reflected in labor force statistics.

TABLE 29. Per cent total population fourteen and over in civilian labor force by sex and per cent labor force female, 1940[a]

County	% POPULATION 14+ IN CIVILIAN LABOR FORCE								% Employed Not Directly in Agri-cultural Occupations	
	Male				Female					
	White		Negro		White		Negro			
Developed:										
York..............	84.0	1	85.3	3	31.4	1	46.1	3	69.2	3
Greenville...........	79.5	9	79.1	11	31.1	3	46.8	1	85.0	1
Spartanburg.........	79.7	8	78.6	12	30.2	4½	40.8	4	77.4	2
Barrow.............	81.9	6	87.5	1	31.3	2	46.4	2	53.8	6
Lancaster...........	83.1	3	83.3	4	30.2	4½	34.5	6	67.8	4
Anderson...........	81.3	7	81.8	6	27.9	6	39.5	5	67.7	5
Group Averages and Rank Sums..........	81.6	34	82.6	37	30.4	21	42.3	21	70.2	21
Underdeveloped:										
Jackson.............	82.7	4	79.9	8	22.8	7	32.3	9	46.5	8
Gwinnett...........	82.1	8	82.3	5	15.0	9	33.7	8	51.1	7
Franklin...........	78.2	11	80.7	7	12.3	10	25.2	11	35.5	9
Hart...............	79.3	10	79.7	10	16.5	8	29.5	10	25.6	11
Madison...........	77.9	12	85.8	2	12.2	11	34.4	7	28.1	10
Banks..............	83.7	2	79.8	9	11.8	12	14.5	12	20.8	12
Group Averages and Rank Sums..........	80.6	44	81.4	41	15.1	57	28.3	57	34.6	57
Level of Significance of Group Differences....	Not signif.		Not signif.		P < .01		P < .01		P < .01	
Ohio.................	78.4		75.4		22.9		32.8		89.0	
Massachusetts.........	77.1		75.2		31.3		38.2		97.3	
U.S..................	78.9		79.8		24.1		37.3		81.3	

[a]Compiled from *United States Census, 1940, Population*, V. II, Pts. 2 and 6, Table 23.

population aged fourteen and over in the developed counties and 13 per cent in the underdeveloped counties—also showed similar responses to unequal nonfarm employment opportunities at the rural-farm level. Differences between per cent of rural-farm population in labor force and per cent of rural-farm population employed further indicate that for both males and females the proportion of the labor force that was either unemployed or on emergency WPA projects was higher in the underdeveloped counties (Table 30).

The above findings appear to be quite consistent with the hypothesis that the manner in which available nonfarm jobs were rationed and certain other factors related to commuting had largely limited the more abundant nonfarm employment opportunities of the developed counties to local farm and nonfarm residents. As for some of the direct consequences of such a situation, we point to the developed counties' higher percentages of their female population aged fourteen and over (both rural-farm and total) in the labor force, higher percentages of their employed (both rural-farm and total) in nonfarm occupations,

TABLE 30.   Rural-farm population of fourteen years of age and over—per cent in labor force by sex and employment status, 1940[a]

County	% Rural-Farm Population in Labor Force				% Rural-Farm Population Employed				% Employed Not Directly in Agricultural Occupations[b]	
	Male		Female		Male		Female			
Developed:										
York..............	85.4	1	28.0	1	79.9	2	25.9	1	29.3	3
Greenville..........	78.2	12	17.6	5	74.0	11	16.4	4	34.2	1
Spartanburg........	78.5	11	18.5	3	74.6	8	17.0	3	28.1	4
Barrow.............	84.6	3	26.2	2	78.9	3	25.1	2	23.4	5
Lancaster..........	83.0	5	17.9	4	78.1	4	16.1	5	32.6	2
Anderson...........	82.0	7	16.9	6½	77.3	6	15.8	6	19.1	7
Group Averages and Rank Sums..........	81.9	39	20.9	21½	77.1	34	19.4	21	26.9	22
Underdeveloped:										
Jackson............	84.2	4	16.9	6½	80.4	1	15.6	7	18.2	8
Gwinnett...........	82.7	6	10.5	11	78.0	5	9.5	10	22.8	6
Franklin...........	78.7	10	8.0	12	73.7	12	6.8	12	13.4	11
Hart...............	79.8	8½	16.5	8	75.6	7	15.0	8	11.2	12
Madison............	79.8	8½	12.9	9	74.4	9½	11.3	9	15.6	9
Banks..............	85.1	2	11.3	10	74.4	9½	7.5	11	14.2	10
Group Averages and Rank Sums..........	81.7	39	12.7	56½	76.1	44	10.9	57	15.9	56
Level of Significance of Group Differences....	Not signif.		P < .01		Not signif.		P < .01		P < .01	
U.S..................	81.3		12.1		74.8		10.8		21.8	

[a]Computed from *United States Census, 1940, Population*, V. II, Pts. 2 and 6, Table 27 and Pt. I, Tables 18 and 19.
[b]Includes all persons not reported as farmers and farm managers, farm wage workers and farm foremen, and unpaid farm family workers.

and lower percentages of their rural-farm labor force either unemployed or on emergency WPA projects.

The Impact of Differential Farm and Nonfarm Labor Returns under Conditions of Nonfarm Job-Rationing upon Local Agriculture

We have thus far established (1) that in all counties the return to the human agent in nonagricultural industries has been a good deal higher than that in agriculture and (2) that nonfarm jobs were rationed in favor of nearby residents, resulting in significantly higher relative nonfarm employment among the rural-farm residents of the developed counties. We are now interested in examining the effect of these developments upon the agriculture of the developed and underdeveloped counties.

At the outset, we posit the following proposition: That the greater alternative employment opportunities—which were generally more rewarding—offered their farmers by the developed counties have increased the opportunity cost of or value imputed to labor in agriculture and that this in turn has forced a reorganization of the farm firm, increasing labor productivity to a level which tends to cover the higher

cost. In this regard, the internal reorganization may proceed along two lines: (1) The enlargement of full-time farms with the view of raising the marginal value productivity curve of labor so that it intercepts the family labor supply curve at a point sufficiently high to cover the increased opportunity cost. This cost is equal to the prevailing nonfarm wage rate in the absence of job rationing. (2) The formation of part-time farms with the idea of employing off-farm a sufficient portion of the family labor, forthcoming at the prevailing nonfarm wage rate, such that the remaining portion will be equal to the equilibrium labor input[24] of the family farm. In this case, there is no need for scale or non-labor factor adjustment within the farm firm as long as we assume away technical rigidity in the production function.[25] Under a homogeneous production function (hence, constant returns to scale) and in the absence of capital- and job-rationing, these two adjustment alternatives are equally preferable. In both cases, the total farm product is exhausted when functionally distributed to labor and other factors on the basis of their respective marginal productivities. Rates of returns to non-labor factors are completely equal between the full-time and part-time sectors of agriculture. Rates of returns to labor are also identical not only among the two agricultural sectors but between the farm and nonfarm sectors as well.

In the real world, both capital and jobs are rationed. Moreover, as local industrial-urban development proceeds apace, both alternative employment opportunities and wage rates rise over time. Just as in the case of the proverbial receding horizon, the adjustment process goes on but never reaches the moving equilibrium. The situation is then one of a series of short-run disequilibria under dynamic conditions over time.

Now, we shall attempt to show that, aided by their gradually improving capital markets and their increasing alternative employment opportunities, the developed counties have been reorganizing their farm firms more rapidly along both lines. Data in Table 31 appear to substantiate this hypothesis. In 1940, the size of "full-time commercial" farms,[26] as measured by the value of farm products per farm ($803 for the developed counties and $648 for the underdeveloped), was significantly larger in the developed counties. At the same time, these counties reported 13 per cent of their farm operators having worked

24. Given by the intersection of the marginal labor productivity schedule and the wage line.
25. One other obvious alternative is the abandonment of the family farm.
26. For the definition of "full-time commercial" farms, see Table 31, n. a.

TABLE 31.   Size of full-time commercial farm and index of part-time farming, 1940; and size of all farms, 1900-40

County	V.F.P. Per Commercial Farm[a]		% Farms Whose Operators Worked 100 or More Days Off-farm[b]		V.F.P. Per All Farm[c]			
					1900		1940	
Developed:								
York.....................	$ 751	6	16.0%	2	$397	3	$ 660	6
Greenville...............	774	4	14.4	3	330	10	646	7
Spartanburg.............	888	1	13.0	4	361	7	785	1
Barrow.................	764	5	7.1	9½	387	4½	684	4
Lancaster...............	814	3	17.9	1	434	1	727	3
Anderson...............	826	2	10.0	6	421	2	783	2
Group Averages and Rank Sums...................	$ 803	21	13.1%	25½	$388	27½	$ 714	23
Underdeveloped:								
Jackson.................	$ 697	7	8.7%	7	$387	4½	$ 619	9
Gwinnett...............	626	10	11.4	5	376	6	532	11
Franklin................	621	11	7.0	9½	316	12	584	10
Hart...................	690	8	3.2	12	351	8	678	5
Madison................	672	9	4.9	11	322	11	623	8
Banks..................	581	12	7.5	8	335	9	477	12
Group Averages and Rank Sums...................	$ 648	57	7.1%	52½	$348	50½	$ 585	55
Level of Significance of Group Differences..............	P < .01		P = .035		Not significant		P = .01	
Ohio.......................	$1,666		21.3%		$726		$1,260	
U.S.......................	1,712		15.5		652		1,282	

[a] Value of farm products sold, traded, or consumed on farms per "full-time commercial" farm, defined to include only those farms whose 1939 major source of farm income was other than home consumption.   Data computed from *United States Census, 1940, Agriculture*, V. II, Pt. 3, County Tables XVII and XIX and V. III, Ch. X, Table 10.
[b] Data computed from *ibid.*, V. I, Pt. 3, County Tables I and IX.
[c] Computed from *ibid.*, V. II, Pt. 3, County Table XVII and from *United States Census, 1900*, V. V, *Agriculture*, Pt. 1, Table 19.

100 or more days off-farm, as compared with only 7 per cent for the underdeveloped counties. This difference in the index of part-time farming is also statistically significant. Insofar as both forms of reorganization represented fuller utilization of formerly underemployed farm labor—one by combining more land and non-land capital with existing labor, the other by shifting part of this labor to nonfarm work —their effect was to increase labor productivity. That the developed counties enjoyed higher agricultural labor productivity in 1940, as measured by imputed (residual) net labor returns per worker, is clear from the findings presented in the preceding chapter.

Looking back to 1900, we find that, while the developed counties already showed somewhat higher values of farm products per *all farm* (group average $388) than the underdeveloped counties ($348), the differences were small and not statistically significant. By 1940, however, the difference between the two group averages ($714 and $585 respectively) had become highly significant. Bearing in mind that in

1940 part-time farming (smaller per-farm output) was almost twice as important in the developed counties as in the underdeveloped counties and in 1900 it was of little or no consequence in either group of counties, we may conclude that the above differential growths in per-all-farm value of farm products indicate significantly more extensive farm reorganization in the developed counties, during 1900-40, in terms of both the enlargement of full-time farms and the development of part-time farming.

With respect to the underdeveloped counties, we have seen that because of employer preferences and distance barriers the residents of these counties had only limited access to the more abundant nonfarm job opportunities of the developed counties, as indicated by their significantly lower relative nonfarm employment in comparison with that among the residents of the developed counties. But this only shows that the residents of the underdeveloped counties, as prospective commuters to available nonfarm jobs, were at a distinct disadvantage vis-à-vis those of the developed counties. Undoubtedly, many of the former had migrated to the developed counties (or to areas outside of the Piedmont) in an effort to better avail themselves of the nonfarm employment opportunities that existed elsewhere. It is to the question of migration that we now turn our attention. In this connection, we advance the following hypothesis.

Hypothesis: That, although out-migration of people was a means, open to and used by the residents of the underdeveloped counties, of reaching into the more abundant job markets of the developed counties, it has not been sufficiently great to raise the actual returns to labor in agriculture to a level comparable with that of the developed counties.

In Tables 32 through 34 we present net migration estimates by decade for the white, Negro, and total population of our various counties. While these estimates are necessarily crude for want of satisfactory county vital statistics, particularly during the first two decades after 1900, they point to an unmistakable, differential migration pattern between our two groups of counties. Their reasonableness is fully attested to, as we shall later see, by the group differences in the age-sex composition and the growth of total population.

A glance at the tables on the following pages reveals striking differences in the migration pattern of the developed and underdeveloped counties during 1900-40. With respect to the white population (Table 32), the developed group showed some net in-migration in all but one decade. Expressed as a percentage of its 1900 population, the total net

TABLE 32.   Estimated net relative in-migration (+) and out-migration (−), White population, 1900-40[a]

County	NET MIGRATION AS % OF ORIGINAL POPULATION[b]					
	1900-10	1910-20	1920-30	1930-40	1900-40[c]	Average Per Decade[d]
Developed:						
York	− 9.5% 9	0.3% 2	2.9% 3	4.7% 3	2.1% 3	− 0.4% 3
Greenville	17.4 1	12.1 1	18.2 1	8.3 2	90.7 1	14.0 1
Spartanburg	6.1 4	− 6.8 4	10.5 2	0.7 4	14.2 2	2.6 2
Barrow	2.1 6	−13.5 8	−11.5 6	− 5.5 6	−38.4 6	− 7.1 6
Lancaster	−11.6 10	−11.5 7	−10.0 5	9.7 1	−23.6 5	− 5.9 5
Anderson	11.7 2	−10.3 6	2.2 4	− 2.9 5	−10.7 4	− 0.9 4
Group Averages and Rank Sums	2.7 32	− 5.0 28	1.3 21	2.5 21	5.7 21	0.4 21
Underdeveloped:						
Jackson	8.8 3	−14.3 9	−14.5 7	−19.4 10	−57.1 8	− 9.9 7
Gwinnett	8.6 8	− 7.1 5	−19.6 8	− 8.0 7	−53.0 7	−10.8 8
Franklin	− 0.2 7	−16.3 10	−29.5 12	−12.4 8	−74.6 10	−14.6 10
Hart	−16.0 11	−22.6 12	−27.0 11	−13.6 9	−86.5 11	−19.8 11
Madison	2.9 5	− 4.7 3	−23.9 9	−23.9 12	−68.0 9	−12.3 9
Banks	−16.8 12	−22.5 11	−24.6 10	−21.0 11	−90.3 12	−21.2 12
Group Averages and Rank Sums	− 5.0 46	−14.6 50	−23.1 57	−16.4 57	−71.6 57	−14.8 57
Level of Significance of Group Differences	Not signif.	Not signif.	P < .01	P < .01	P < .01	P < .01
Georgia	− 0.9	− 0.6	0.4	0.2	− 2.0	− 0.5
South Carolina	1.4	1.5	0.9	2.9	0.5	.02
Ohio	3.8	8.4	4.8	− 0.8	18.7	4.1
Massachusetts	13.6	2.4	1.6	1.7	16.0	4.0
U.S.	7.7	2.7	5.7	0.6	20.1	4.2

[a] Computed from Appendix III, Tables 51 and 47.
[b] Net number of migrants divided by the census population at the beginning of the period.
[c] Net total number of migrants (Appendix III, Table 51, Col. 5) during the entire period 1900-40 as a percentage of the initial population in 1900.
[d] Simple arithmetic mean of the net relative migration for the four decades under consideration.

Table 33. Estimated net relative in-migration (+) and out-migration (−), Negro population, 1900-40[a]

County	Net Migration as % of Original Population[b]											
	1900-10		1910-20		1920-30		1930-40		1900-40[c]		Average Per Decade[d]	
Developed:												
York	− 6.0%	4	−16.1%	9	−18.3%	3	−10.7%	6	−55.8%	3	−12.8%	4
Greenville	−14.9	11	− 2.7	1	13.4	1	3.7	2	8.8	1	1.2	1
Spartanburg	− 2.9	3	− 3.0	4	4.8	2	− 4.6	3	− 1.3	2	0	2
Barrow	− 8.2	5	−20.4	12	−39.0	8	− 7.8	1	−69.4	7	−15.0	6
Lancaster	−13.5	10	−15.9	8	−25.2	5	− 7.6	5	−59.8	5	−15.6	7
Anderson	− 9.8	7	−16.8	10	−24.3	4	− 5.8	4	−61.4	6	−14.2	5
Group Averages and Rank Sums	− 8.3	40	−11.6	44	−14.8	23	− 2.9	21	−39.8	24	− 9.4	25
Underdeveloped:												
Jackson	− 8.8	6	− 3.3	5	−44.7	9	−24.1	11	−82.7	9	−20.2	10
Gwinnett	−15.4	12	−18.8	11	−31.3	6	−12.4	8	−81.7	8	−19.5	9
Franklin	− 9.9	8	− 2.3	3	−47.1	10	−24.0	10	−89.8	11	−20.8	11
Hart	− 4.3	2	0.5	1	−37.9	7	−10.8	7	−58.4	4	−11.0	3
Madison	10.6	1	− 7.1	7	−50.2	11	−25.1	12	−85.1	10	−18.0	8
Banks	−11.2	9	− 3.5	6	−66.2	12	−23.3	9	−106.3	12	−26.1	12
Group Averages and Rank Sums	− 5.1	38	− 5.8	34	−46.2	55	−20.0	57	−84.0	54	−19.3	53
Level of Significance of Differences	Not signif.		Not signif.		P = .01		P < .01		P = .02		P = .03	
Georgia	− 7.0		− 4.1		−16.1		− 8.0		−38.8		− 8.8	
South Carolina	−16.6		−12.7		−18.6		− 9.7		−60.7		−14.4	
Ohio	14.5		63.2		65.4		8.3		240.1		37.9	
Massachusetts	14.7		10.8		10.9		2.7		46.5		9.8	
U.S.	− 3.1		− 6.4		6.9		0.9		− 0.8		− 0.4	

[a] Computed from Appendix III, Tables 51 and 52. In this table, as elsewhere, by Negro population we generally mean colored population as defined by Census Bureau. In the Piedmont, these two populations are virtually identical.
[b] [c] [d] See corresponding footnotes in the preceding table.

TABLE 34.   Estimated net relative in-migration (+) and out-migration (−), total population, 1900-40[a]

County	NET MIGRATION AS % OF ORIGINAL POPULATION[b]											
	1900-10		1910-20		1920-30		1930-40		1900-40[c]		Average Per Decade[d]	
Developed:												
York	− 7.7%	8	− 8.4%	4	− 7.3%	3	− 1.7%	4	−28.3%	3	− 6.3%	4
Greenville	5.6	1	9.2	1	16.9	1	7.2	1	61.1	1	9.7	1
Spartanburg	5.1	3	− 5.6	3	8.6	2	− 0.7	3	9.2	2	1.9	2
Barrow	− 0.7	6	−15.3	2½	−17.9	6	− 3.3	5	−46.8	6	− 9.3	5
Lancaster	−12.5	11	−13.7	10½	−16.9	5	− 2.9	2	−44.1	5	−10.1	6
Anderson	2.6	5	−12.7	7	− 9.8	4	− 3.7	6	−32.1	4	− 5.9	3
Group Averages and Rank Sums	− 1.3	34	− 7.8	34	− 4.4	21	0.1	21	−13.5	21	− 3.3	21
Underdeveloped:												
Jackson	− 3.3	4	−11.2	6	−23.0	8	−20.3	10	−65.2	8	−12.8	8
Gwinnett	− 9.7	9	− 8.9	5	−21.3	7	− 8.5	7	−57.6	7	−12.1	7
Franklin	− 2.5	7	−13.2	8	−33.4	11	−14.4	9	−78.2	10	−15.9	10
Hart	−10.4	10	−15.3	10½	−30.4	9	−12.1	8	−78.7	11	−17.3	11
Madison	5.2	2	− 5.6	2½	−30.9	10	−24.1	12	−73.0	9	−13.9	9
Banks	−15.7	12	−18.6	12	−33.5	12	−21.2	11	−93.5	12	−22.3	12
Group Averages and Rank Sums	− 5.0	44	−12.1	44	−28.8	57	−16.9	57	−74.4	57	−15.7	57
Level of Significance of Group Differences	Not signif.		Not signif.		P < .01		P < .01		P < .01		P < .01	
Georgia	− 3.7		− 2.2		− 7.0		− 2.9		−19.2		− 4.0	
South Carolina	−10.3		− 7.7		−10.0		− 2.8		−35.2		− 7.7	
Ohio	4.0		9.7		6.8		− 0.3		23.9		5.1	
Massachusetts	13.6		2.5		1.7		− 1.6		16.4		4.0	
U.S.	6.4		1.7		5.8		0.6		17.9		3.6	

[a] Computed from Appendix III, Tables 47, 51 and 52.
[b][c][d] See corresponding footnotes in Table 32.

in-migration (28,400 persons) during 1900-40 for this group amounted to 5.7 per cent. The underdeveloped group reported very substantial net out-migration in all four decades, reaching a peak during 1920-30.[27] Total net out-migration (49,078) for all four decades came to a surprising 71.6 per cent of the group's 1900 population. The latter percentage, however, contains an inherent bias where differences in the migration pattern are great, as they are in our case, since the 1900 population is used as the base. Far more satisfactory as a measure of average migration rate over a long period of time is the simple average rate per decade. In terms of this measure, the developed counties showed an average rate of 0.4 per cent (in-migration) during 1900-40 as compared with an average rate of –14.8 per cent (out-migration) for the underdeveloped counties.

The migration pattern of the Negro population (Table 33) indicates similar differences, though less striking, between the two groups of counties. Over the same four decades, while both groups suffered substantial net out-migration, the average rate per decade was over twice as great in the underdeveloped group (–19.3 per cent) as in the developed group (–9.4 per cent). Taking into account both whites and Negroes, we find that the total net out-migration from the developed counties was only 6,426 persons during 1900-40, as compared with a net

27. Differential migration between the developed and underdeveloped groups was greatest during that decade. A possible argument is whether this can be explained by unequal extents to which our counties were affected by boll weevils which invaded the Piedmont early in the twenties and caused considerable damage throughout the decade. Since the pests followed an eastward movement from Mexico and Texas and since all but five developed counties were in South Carolina, hence, east of the Savannah River, one may wonder if the developed counties as a group had not escaped with relatively less damage, thus accounting for the striking differences in the migration pattern during the decade. This thesis, though interesting, does not appear plausible, for in that decade South Carolina suffered much more substantial net out-migration than Georgia (Tables 32 through 34). However, Dr. W. E. Hendrix, who knows the Piedmont as intimately as anyone else, suggested that our developed counties were probably less seriously inflicted with the boll weevil. He further suggested in his correspondence with the writer that if his suspicion is well-founded the weevil "must share joint credit with industrial development for the differentials in [farm] incomes ....." The conclusion is a reasonable one when viewed in a short-run context. In a long-run context, if the pest drove people out and forced down land values in the underdeveloped counties, as it would have, its effects upon these counties' agriculture need not have been all negative. By forcefully laying the ground for the needed adjustment process, its net income effect might have been positive in the long run. When so viewed, one is no longer sure whether the weevil conceals or reinforces farm income differentials attributable to the pattern of industrial-urban development. In our opinion, its net income effect, if negative, upon the agriculture of the underdeveloped counties was probably minor even if the suggested pattern of weevil infestation is granted.

total of 68,055 out-migrants for the underdeveloped counties whose total combined population during that period averaged no more than one-third that of the developed. In terms of average rate per decade, net total out-migration during the forty-year period was 3.3 per cent in the developed counties and 15.7 per cent in the underdeveloped counties (Table 34).

As for the statistical significance of these differences, Tables 32-34 indicate that while the group algebraic differences in the net migration rates of the developed and underdeveloped counties are not significant during 1900-10 and 1910-20 with respect to either the white, Negro, or total population, they are highly significant during the two following decades. The average rate per decade for the entire forty-year period is also significantly different between the two groups of counties in all respects. To sum up, we may conclude that migration, as an equilibrating force, had indeed been active in equalizing the unequal employment opportunities of the two groups of counties. The next question is whether it had been sufficiently great to equalize agricultural labor returns among counties. Before we turn our attention to this query, let us first check the reasonableness of our migration estimates against certain more reliable data.[28]

As a very rough check, we refer to the total population growth data in Table 35. These data show that during all decades, 1900-40, total population grew at a more rapid rate, both absolute and relative, in the developed group. In fact, during the 20's and 30's, total population declined absolutely in the underdeveloped group, while it continued to increase at a steady absolute rate (about 50,000 per decade) in the developed group. Relative to the 1900 population, the latter group showed an increase of 70 per cent in total population during the entire forty-year period as compared with only 5 per cent for the underdeveloped group.[29] This difference is too great to be explained by possible county differences in the crude rate of natural increase.[30]

28. The rather crude nature of the migration estimates can be seen from the description of the methods of estimation shown in several footnotes to Appendix III, Table 51.

29. It is interesting to note that the forty-year growth rate of the developed counties is comparable to that of the United States, Massachusetts, and Ohio. On the other hand, Table 34 shows important differences in net migration, which was negative in the developed counties and positive in the selected states and the nation. A reconciliation of these data leads to the obvious conclusion that the latter had lower crude rates of natural increase.

30. In fact, natural increase, whose average rate during 1920-40 was somewhat higher in the underdeveloped counties than in the developed, far from explaining any part of it, will increase the difference in total growth rate that is to be explained.

TABLE 35. Total population, 1900-40[a]

County	1900	1910	1920	1930	1940	Relative, 1940 Index (1900 = 100)	Rank
Developed:							
York..............	41,684	47,718	50,536	53,418	58,663	141%	4
Greenville.........	53,490	68,377	88,498	117,009	136,580	255	1
Spartanburg........	65,560	83,465	94,265	116,323	127,733	195	2
Barrow............	10,038	12,207	13,188	12,401	13,064	130	6
Lancaster..........	24,311	26,650	28,628	27,980	33,542	138	5
Anderson..........	55,728	69,568	76,349	80,949	88,712	159	3
Group Totals:.........	250,811	307,985	351,464	408,080	458,294	170[b]	21[c]
Underdeveloped:							
Jackson............	18,486	23,200	24,654	21,609	20,089	109%	8
Gwinnett..........	23,257	26,201	30,327	27,853	29,087	125	7
Franklin...........	14,939	17,894	19,957	15,902	15,612	105	10
Hart..............	14,492	16,216	17,944	15,174	15,512	107	9
Madison...........	13,224	16,851	18,803	14,921	13,431	102	11
Banks.............	10,545	11,244	11,814	9,703	8,733	83	12
Group Totals:.........	94,943	111,606	123,499	105,162	102,464	105[b]	57[c]
Ohio (000 omitted).....	4,158	4,767	5,759	6,647	6,908	166%	..
Massachusetts (000)....	2,805	3,366	3,852	4,250	4,317	154	..
U.S. (000 omitted).....	75,995	91,972	105,711	122,775	131,669	173%	..

[a] Compiled from Appendix III, Table 47.
[b] Unweighted averages. The weighted averages comparable to the state and U.S. averages are: 183 per cent for the developed group and 108 per cent for the underdeveloped.
[c] Group rank sums indicate that the population growth rates have been significantly higher in the developed counties (P < .01).

Total population growth data appear to be quite consistent with our migration estimates.

Before we undertake to check the reasonableness of our migration estimates against the age-sex composition of the area counties' population, let us first set forth several known propositions concerning the age and sex selectivity of migration. Historically, it has been true that the mobility of people varies with their age and sex:

1. People in the early adult age group, both male and female, have been relatively more mobile.

2. Long distance migration has been male selective.[31]

3. Short distance, rural-urban migration has been female selective.[32]

On the basis of the above propositions, we would expect the ob-

For the crude rates of natural increase of our various counties, see Tang, *Economic Development of the South—Upper Southern Piedmont*, Progress Report USP-IV (December, 1953), Tables 102-3, pp. 21 and 23.

31. For historical proofs with respect to two specific areas in the South, see *ibid.*, Progress Report USP-I (June, 1953), pp. 12-13 and William H. Nicholls, *Economic Development of the Upper East Tennessee Valley,* Progress Report ETV-I (mimeographed, Vanderbilt University, January, 1953), p. 13.

32. See for instance J. B. Knox, *The People of Tennessee* (Knoxville: The University of Tennessee Press, 1949), p. 36.

served differential pattern of migration among the developed and underdeveloped counties, if our estimates are correct, at least qualitatively, to have resulted in (1) relatively heavier concentration of both males and females in the early adult age group (20-39) in the developed counties as a consequence of their greater net in-migration or smaller net out-migration in recent years; (2) relatively greater concentration of both males and females in the late adult age group (40-59) in the developed counties as a consequence of their greater net in-migration or smaller net out-migration in the more distant past; (3) less significant differences between the developed and underdeveloped counties in the relative importance of the late adult age group than in that of the early adult age group (since the differential pattern of migration had been less distinct during the early decades of this century); (4) lower male-female sex ratio in the developed counties (since the male selectivity of their long-distance out-migrants, to Northern industrial centers primarily, has undoubtedly been accompanied by the female selectivity of their short-distance, rural-urban in-migrants from the nearby underdeveloped counties); and (5) higher male-female sex ratio in the underdeveloped counties (since the male selectivity of their long-distance out-migrants has been at least partially offset by the female selectivity of their short-distance, rural-urban out-migrants to the developed counties).

It is against these expected results that we shall apply the age-sex composition check to the migration estimates presented earlier. Actually, this part of the analysis is designed to serve a far more important purpose than that of testing the reasonableness of the migration estimates. If the above expected results are fully borne out by the available data on the age-sex composition of our counties' population, the same analysis can then be applied, in reverse, to the age-sex composition of the rural-farm population—for which it is impossible to make independent migration estimates—and appropriate inferences drawn about the pattern of migration of the rural-farm populations of the developed and underdeveloped counties. In this fashion, we shall attempt to evaluate the adequacy of the rural-farm out-migration from the underdeveloped counties as an equilibrating force in agriculture.

Tables 36 and 37 indicate that the expected differences in the age-sex composition of the populations of the developed and underdeveloped counties are fully consistent with available census data. In 1940, the percentage of population in the early adult age group (20-39) was significantly higher in the developed counties than in the underdevel-

TABLE 36.   Percentage of total population in selected age groups by sex and race, 1940, and male population by race, 1900[a]

County	% Population in the 20-39 Age Group				% Population in the 20-59 Age Group				% Male Population in the 18-44 Age Group, 1900	
	White		Negro		White		Negro		White	Negro
	Male	Female	Male	Female	Male	Female	Male	Female		
Developed:										
York	33.8 (3)	33.5 (5)	30.1 (7)	31.9 (5½)	51.3 (2½)	51.7 (4)	43.6 (5)	47.3 (4½)	36.9 (4)	33.8 (12)
Greenville	34.4 (1)	36.1 (1)	33.7 (1)	36.5 (1)	52.8 (1)	54.4 (2)	48.7 (1)	51.8 (1)	38.1 (1)	36.0 (5)
Spartanburg	34.1 (3½)	34.6 (3)	32.3 (2½)	35.2 (2)	50.8 (4)	52.3 (4)	46.8 (2)	50.7 (2)	37.6 (2)	36.9 (2)
Barrow	32.5 (5)	33.8 (3½)	32.3 (4½)	31.9 (5)	51.3 (2½)	54.5 (1½)	42.8 (6)	44.9 (8½)	36.4 (6)	35.3 (8)
Lancaster	32.2 (6)	32.3 (6)	28.1 (10)	30.5 (9)	47.6 (6½)	48.2 (5)	40.3 (10½)	43.7 (10)	35.7 (10½)	34.9 (9)
Anderson	33.0 (3½)	33.8 (3½)	32.4 (2½)	33.0 (3)	50.1 (5)	51.2 (5)	46.6 (2½)	47.4 (4½)	36.2 (7)	35.9 (6)
Group Averages and Rank Sums	33.2 — 21	34.0 — 21	31.2 — 27	33.2 — 25	50.7 — 21½	52.1 — 23½	44.8 — 27½	47.6 — 30½	36.8 — 30½	35.5 — 42
Underdeveloped:										
Jackson	29.7 (7½)	31.2 (7)	28.8 (9)	30.9 (8)	47.2 (8)	49.8 (6)	40.9 (8½)	45.5 (7)	36.6 (5)	34.0 (11)
Gwinnett	29.9 (7½)	30.1 (8)	30.8 (4)	31.1 (7)	47.8 (6½)	49.2 (7)	44.8 (4)	47.6 (3)	35.7 (10½)	38.0 (1)
Franklin	27.5 (11)	29.7 (10)	29.1 (8)	32.0 (5)	45.3 (11)	47.5 (11)	42.4 (7)	46.2 (6)	36.0 (8)	36.3 (3½)
Hart	28.8 (9)	29.7 (10)	26.6 (12)	30.2 (10½)	46.7 (9)	48.1 (9)	40.1 (10½)	44.8 (8½)	35.8 (9)	35.6 (7)
Madison	27.5 (11)	28.4 (11)	30.2 (6½)	30.2 (10½)	45.6 (10)	47.9 (10)	40.9 (8½)	42.4 (11½)	37.2 (3)	34.4 (10)
Banks	27.5 (11)	27.9 (12)	27.5 (11)	28.9 (12)	44.7 (12)	45.6 (12)	39.5 (12)	42.2 (11½)	35.6 (12)	36.3 (3½)
Group Averages and Rank Sums	28.5 — 57	29.4 — 57	28.8 — 51	30.5 — 53	46.2 — 56½	48.0 — 54½	41.4 — 50½	44.8 — 47½	36.2 — 47½	35.8 — 36
Level of Significance of Group Differences	P < .01	P < .01	P = .05	P = .03	P < .01	P = .015	Not signif. (P = .055)	Not signif.	Not signif.	Not signif.
Ohio	31.7	32.0	32.6	36.2	56.3	56.2	59.5	59.2	42.4	47.6
Massachusetts	31.0	31.5	28.5	30.8	56.2	56.7	55.9	55.8	46.1	58.7
U.S.	31.7	32.6	32.1	35.0	55.4	55.5	51.9	53.5	42.2	39.6

[a] Computed from *United States Census, 1940, Population*, V. II, Pt. 1, Table 26 and Pts. 2 and 6, Table 22 and *United States Census, 1900*, V. II, *Population*, Pt. II, Tables 22 and 26.

oped with respect to both the white and Negro, male and female. In the same year, the percentage of population in the 20-59 age group was also higher in the developed counties in all respects. It is to be noted, however, that the difference between the two groups of counties is not quite significant at the conventional 5 per cent level in the case of the Negro population. Although the difference is significant in the case of the white population, it is less so than the similar difference in the percentage of population in the 20-39 age group. The above findings indicate that the developed counties had indeed experienced less net out-migration (or greater net in-migration) than the underdeveloped but that such a differential pattern of migration has been more striking in the recent years than in the first two decades of this century. This is fully in accordance with the conclusion drawn from our migration estimates.

It is also reassuring to find that in 1900, in terms of per cent male population in the 18-44 age group, there was virtually no difference between the developed and underdeveloped groups of counties (Table 36). This seems to reconfirm the conclusion already reached in Chapters II and III that the entire Piedmont study area was notably homogeneous at the time local industrial-urban development began to reach significant proportions (in 1900) and that later differences between counties in terms of either migration, farm income, or other socio-economic measures were attributable to the differential pattern of this development.

Data in Table 37 on male-female sex ratios also tend to confirm the reliability of our migration estimates. In 1900, the differences in this ratio between the two groups of counties for both the white and Negro populations were rather minor as compared with later differences in 1940. In the latter year, the developed counties' male-female sex ratios were significantly lower than the underdeveloped counties' for both the white and Negro populations. It appears that in all respects the age and sex characteristics of the populations of our various counties behaved as if our migration estimates were accurate. On this basis, we conclude that the differential pattern of migration among the developed and underdeveloped counties, as portrayed by these estimates, is essentially correct.

The question now at hand is whether this differential pattern, characterized by much greater out-migration of people from the underdeveloped counties, has been sufficient to offset the scarcity of economic opportunities open to the *farm* residents of these counties. Data in

TABLE 37. Male-female sex ratio by race, 1900-40[a]

| County | No. Males Per 100 Females, Total Population | | | | | | | | No. Males Per 100 Females, 1940, Rural-Farm Population | | | |
| | White | | | | Negro | | | | White | | Negro | |
	1900		1940		1900		1940					
Developed:												
York	997.2	12	100.4	4	99.0	10	93.0	9	108.1	1	101.2	8
Greenville	100.5	4	96.3	11	96.5	12	90.1	12	104.9	9	104.4	2
Spartanburg	99.8	4	98.3	9	101.9	6	91.6	11	106.7	2	106.4	1
Barrow	99.9	7	96.0	12	100.2	8½	91.7	10	105.0	7½	98.2	11
Lancaster	99.2	10	99.1	7	96.6	11	94.3	8	105.9	5	102.6	7
Anderson	101.6	1	97.4	10	102.2	4½	95.5	6	105.0	7½	103.5	6
Group Averages and Rank Sums	99.7	42	97.9	53	99.4	52	92.7	56	105.9	32	102.7	35
Underdeveloped:												
Jackson	100.2	6	98.6	8	100.2	8½	99.5	1	104.2	10	104.3	3½
Gwinnett	100.3	5	100.8	3	102.2	4½	97.4	4	106.2	3½	104.3	3½
Franklin	101.0	3	99.6	6	104.3	2	94.9	7	103.6	11	98.9	10
Hart	99.0	11	103.2	3	103.2	3	97.5	3	106.2	3½	100.1	9
Madison	101.1	2	103.5	2	100.3	7	97.2	5	105.7	6	103.8	5
Banks	99.6	9	99.9	5	105.2	1	97.6	2	100.6	12	94.6	12
Group Averages and Rank Sums	100.2	36	101.1	25	102.6	26	97.4	22	104.4	46	101.0	43
Level of Significance of Group Differences	Not signif.		P = .03		P = .04		P < .01		Not signif.		Not signif.	
Ohio	102.2		100.5		106.5		99.0		114.6		134.7	
U.S.	105.1		101.2		98.8		95.0		113.1		104.1	

[a]Computed from *United States Census, 1940, Population*, V. II, Pts. 2 and 6, Tables 27 and 27a, Pt. 5, Table 5, and Pt. 1, Table 5, p. 20.

Tables 37 and 38 appear to indicate that the answer is in the negative. In fact, the age and sex characteristics of the rural-farm population were so nearly identical in both groups of counties that it is altogether plausible to infer that the net movement of people out of the rural-farm status has been no greater in the underdeveloped group than in the developed, despite the fact that, in the former group, economic opportunities open to its farm residents have been far less numerous and rewarding. Bearing in mind the fact that considerably more rural-farm residents of the developed counties had part- or full-time non-farm employment—a fact allowed for in our farm labor force estimates—it is not surprising that we should find an absolute decrease in the developed group's number of farm workers during 1900-40 as compared with an absolute increase in the underdeveloped group's number. During that forty-year period, the developed group showed a 3.2 per cent decrease in the number of farm workers despite a 70 per cent increase in its total population. On the other hand, the underdeveloped group reported an increase of 8.5 per cent in the number of farm workers, although its total population increased by only 7 per cent.

It is then clear that, in spite of the great exodus of people from the

TABLE 38.   Percentage of rural-farm population in selected age groups by sex and race, 1940[a]

County	% R-F Population in the 20-39 Age Group				% R-F Population in the 20-59 Age Group			
	White		Negro		White		Negro	
	Male	Female	Male	Female	Male	Female	Male	Female
Developed:								
York.............	26.2	26.7	26.5	27.0	45.5	47.0	39.3	41.5
Greenville.....	27.0	28.3	25.2	26.4	46.5	48.5	38.7	40.4
Spartanburg. .	27.6	28.5	26.0	28.4	45.6	47.4	39.8	43.0
Barrow........	29.2	31.5	27.3	29.4	47.6	50.9	39.3	40.9
Lancaster......	25.9	26.1	23.0	25.7	42.7	43.5	35.4	39.2
Anderson......	28.3	28.7	29.4	28.3	46.3	47.8	42.7	41.3
Group Averages and Rank Sums	27.4	28.3	26.2	27.5	45.7	47.5	39.2	41.0
Underdeveloped:								
Jackson.......	27.2	28.9	24.6	28.0	44.7	47.3	37.1	41.7
Gwinnett......	27.3	27.4	27.1	24.9	45.2	46.9	43.3	41.7
Franklin.......	26.0	27.5	27.7	29.2	43.6	45.6	41.2	43.1
Hart..........	28.3	29.0	26.3	29.4	45.5	46.7	39.5	43.1
Madison.......	26.7	27.8	28.1	29.4	44.5	46.7	39.2	42.4
Banks.........	27.1	27.1	24.1	29.1	44.2	44.8	37.8	42.5
Group Averages and Rank Sums	27.1	28.0	26.3	28.3	44.6	46.3	39.7	42.4
Level of Significance of Group Differences....	Not sign.	Not sign.	Not sign.	Not sign.	Not sign.	Not sign.	Not sign.	Not sign.
U.S.............	27.2	26.8	26.7	27.5	48.3	48.1	42.0	42.6

[a]Computed from *United States Census, 1940, Population,* V. II, Pts. 2 and 6, Tables 27 and 27a and Pt. 1, Table 7.

underdeveloped counties during 1900-40, it has not been great enough to eliminate the important disparity in alternative employment opportunities and agricultural labor productivity. Empirical evidence presented in this section appears to be quite consistent with the hypothesis[33] that "although outmigration of people was a means, open to and and used by the residents of the underdeveloped counties, of reaching into the more abundant job markets of the developed counties, it has not been sufficiently great to raise the actual returns to labor in agriculture to a level comparable to that of the developed counties."[34]

Referring back to Chapter V, we find that net agricultural labor

33. *Supra,* p. 163.

34. Identification of the specific factors that serve as barriers to migration must await further research. Among the more plausible explanations of geographical immobility of labor, we may mention the following (1) the uncertainty of nonfarm employment because of business fluctuations, (2) the insufficient dissemination of information with respect to employment opportunities existing elsewhere, (3) the lack of sufficient capital to bear the cost of migration, and (4) human inertia arising from fear of the transition from the familiar to the unknown. (See for instance Johnson, "Functioning of the Labor Market," *op. cit.,* p. 87.)

returns were about 30 per cent higher in the developed counties in 1940 than in the underdeveloped counties (Table 23). Now it remains to examine the extent to which this observed difference may be explained by possible variations in personal capacities, preferences for leisure, preferences for a particular way of life, or the age composition of the farm labor force.[35] In this connection, we advance the following hypothesis.

Hypothesis: That the observed differences in labor returns in agriculture between the developed and underdeveloped counties cannot yet be attributed to county differences in personal capacities, or to county differences in preferences for leisure and a particular way of life, or to county differences in the age composition of the farm labor force.

Data in Table 28 when rearranged to obtain group averages indicate that the developed group, undoubtedly because of its relatively heavier Negro population, actually showed a lower median school years completed for its farm population aged twenty-five and over than the underdeveloped group. County differences in acquired personal capacities do not appear to explain the observed differences in agricultural labor returns between counties. As for possible county differences in natural personal capacities, even if we grant for the time being the validity of the argument that natural personal capacities are related to the ethnic background of the people, we can still point to the historical fact that the population of the Southern Piedmont has been rather homogeneous.[36] By this we mean that historically there has been no evidence of the concentration of particular ethnical groups in particular counties within the Piedmont.

We now turn our attention to county differences in preferences for leisure and a particular way of life as likely explanations of county differences in agricultural labor returns, as measured by returns per (available) worker. Under an identical labor force base, the county with a strong leisure preference would show a lower labor supply schedule, as derived from its indifference map, than the county whose preference is more strongly inclined toward income. This situation would lead to greater leisure and lower average income per capita or per available worker (though higher income per unit of actual labor

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35. Possible variations in the sex composition of the farm labor force are excluded from this list since their numbers and differential productivity have already been allowed for in our farm labor force estimates.

36. *Supra,* Ch. II. For a more general argument in support of the homogeneity of the nation's farmers, see Schultz, "Reflections on Poverty ...," *op. cit.,* p. 4.

input as suggested by the law of diminishing returns) in the former county if both counties are endowed with identical resources. In such a case, differential amounts of leisure enjoyed and, consequently, differential income levels are directly attributable to county differences in their preference patterns.

But these differentials need not always imply unequal valuation of leisure. Suppose that all counties have the same indifference map and the same labor force base, therefore, also the same labor supply schedule. The underdeveloped counties by virtue of their more stringent agricultural capital alone—hence, a lower derived demand schedule for labor—would realize greater leisure and lower income than the developed counties.[37] While observed differences in the amount of leisure enjoyed may be indicative of fundamental differences in preference and, therefore, causally related to income level, they may also be the consequence of unequal resources.[38] If the farmers of the underdeveloped counties appeared to hunt and fish more extensively, the accompanying low income, in our opinion, is attributable to their relative lack of resources and lower derived demand for labor. Perhaps a more sensible way of putting it is that they hunted and fished extensively because they had little else productive to do either on or off farms.[39] As for county differences in their preference for a particular way of life, it suffices to say that, since we are concerned with members of the farm labor force, these differences could not have been sufficiently great (particularly in view of the similarity of the type of farming in all counties) to account for any sizable portion of the observed differences in agricultural labor returns between the developed and underdeveloped counties.

37. An exception is where the pressure of subsistence forces out a greater amount of labor supplied (hence, less leisure) at a low rate of labor return than at a higher rate. This may happen if there is extreme scarcity of resources relative to labor. This argument also rests upon an s-shaped labor supply curve where both its upper and lower reaches are negatively inclined.

38. The above arguments assume no agricultural specialization (among counties) in areas of different labor- and capital-intensity. This assumption is quite valid with respect to the Southern Piedmont before 1940.

39. An explanatory note is in order at this point. Our farm labor force estimates are arrived at in such a manner that underemployment of farm labor is not deducted from our estimates but farm labor employed elsewhere is so deducted. Thus, taking a farm family with a labor force of five man-years equivalent, if the entire force is employed on the family farm, though grossly underemployed, all five would have been counted in our estimates. But if that part of the force, previously underemployed, were later employed elsewhere, it would have been deducted from our estimates, even though the actual labor input on the farm has remained the same. Thus, our estimates represent available labor in agriculture rather than actual farm labor input.

Finally, if we take the age composition of the rural-farm population aged 20-59 to be representative of that of the farm labor force, data in Table 28 again indicate that county differences in this respect appear to be an unlikely explanation of county differences in labor returns. In 1940, for both white and Negro males, the proportion of the farm labor force in the most productive (20-39) age group[40] was all but identical in the two groups of counties.[41] Although the age breakdown is rough, the division of the labor force into the lower- and upper-half age groups is sufficient for our purpose, particularly in view of the amazing uniformity it has revealed.

INTER-COUNTY TRANSFERS OF LABOR WITHIN AGRICULTURE
UNDER DIFFERENTIAL FARM LABOR RETURNS

In previous sections, we have seen that the farm population of the developed counties indeed enjoyed greater alternative employment opportunities and that the out-migration of farm people from the underdeveloped counties, while great, has not been sufficient to offset the paucity of alternatives open to them in these counties. Important differences in labor returns in agriculture had persisted and, undoubtedly, widened between the two groups of counties since the highly uneven industrial-urban development gained momentum in the study area around 1900. It now remains to investigate, insofar as the insufficient diffusion of available capital and alternative employment opportunities between counties has given rise to important and persistent differential labor returns in agriculture, why the movement of people within agriculture has been insufficient over time to equalize agricultural labor returns between counties. The reader may be re-

40. This (20-39) age group is termed the most productive in agriculture on the basis of the Long-Parsons "farm-manpower" curve which shows a plateau (peak productivity during a person's life) lasting about 20 years beginning with the age of 20-21. After the age of 40, the "work capacity" of the average farm man begins to fall rather rapidly. (Erven J. Long, "The Agricultural Ladder: Its Adequacy as a Model for Farm Tenure Research," *Land Economics*, XXVI, No. 3 [August, 1950], 270-71.)

41. For white and Negro males respectively, the developed group reported 59.9 and 66.9 per cent of its rural-farm population aged 20-59 in the lower half age group; in the underdeveloped group, 60.7 and 66.3 per cent were so reported.

Although in terms of the age composition of the farm population in the productive age groups there appears to be no difference between the two groups of counties, it is probable that the developed counties actually had less favorable age composition with respect to their farm labor force. This follows from the fact that greater proportions of their farm population were engaged in nonagricultural pursuits (off-farm employment) and that such employment was age selective in favor of persons in the lower productive age group, thus leaving higher proportions of the developed counties' farm labor force in the higher, less productive age group (40-59). For documentation on the latter point, see *infra*, p. 208.

minded that these differences in agricultural labor returns between the developed and underdeveloped counties cannot be attributed primarily to possible differences in personal capacities (acquired and natural), preferences, or the age composition of the farm labor forces of the various counties. They are, in the final analysis, indicative of fundamental impediments to the mobility of labor within agriculture. That agricultural labor has failed to respond fully to differential labor returns in agriculture is clear from the notable fact, shown earlier, that during 1900-40 the developed counties' total farm labor force actually declined, while that of the underdeveloped counties increased, even as the latter counties steadily lagged farther behind in terms of farm income and labor returns per agricultural worker. What were the factors that prevented sufficient numbers of farm workers from moving from the underdeveloped to the developed counties in response to observed differences in labor returns in agriculture? Apart from the usual explanation of imperfect knowledge and inertia, it appears plausible to ascribe the following impediments to agricultural labor mobility. At this point, we hasten to add that our inquiry in this regard should not be taken to mean that free movement of labor within agriculture is the ultimate solution to agricultural poverty. Given the chronic surplus of labor in agriculture, a general equilibrium is impossible without a substantial movement of people out of agriculture. Our interest is simply to understand why labor failed to respond to differential returns even within agriculture—a situation where impediments to occupational mobility of labor play no role. Even though the general equilibrium is beyond its reach, the free movement of labor within agriculture is nonetheless consistent with greater agricultural efficiency. In general, any disparity in factor returns or prices (beyond what can be explained by existing differences in such factors as age, ability, and training) is indicative of resource malallocation, and any tendency toward equality suggests improved efficiency in resource utilization.

Popularity of the Traditional Concept of "The Agricultural Ladder" among Farmers

The traditional concept of an agricultural ladder, popularized by W. J. Spillman[41a] in 1916, describes a process "by which a young man starting as a farm laborer becomes successively a tenant, an owner sub-

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41a. W. J. Spillman, "The Agricultural Ladder," *American Economic Review, Supplement* (March, 1919), pp. 170-79.

ject to mortgage and, finally, an owner free from mortgage debt."[42] For years, this concept served as a useful model and also an ideal in research and public action programs. The process it describes was generally descriptive of the experience of the American farmers. Full-ownership was considered the ultimate and desirable end by researchers and farmers alike. And the concept was accepted as a yardstick of value by which the working of the economic process in agriculture could be judged. Any upward movement along the ladder was assumed to imply concomitant increases in income and efficiency. Land tenure researchers not infrequently asserted categorically that "changes in tenure status which improved the farm operator's position in life [i.e., any upward movement along the ladder] are naturally advantageous for him, and are socially desirable."[43]

In more recent years, however, it is no longer certain that tenure achievements along the agricultural ladder actually represent real economic progress. As Erven J. Long puts it, "By bringing tenure status to test against the more embracing ends of maximum net revenue at the private level, and maximum economic efficiency at the public level, the usefulness of the model in measuring the economic accomplishments of farmers was subjected to severe question. It was hard to know now which end of the ladder was up."[44] In short, climbing the traditional agricultural ladder need no longer be consistent with the more rigorous criteria of income and efficiency.[45] There can be little doubt that to many, if not most, farmers each step up the ladder still represents a desirable change, although in recent decades, with the disappearance of free land in this country, the ladder has too frequently turned out to be a treadmill. The fact that the upward movement does not necessarily bring increased income and efficiency as a concomitant

42. *The Encyclopedia of Social Sciences* (New York: Macmillan, 1930), Vol. 6, p. 124, as quoted by Long, "The Agricultural Ladder . . . ," *op. cit.*, p. 268.

43. Charles E. Allred, Margaret I. Guilford, and Howard J. Bonser, *Why Farmers Move or Change Tenure Status*, Tennessee Agricultural Experiment Station, Rural Research Series, Monograph No. 159 (August, 1943), p. 1. Hereafter cited as *Why Farmers Move.*

44. "The Agricultural Ladder . . . ," *op. cit.*, p. 269. The development of the basic economic concepts which undermined the adequacy of farm ownership as a complete end in itself is presented in such articles as Theodore W. Schultz, "Capital Rationing, Uncertainty, and Farm-Tenancy Reform," *Journal of Political Economy* (June, 1940), pp. 309-24.

45. Marshall Harris also suggested a supposedly more descriptive model in place of the old agricultural ladder which has lost some of its validity under fundamental changes in American agriculture in recent decades ("A New Agricultural Ladder," *Land Economics*, XXVI, No. 3 [August, 1950], 260-66).

apparently has not detracted from its desirability in the eyes of those farmers whose consideration of social prestige may be paramount.

The import of the above remarks is that, as long as the traditional agricultural ladder remains a yardstick of progress in the mind of some farmers, its effect is to impede the movement of agricultural labor as an equilibrating mechanism. More specifically, if a typical owner-operator of the underdeveloped counties should find himself realizing lower returns to his labor and management than a typical cash renter of the developed counties, as was likely according to data in Table 39, he may not be induced by such a differential labor return into condescending to the status of a renter in the developed counties, even if the opportunity of thus earning a higher labor return is open to him.

TABLE 39.   Value of farms per operator by tenure class, 1940[a]

County	Owner-Operators				Tenant-Operators					
	Full		Part		Cash		Share Tenants and Croppers		Others	
Developed:										
York	3,860	1	4,716	2	3,415	1	1,379	6½	2,197	4
Greenville	3,480	4	4,408	4	2,491	2	2,262[b]	1	2,538	2
Spartanburg	3,512	3	4,528	3	2,183	4	2,037	2	2,544	1
Barrow	2,940	5	3,300	6	1,761	5	1,753	4	1,679	9
Lancaster	2,738	6	3,244	7	1,667	6	1,277[b]	11	1,820	5
Anderson	3,843	2	5,029	1	2,473	3	1,776	3	2,387	3
Averages and Rank Sums	2,938	21	4,204	23	2,332	21	1,747	27½	2,194	24
Underdeveloped:										
Jackson	2,543	7	3,604	5	1,524	9	1,347	8	1,625	10
Gwinnett	1,836	11	1,873	11	1,433	11	1,338	9½	1,693	8
Franklin	2,261	10	2,782	9	1,511	10	1,339	9½	1,586	11
Hart	2,482	8	2,700	10	1,576	7	1,380	6½	1,791	8
Madison	2,293	9	3,216	8	1,542	8	1,443	5	1,747	7
Banks	1,817	12	1,579	12	1,186	12	1,059[b]	12	1,036	12
Averages and Rank Sums	2,205	57	2,626	55	1,462	57	1,318	50½	1,580	54
Significance Level of Group Differences	P < .01		P = .01		P = .01		P = .05-.06		P = .02	

[a] Computed from *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Table II.
[b] Includes the value of two share-cash tenants in Greenville and Lancaster and one in Banks. Farm values for these tenants were not reported separately by the Bureau of the Census for the above counties, but included in the farm values of the share tenants and croppers, because of the small numbers of share-cash tenants.

By the same token, although cash renters of the underdeveloped counties almost certainly received lower labor returns on the average than the share tenants and croppers of the developed counties (Table 39), they, too, may hesitate to pay the price of retrogression along the agricultural ladder for higher labor returns. To be sure, the case can be easily overstated. Nonetheless, it appears probable that the influence of the concept of an agricultural ladder upon operators' decision-mak-

ing has served to impede the movement of agricultural labor between counties.

It is noteworthy that, according to a Tennessee survey on the motivations behind labor movement in agriculture, of all the voluntary moves made by the interviewed farmers that may be attributed to explicit desires for "preferred tenure changes," only about 5 per cent involved downward movements along the agricultural ladder.[46] Surely, one would hardly be guilty of excesses to speculate that the relative frequency of the "undesirable" tenure changes that would have brought increased incomes has been higher than is indicated by the above figure. This is saying that, had the "preferred tenure changes" been motivated exclusively by strict economic considerations, many more moves that involved downward tenure changes would have been made. As things were, uneconomic considerations based on the concept of an agricultural ladder discouraged many such moves.

We have seen that the inter-county movement of agricultural labor which at the same time involved vertical, downward shifts in tenure status has been hampered by the traditional idea of an agricultural ladder. Vertical, upward movement of farm labor need not detain us, since such a movement implies more than a simple shift of labor between counties with which we are presently concerned. Under conditions of external capital rationing, the climbing of the proverbial ladder is, in the first instance, a matter of accumulating sufficient personal savings. What then can we say of the horizontal shifts of farm labor between counties? Several considerations indicate that even these shifts have been far from free of impediments. Before we take up such impediments, let us first examine if there was a basis for movements of labor within each tenure class. Although we are unable to compute net labor returns per worker by tenure class, available data on the value of farm capital per operator by tenure status indicate that in 1940 farm operators of all tenure status worked with considerably and significantly more capital in the developed counties than in the underdeveloped counties (Table 39).[47] It is reasonable to infer that farm

46. Allred, Guilford, and Bonser, *Why Farmers Move*, Table VIII, pp. 28-29. Although the sample was taken from three Tennessee counties, only the data for Madison County, Tennessee—a cotton county that more closely resembles the Piedmont counties in tenure, type of farming, and population composition than the other two—are used to arrive at the above figure. If the data for all three counties are used, the figure becomes 6.5 per cent.

47. Only in the case of share tenants and croppers did the group difference fail to reach the conventional level of significance. However, P is equal to about .06, which barely misses the conventional .05 level. The unusually low level of significance

operators of all tenure status realized significantly higher labor returns in the developed counties than in the underdeveloped counties, since there were no appreciable differences in the size of family labor force between counties. Given such an inducement to the horizontal movement of farm labor from the underdeveloped counties to the developed, what were the impediments that prevented such a movement from equalizing labor returns over time?

Insignificance of Full-Time Farm Wage Laborers

The mobility of farm labor should, by all odds, be highest among the farm wage laborers. It is here that one would expect most of the equilibrating labor movement to have taken place. However, in the cotton counties of the Southeast, few farm operators ever employed regular, full-time wage laborers. The traditional emphasis was upon cropper labor. During the crop year of 1947, Butler reported that, on typical small South Carolina Piedmont cotton farms, the entire labor input consisted of operator and cropper family labor; on typical medium cotton farms, only 1.9 per cent came from wage labor; and on typical large cotton farms, 3.4 per cent.[48] Likewise, Sutherland and James, in their study of North Carolina Piedmont cotton farms, showed that in the same year, "Neither the small nor the medium farms reported regular wage workers; and they were only reported on 2 in 36 farms in the large farm group."[49] Even during the season of peak labor inputs associated with the cotton harvest, cotton growers and their families supplied the bulk of required farm labor in the study area.[50] Wage laborers employed during the cotton harvest were predominantly local, casual, seasonal workers, hence quite ineffectual with respect to their ability to equalize geographical labor returns.[51]

Further evidence of the insignificance of full-time wage laborers

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in this case, as compared with all other tenure classes, is accountable by the great disparity in the relative importance of Negroes in this "lower" tenancy group among our various counties.

48. Charles P. Butler, *Cotton Production Practices and Requirements in South Carolina,* South Carolina Experiment Station Bulletin No. 387 (June, 1950), Table 9, p. 18. The word "farm" used here refers to true management unit (or multiple unit that includes sub-units operated by croppers), not census farm.

49. J. Gwyn Sutherland and H. B. James, *Cotton Production Practices in the Southern Piedmont Area,* North Carolina State College, AE Information Series, No. 25 (September, 1950), p. 11.

50. John L. Fulmer and Ralph R. Botts, *Analysis of Factors Influencing Cotton Yields and Their Variability,* United States Department of Agriculture, Technical Bulletin, No. 1042 (October 1951), p. 43.

51. Migrant workers have been significant only in the cotton counties of the Southwest (*ibid.*).

in the Southern Piedmont can be obtained from census enumerations of farm workers, unsatisfactory as they were. During 1939-40, the average number of wage workers hired by month—of whom only a fraction may be considered regular, full-time farm wage laborers—totaled 3,792 in our developed and underdeveloped counties or a mere .095 worker per farm.[52] Under these circumstances, little may be expected from the movement of wage laborers within the study area as an equilibrating force.

Rigidity in Prevailing Sharecropping Arrangement

Since the day the institution of sharecropping gained currency after the Civil War, the terms of this "leasing" arrangement have undergone little, if any, change in the traditional cotton counties. A brief description of the prevailing sharecropping arrangement in the early post-Civil War days is presented in Chapter II. Current arrangements between operators and sharecroppers, as described by Butler, indicate that the passage of time has had no practical effects upon the essential features of this type of leasing arrangement.

Sharecroppers provide most of the man labor used to produce cotton in the Piedmont Area of South Carolina. Current arrangements between operators and sharecroppers have been established over a long period, and are uniform in most features throughout the area. Under these arrangements the operator and the cropper each receives half of the crop and each pays half of the cash expenses of fertilizer and ginning. Thus, sharecroppers are often referred to as "halvers." Operators provide the croppers with dwellings, furnish all the seed, power and machinery, and in addition provide general supervision and management of all the production practices .... In some cases, sharecroppers own the workstock but it is a common practice for the operator to pay for all the fertilizer when the cropper [called share tenant according to census terminology] furnishes the workstock.[53]

Partly because of their large numbers and partly because of their high mobility, sharecroppers were by far the most important single tenure group as a potential equilibrating force in the study area. In 1940, sharecroppers—defined to include both census-classified "share tenants" and "croppers"—numbered 19,512 in both groups of counties, a total half again as large as that of the next most important tenure

52. *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Table X. This average undoubtedly overstates the importance of wage workers, since many of them worked on more than one farm during the year and, therefore, were counted more than once by census enumerators.

53. Butler, *Cotton Production*, p. 18.

group (Table 40).[54] That their mobility has been high can be seen from the following data. In 1935, Elrod reported that 58 per cent of Georgia's tenants[55] had been on the farm they occupied for one year or less. In the Piedmont, this figure was still higher (59 per cent).[56]

TABLE 40.　Number of operators by tenure class, 1940[a]

County	OWNER-OPERATORS		TENANT-OPERATORS					
	Full	Part	Cash	Share-Cash	Share Tenants[b]	Croppers[b]	Others
Developed:							
York................	1,189	134	106	11	395	1,477	522
Greenville............	2,484	228	289	2	939	1,276	381
Spartanburg..........	2,433	231	175	5	1,546	2,047	305
Barrow..............	436	70	92	10	329	412	106
Lancaster............	885	135	117	2	189	651	477
Anderson............	1,826	245	188	15	1,044	2,490	615
Totals.................	9,253	1,043	967	45	4,442	8,353	2,406
Underdeveloped:							
Jackson..............	632	111	164	5	269	896	136
Gwinnett............	1,223	126	349	5	733	744	127
Franklin.............	648	110	92	6	457	708	116
Hart................	602	60	210	7	401	807	220
Madison.............	482	88	120	10	546	463	166
Banks...............	432	57	102	1	331	362	83
Totals.................	4,019	552	1,037	34	2,737	3,980	848
Total for Both Groups....	13,272	1,595	2,004	79	7,179	12,333	3,254

[a]Compiled from *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Table II.
[b]For practical purposes, both may be considered sharecroppers (see, for instance, Butler, *Cotton Production*, p. 18).

Under conditions of flexible or competitive sharecropping arrangements, such a high mobility of cropper labor would likely have tended to remove county differences in agricultural labor returns. The movement of cropper labor from the underdeveloped counties to the developed in response to the latter's higher returns to cropper labor would have served to bid up (rent) the terms of the sharecropping arrangements in favor of the landlords in the developed counties and, at the same time, force down the terms in the underdeveloped counties. This, of course, would have acted to equalize labor returns in all counties.

But with the terms fixed by long-established customs of the region, the high mobility of cropper labor was only indicative of the high de-

54. Even if "share tenants" are excluded, the total number of sharecroppers, 12,333, would still rank a very close second after the leading (full-owner) group.

55. Of whom some 60 per cent were croppers and share tenants, according to the 1935 census. Although Elrod's figures referred to all tenants, the mobility of the sharecroppers may be expected to be even higher, since, being the most dispossessed of all tenants, they had no livestock or equipment to hamper their movement.

56. J. C. Elrod, *Types of Tenancy Areas in Georgia*, Bureau of Agricultural Economics (preliminary, April, 1941), pp. 17 and 25.

gree of insecurity of this type of tenure. Also, since there is no reason why the operators of the developed counties should have preferred cropper labor from the underdeveloped counties without changes in leasing terms, the *net* movement of croppers into the developed counties could not have been substantial. Thus far, however, we have dealt only with one relevant variable, the terms of leasing arrangements. The other variable has to do with the size of cropper unit under consideration. As indicated by Table 39, the average size of (census) farms operated by "share tenants" and "croppers" was indeed substantially larger in the developed counties in 1940, as measured by the average value of farms. Data in Table 40 also show significantly higher average value of farm implements and machinery per cropper unit in the developed counties. If the terms have been noncompetitive, hence insensitive to the movement of cropper labor, higher returns to cropper labor in the developed counties could still have attracted a net influx of cropper labor from the underdeveloped counties, if one assumes flexibility in unit size. Such a net influx of cropper labor into the developed counties would then have encouraged subdivision of existing cropper units until they yielded no higher returns to cropper labor than in the underdeveloped counties. Such a turn of events would have increased total output and also the landlords' total share in the developed counties without changes in leasing terms. How, then, does one explain the important differences in the average size of cropper unit observed in 1940 between the two groups of counties?

A plausible explanation is that adjustments through changes in unit size, unlike those through changes in leasing terms, are subject to physical and technical limitations. In the first place, a management unit (particularly, if it is small, as is typically the case in the study area) is not perfectly divisible into any number of smaller cropper units. While a typical management unit, as presently constituted in the developed counties, may contain larger cropper units relative to the average unit size found in the underdeveloped counties, a further subdivision may produce cropper units that are too small to attract tenants. In the second place, subdivision of existing units would require landlords to make additional capital outlay in workstock, equipment, and housing for their new tenants, which may be difficult under a stringent capital market. Thirdly, such adjustments certainly mean increased cost of supervision and management to the landlords. In short, we may conclude that, while the amazing mobility of cropper labor could have acted as an effective counterforce to the disequilibrating forces arising

from the imperfect manner with which local capital and labor markets allocated the available capital resources and employment opportunities, its effectiveness as an equilibrating force has been compromised by the rigidity in the terms of the prevailing sharecropping arrangements and inflexible sizes of cropper units.

County Differences in Tenant-Owned Farm Capital

The third impediment to the equalization of (net) labor returns between the developed and underdeveloped counties lies in unequal farm capital owned by tenants (other than sharecroppers) between counties. Under conditions of external capital rationing, this difference in tenant-owned capital is sufficient to give rise to differential labor returns, even if existing leasing arrangements of all types were perfectly flexible and even if there were no other impediments to the inter-county movement of labor within agriculture. We have seen that tenants (other than sharecroppers) of the developed counties enjoyed the advantage of working with significantly larger farm units, as measured by the average value of farms, than those of the underdeveloped counties (Table 39). Suppose now that there were no impediments to the movement of tenants (and their owned assets) within agriculture from one county to another and that all existing leasing arrangements were perfectly flexible. Tenants of the underdeveloped counties would then have found it possible, by migrating to the developed counties, to acquire larger units (higher ratio of capital to labor) and to increase net returns to their labor. Such a movement of labor would have bid up the rent in the developed counties and forced down that of the underdeveloped counties. The migration would have continued until the tenants of the latter counties found it possible to earn as high a return for their labor in their own counties as they could in the developed counties.

But this "equilibrium" level of labor returns is consistent only with the lower value of tenant-owned livestock, implements, and machinery in the underdeveloped counties. Insofar as the tenants of the developed counties owned, in the first instance, larger quantities of such assets and would continue to hold this advantage (though narrowed) even after their ranks have been diluted with migrant tenants from the underdeveloped counties, some differences in labor returns, accountable by the differences in tenant-owned farm assets, would persist, as long as external capital rationing made it difficult to acquire additional capital through borrowing. Under these circumstances, tenants of the developed counties would continue to realize not only higher net farm

incomes (net returns to their labor and owned assets) but also higher net labor returns than the tenants of the underdeveloped counties. Even under our assumed conditions of flexible leasing arrangements and free movement of tenant labor, county differences in tenant-owned farm capital alone, when given substance by external capital rationing, can sustain some differences in labor returns.

That external capital rationing has been a reality in the study area appears to be clear from the findings presented earlier in Chapter V. That the tenants of every status worked with significantly different amounts of farm capital, other than land and buildings, in the two groups of counties is equally clear from the data in Table 41. In 1940, all tenants other than sharecroppers of the developed counties owned nearly half again as much capital as those of the underdeveloped counties. In the same year, cash tenants of the former counties owned about twice as much capital as their counterparts of the latter counties. These differences are statistically significant. Although the above data pertain only to the value of implements and machinery—the available census statistics on the value of livestock give only aggregates without tenure breakdown—there can be little doubt that they are representative of all tenant-owned farm capital.

Lastly, it is pertinent to note the potential of the non-sharecropping

TABLE 41. Value of implements and machinery per farm reporting by type of tenancy, 1940[a]

County	Share-Tenants and Croppers		OTHER TENANTS				CROPPERS ONLY					
			Cash		All		White		Negro		All	
Developed:												
York	93	4	186	2	134	6	143	1	72	1	88	3
Greenville	92	5	161	5	139	4	90	6	49	5½	70	6
Spartanburg	99	2	181	3	168	2	117	3	60	3	94	1½
Barrow	98	3	160	5	141	3	96	4	57	4	86	4
Lancaster	54	12	162	5	97	10	82	7	36	9½	53	11
Anderson	118	1	265	1	194	1	129	2	64	2	94	1½
Averages and Rank Sums	92	27	186	21	146	26	110	23	56	25	81	27
Underdeveloped:												
Jackson	59	9½	84	10	96	10	56	12	43	7½	53	11
Gwinnett	59	9½	72	11½	81	12	58	10½	35	9½	56	9
Franklin	80	7½	133	7	133	6	70	9	28	11½	61	8
Hart	80	7½	111	8	136	6	78	8	43	7½	65	7
Madison	87	6	73	11½	105	8	94	5	50	5½	83	5
Banks	61	11	106	9	96	10	58	10½	27	11½	54	11
Averages and Rank Sums	71	51	97	57	108	52	69	55	38	53	62	51
Significance Level of Group Differences	P = .05		P < .01		P = .04		P = .01		P = .03		P = .05	

[a]Computed from *United States Census, 1940, Agriculture*, V. I, Pt. 3, County Tables II and II Supplemental.

tenants as an equilibrating force in the study area. In the first place, while their mobility is not as high as that of sharecroppers, it is greater than that of owner-operators. Secondly, as Table 40 indicates, the number of these tenants (cash, share-cash, and "other" tenants), totaling 5,337 in 1940, was much larger than the number of "full-time" wage workers in the two groups of counties,[57] although it ran only a poor third after the number of sharecroppers and full-owners.

Movement of Owner-Operators Not Independent of the Capital and Land Markets

Despite their relative immobility, the numerical importance of owner-operators in the study area (13,272 in 1940, Table 40) requires that some consideration be given this group. In 1940, the average value of owner-operated farms was $2,938 in the developed counties and $2,205 in the underdeveloped (Table 39). This difference is highly significant and indicative of important differences in returns to owner-operator labor between counties. The mobility, hence the equilibrating potential, of the owner-operators is, needless to say, partly dependent upon the efficiency of local land markets. To the extent that these markets seldom permit the selling and buying of land with ease, the mobility of owner-operators may be expected to be less than that of tenants.

Assuming now that the owner-operators were willing to move freely from one county to another without allowing themselves to suffer any lowering in their tenure status and assuming that they were to encounter no difficulties in selling and acquiring land, would their movement (accompanied by owned capital) from the underdeveloped counties to the developed counties enable them to realize higher labor returns and higher net farm incomes? Unlike the tenants, the owner-operators of the underdeveloped counties can have access to larger farm units that prevail in the developed counties and to higher labor returns, only if they are able to amass sufficient additional capital through borrowing to acquire them.[58] Again, under conditions of external

57. *Supra,* pp. 182–83.
58. We are assuming that the migrant owner-operators insist on maintaining their tenure status. As was explained earlier in this chapter, uneconomic considerations arising from the concept of an agricultural ladder probably constitute a powerful deterrent to downward, vertical shifts in tenure status even if they may be economically sound. It is true that one may still contend that the migrant owner-operators may avail themselves of larger operating units and still retain their owner-operator status by becoming part-owners. However, if this is to be the means of increasing labor returns and incomes, an owner-operator need not migrate out of his county to achieve it.

capital rationing, this may be difficult to achieve. If an owner-operator should find himself in the position to acquire a larger unit, he could do so as easily in his own county as in another. Certainly, there can be no impelling reason why he should migrate to one of the developed counties.

Another consideration is that, with owner-operators, labor returns are not the only basis for labor movement. Where capital is also involved in the movement, it is the total net farm incomes that constitute the paramount consideration from their standpoint. Even if the less stringent capital rationing of the developed counties permits them to increase somewhat the size of their farms by migrating to these counties, the resulting increases in labor returns should be revised downward by any decreases in returns to owned capital. This follows from the fact that capital earned a higher rate of net returns in the underdeveloped counties than in the developed.

The import of the above remarks is that the movement of owner-operators amounts to more than a simple movement of labor in response to higher labor returns elsewhere. In fact, for those owner-operators who may refuse to condescend to a lower tenure status, even if such a change is sound income-wise, the only way open to them in realizing higher labor returns and incomes lies in their ability to obtain additional capital through borrowing or in their ability to rent additional land to supplement their small holdings. In neither case can one find impelling reasons for a net movement of owner-operators from the underdeveloped to the developed counties. A far more rational move from an adjustment standpoint is one whereby the owner-operators of the underdeveloped counties would leave behind their relatively small holdings for rent, while they avail themselves of the opportunity of acquiring larger farm units in the developed counties as, say, cash tenants. Such a move would be consistent with the existing differences in the rates of returns to labor and (land and non-land) capital between the developed and underdeveloped counties. It is also highly feasible in view of the fact that in the developed counties the average value of farms operated by cash renters was higher than that of owner-operated farms of the underdeveloped counties (Table 39). Arrangements of this sort have important ramifications that tend to discourage owner-operators from making use of them. In the first place, the traditional concept of an agricultural ladder may deter them from accepting what amounts to a lower tenure status. In the second place, few operators would be willing to leave their holdings (perhaps ac-

quired after long years of hard ladder-climbing) unsupervised. Minimally, one can certainly say that the contribution of owner-operators to the equilibrating inter-county flow of labor within agriculture must have been relatively unimportant because of their low mobility. This conclusion is consistent with the negative relationship Allred, Guilford, and Bonser found to have existed between the mobility of farm workers, as measured by the average number of moves per operator during a sixty-year period (1859-1920), and the percentage of farm operators who were owner-operators.[59]

<div align="center">SUMMARY</div>

Findings in this chapter indicate that, in general, our hypotheses appear to be quite consistent with the available empirical and historical evidence. It should be clear now that the workings of the local labor markets have been such that the movement of labor has thus far been insufficient to offset the imperfect diffusion of capital resources and nonfarm employment opportunities among counties. As a consequence, important differences in the ratio of capital to labor and net returns to labor in agriculture were allowed to persist and even widen between the developed and underdeveloped counties, as the dynamic, but uneven, industrial-urban development proceeded apace in the area. The failures of local labor markets in this respect are apparently traceable to the following sources of market imperfections:

1. The rationing of available nonfarm employment opportunities which have been concentrated for the most part in the developed counties of the area.

2. The nature of this rationing and the commuting limitations which, together, have restricted available local nonfarm employment opportunities to nearby residents, resulting in significantly higher percentages of the developed counties' farm residents having found employment in nonfarm industries.

3. Insufficient out-migration of the underdeveloped counties' farm residents to counteract the paucity of local alternatives by availing themselves of the greater nonfarm job opportunities elsewhere. (The net movement of people out of the rural-farm status has been no greater in the underdeveloped counties than in the developed counties —whose rural-farm residents have been able to move into nonfarm jobs in greater numbers without leaving their rural-farm status. The combined effect of these factors is that the total number of the developed

59. *Why Farmers Move*, Table III, p. 5.

counties' farm workers has decreased over time, while that of the underdeveloped counties has increased.)

4. Insufficient inter-county movement of farm workers within agriculture in response to existing differences in net returns to agricultural labor between the developed and underdeveloped counties. This may be explained, in turn, by the following impediments to the movement of labor within agriculture:

a. The predominance of family labor in the area's agriculture, hence, the insignificance of regular, full-time wage workers whose high mobility could, otherwise, have been a highly effective equilibrating force.

b. The rigidity and uniformity of the terms of prevailing share-cropping contracts in the Southern Piedmont and the indivisibility of existing cropper units which, together, have destroyed the effectiveness of the high mobility of the sharecroppers from an adjustment standpoint. (Their high mobility is then simply a reflection of the insecurity of their tenure.)

c. Significant differences between the developed and underdeveloped counties in the amount of tenant-owned farm capital which, given substance by external capital rationing, have prevented the movement of tenants, even if under friction-free movement and perfectly flexible leasing terms, from equalizing returns to tenant labor between counties.

d. The relative immobility of owner-operators arising from the dependence of their inter-county movement upon the workings of local capital and land markets.

e. The adherence on the part of farmers to the idea of an agricultural ladder which, when used as a yardstick of progress in agriculture, served to hamper the inter-county movement of labor by discouraging those moves which, though economically sound, involved downward shifts along the agricultural ladder.

SOUTHERN PIEDMONT UNDER GENERAL ECONOMIC PROSPERITY, 1940-50

THE DECADE 1940-50 represents a highly unusual period. It was a decade of unprecedented general economic prosperity and high war-induced resource mobility. These are the conditions conducive to greater equality in factor returns and incomes not only between geographical areas but between the farm and nonfarm sectors as well. In earlier chapters, we have seen that, under less favorable conditions before 1940, there was a definite trend toward increasing disparity in county farm incomes in the Piedmont area under the then existing pattern of differential industrial-urban development. Supposing that the pattern of industrial-urban development had continued unchanged during the 1940's in the study area, the relevant question is then: Did the highly favorable conditions of that decade prevent further divergences in county farm income? The import of this query lies in the fact that findings in this connection may throw light on the extent to which the maintenance of full-employment conditions may be relied upon as a means of solving the resource and income problems of today's depressed farm areas. If farm incomes continued to diverge among counties of our small, homogeneous area during the 1940's, then one may well question the adequacy of full-employment policies as means of removing poverty from within agriculture.

The above considerations constitute the primary reason for our devoting a separate chapter to the 1940-50 decade. In addition, we wish to enlarge the scope of our earlier analysis by focusing our attention this time on certain specific aspects of the internal adjustment processes that took place within the agriculture of the study area during the period. In this connection, we shall make extensive use of the data furnished by the Census Bureau (for the first time in the 1950 census) for commercial and "other" farms. As we shall see, these data

permit us to discover possible contrasts between the two agricultural sectors with respect to the type of internal adjustments as well as the magnitude and effectiveness of these adjustments in raising agricultural productivity.

In terms of methodology, we shall employ Spearman's rank correlation technique in this chapter rather than the rapid group-rank-sum method used earlier. This is done to permit greater freedom in introducing different independent variables. The rapid method utilizes county groupings made on the basis of a constant criterion (value added by manufacture per capita of 1940). The basis used in classifying our counties under the rapid method is equivalent to the independent variable in correlation analysis. Since our planned change in the scope of analysis will involve the use of many different independent variables, it is deemed advisable to change the statistical technique.

DEVELOPMENT PATTERN AND FARM INCOME, 1940-50

During the 1940's, the Southern Piedmont continued to experience important industrial-urban growth.[1] In line with the earlier pattern, the process of growth continued to be highly uneven. During 1939-47, increases in value added per capita ranged from $9.00 to $802 among the Piedmont counties. By 1947, two counties reported values added of less than $100 per capita, four from $100 to $200, and the remaining counties from $295 to $914. There has been no drastic shift in the relative standings of the area counties in that decade in terms of this index of industrial-urban development. The correlation coefficient between per capita value added of 1939 and that of 1947 was +0.76*.[2] If a more adequate measure of industrial-urban development is used, the continued stability of the development pattern becomes even more striking. By substituting per-capita payroll in major nonagricultural in-

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1. Textiles, with their heavy employment of women, continue to be the dominant manufacturing industry.

2. An asterisk (*) indicates coefficients significant at the 5 per cent level. Rank correlation coefficient (Spearman's *rho*) is used throughout this part. Considering the crudeness of the data (often arrived at after numerous estimates and adjustments), the small number of counties, and the assumptions implicit in the parametric techniques, it is felt that this nonparametric method is less pretentious, if not also more appropriate, than the orthodox variate correlation. In testing the significance of *rho*, E. G. Olds' table is used. This table may be found in his "The Five Per Cent Significance Levels for Sums of Squares of Rank Differences and a Correlation," *Annals of Mathematical Statistics*, XX (1949), 117-18.

TABLE 42. Value added by manufacture per capita, 1939 and 1947; payroll in major nonagricultural industries per capita, 1939 and 1947-48; farm income per worker, 1939 and 1949

(Ranks in Parentheses)

County	Value Added by Manufacture Per Capita[a]			Payroll in Major Nonagricultural Industries Per Capita[b]			Farm Income Per Worker[c]		
	1939	1947	Difference	1939	1947-48	Difference	1939	1949	Difference
Greenville	$183(2)	$807(2)	$624(2)	$147(1)	$597(1)	$450(1)	$269(11½)	$1,174(3)	$905(2)
Spartanburg	181(3)	789(3)	608(3)	127(2)	545(2)	418(2)	369(2)	1,192(2)	823(5)
Stephens	71(14)	651(6)	581(5)	51(14)	460(3)	409(3)	164(21)	1,239(1)	1,075(1)
Lancaster	139(5)	726(4)	587(4)	95(5)	420(4)	325(4)	332(4)	987(12)	655(14)
York	199(1)	615(7)	416(8)	106(3)	394(5)	288(5)	294(8)	1,061(7)	767(7)
Union	112(10)	914(1)	802(1)	98(4)	391(6)	293(5)	224(20)	884(17)	660(13)
Anderson	132(6)	716(5)	584(5)	94(6)	371(7)	277(7)	348(3)	1,024(9)	676(10½)
Chester	120(8)	482(10)	362(11)	93(7)	363(8)	270(8½)	316(7)	915(15)	599(17)
Hall	124(7)	594(8)	470(7)	89(8)	350(9)	270(8½)	247(16)	1,149(4)	902(3)
Pickens	83(12)	450(11)	367(10)	63(11)	262(10)	199(10)	273(10)	949(14)	676(10½)
Cherokee	119(9)	509(9)	390(9)	78(9½)	252(11)	174(12)	320(5)	1,116(5½)	796(6)
Jackson	55(16)	389(13)	334(12)	49(15)	240(12)	191(11)	261(14)	1,117(5½)	856(4)
Walton	75(13)	310(14)	235(14)	53(13)	219(13)	166(13½)	422(1)	1,053(8)	631(16)
Oconee	57(15)	390(12)	333(13)	43(16)	209(14)	166(13½)	270(11½)	1,008(10½)	738(8)
Barrow	158(4)	296(15)	138(16)	78(9½)	204(15)	126(15)	318(6)	958(13)	640(15)
Elbert	87(11)	179(17)	92(19)	58(12)	169(16)	111(16)	245(17)	821(18)	576(18)
Gwinnett	27(17)	154(18)	127(17)	27(17)	127(17)	100(17)	243(18)	912(16)	669(12)
Franklin	9(18)	187(16)	178(15)	12(18)	100(18)	88(18)	263(13)	756(20)	493(21)
Hart	8(19)	109(19)	101(18)	11(19)	70(19)	59(19)	282(9)	1,010(10½)	728(9)
Banks	0(20½)	28(20)	28(20)	1(21)	21(20)	20(20)	235(19)	736(21)	501(20)
Madison	0(20½)	9(21)	9(21)	3(20)	15(21)	12(21)	258(15)	814(19)	556(19)
21-County Averages	129	605	476	93	389	296	296[d]	1,023[d]	727[d]

[a] Computed from censuses of manufactures of 1940 and 1947 and censuses of population of 1940 and 1950. Population counts for the year 1947 were arrived at by straight-line interpolation using 1940 and 1950 census population data as terminal figures.

[b] Includes payrolls originating in the manufacturing, retail, wholesale, and services industries. Computed from censuses of manufactures of 1940 and 1947 and censuses of business of 1940 and 1948. The population denominator represents estimated 1947 population.

[c] Computed from data in Appendix III, Table 53.

[d] Corresponding U.S. figures are $928, $1,957, and $1,329 respectively.

dustries,[3] the relationship between the 1939 and 1947 values improved materially *(rho* = +0.87*)*.

These data clearly indicate a continued concentration of industrial-urban growth during the 1940's in those counties which already enjoyed greater development in 1940. As we have already seen, these developed counties also reported significantly higher agricultural incomes and labor returns (gross or net) per farm worker in 1940. Did the favorable conditions of the 1940's permit sufficient equilibrating factor movements to counteract the expected income effect of this growth pattern upon the agriculture of the study area?

The answer appears to be in the negative. For 1940, the correlation between industrial-urban development and farm income per worker yields a coefficient of +0.42*. For 1950, the same relationship is indicated by a coefficient of +0.68*. This suggests that local industrial-urban growth had succeeded in exerting increasing influences upon the level of farm income of the area counties during 1940-50. That is to say, the disequilibrating income effect of an uneven industrial-urban development continued to outstrip the equilibrating effect of factor transfers so that as a determinant of farm income level this development gained in importance between 1940 and 1950. Also, the correlation between increases in farm income per worker[4] and increases in nonagricultural payroll per capita during the 1940's yields a surprisingly high coefficient of +0.64*. The developed counties appear to have continued to move ahead of the underdeveloped counties in farm labor

3. A measure of this type is believed to be more adequate since, as Colin Clark has argued, a society's economic development, having reached an advanced stage in (secondary) industrial development, will largely take the form of growth in its tertiary industries. We have found that when value added by manufacture per capita is replaced by a more comprehensive measure (payroll in major nonagricultural industries per capita), the relationship between industrial-urban development and numerous other socio-economic variables is almost invariably improved. For this reason, industrial-urban development is measured by per-capita nonagricultural payroll throughout the remainder of this chapter.

4. Farm income is defined as the value of farm products sold or consumed on farms less most of the out-of-pocket production expenses (including estimated cost of fertilizer). Data do not represent net income, but they are superior to gross data in that county differences—which had become quite important during the 1940's as a result of substantial product innovations in some counties—in the relative importance of current production expenses are allowed for. Income excludes government payments to farmers but includes all income from agriculture paid to factor owners outside of agriculture.

Farm worker is defined to comprise the census farm (rural and urban) population aged fifteen and over adjusted downward to allow for off-farm employment and school attendance and, in the case of females, also lower productivity and labor force participation.

productivity in that decade.[5] To some this finding may come as a surprise since the decade was probably the most dynamic period in American history—a decade of high resource mobility and full-employment that offered unprecedented alternatives to farm people in low-income farm areas. If such a decade had failed to bring about in these areas the necessary farm reorganization required to push their agricultural income to a level comparable to that in the other sectors or regions, one wonders whether under the existing market mechanism full-employment alone will solve the problems of depressed farm areas.

To gain insight into the reasons for the continued divergence in farm income within the study area, we now turn to an analysis of the

5. Although the absolute dispersion (standard deviation) in income per farm worker rose (from $57 to $140) between 1940 and 1950, the relative dispersion as measured by the coefficient of variation narrowed (from 20% to 14%). This requires some elaboration. Take a simple case of two counties: A's 1940 and 1950 farm incomes were $200 and $400 per worker respectively and B's $400 and $700. Relatively, the difference has narrowed. Absolutely, it has not. The question as to which conclusion is more plausible depends on what one thinks future growth will be like. If one thinks that the base period relationship between A's rate of growth and B's will hold in the future, then a conclusion of convergence is appropriate. If one thinks that the base period relationship between A's absolute growth and B's will hold in the future, then a conclusion of convergence is misleading. In this case, the long-run income position of A can only approach (as a limit) two-thirds that of B. Even apart from this consideration, there is still one puzzling question unanswered. From a standpoint of either welfare or resource allocation, is an income difference between, say, $100 and $300 more significant than an income difference between $1,000 and $2,000?

A far more important consideration, however, has to do with the fact that we are thus far dealing with total farm income. No distinction is made between the commercial and part-time sectors of agriculture. As we shall see later, the part-time sector was far more responsive than the commercial sector to the forces of local industrial-urban development. The developed counties reported far greater relative numbers of part-time farms than the underdeveloped counties. But for a number of reasons—some of which in no way imply lower efficiency—even relatively well-adjusted part-time farms yielded labor productivity below that of commercial farms of moderate size. This tends to pull down the developed counties' average *total* farm income per worker. Since part-time farming as a method of farm reorganization cuts across the agricultural and nonagricultural sectors, its effectiveness cannot be judged without the inclusion of both farm and nonfarm incomes. One solution to the problem is to add to total income from agriculture that income received by part-time farm families from off-farm employment. If the 1950 census (net cash) median farm family income (available only for that year) is used to represent income so redefined, then the coefficient of variation increases to 28% (as compared with 14% if farm income alone is included). Since in 1940 off-farm employment of farm residents was relatively unimportant—only 10% of farm operator man-years was spent off-farm in 1940 as compared with 30% in 1950—it is doubtful that the coefficient of variation could be raised from 20% to 28% by the inclusion of income from off-farm employment. In short, the conclusion of increasing farm income disparity within the Southern Piedmont seems plausible for the decade 1940-50.

nature of the resource and scale adjustments undertaken by the area's farm firms.

FACTOR ADJUSTMENTS, 1940-50

The basic farm input and output data used in this chapter were arrived at after numerous refinements and adjustments were applied to census returns. Certain items not enumerated by the Census Bureau, such as the value of farm consumed farm products, the cost of fertilizer, and the value of farm machinery and equipment in 1950, represent our estimates. Output data were further refined to eliminate the effect of short-run yield variability. These data represent essentially "normal" farm income. A simple reasonableness test was then applied to the estimated input and output data. In this connection, we employed a multiple correlation in which changes in output during 1940-50 were related to changes in labor and capital[6] during the same period. The result of this test ($R = 0.85^*$) suggests that our basic data are adequate.

The test also brings to light two other significant pieces of information: (1) In real magnitudes, changes (reductions) in farm labor force were far more important during 1940-50 than changes (increases) in farm capital throughout the study area. (2) Yet, in terms of either the gross or partial correlation coefficients, changes in output were related primarily to changes in capital and, only to a limited extent, to changes in labor. This suggests the presence of substantial initial underemployment of farm labor in the study area, such that reductions in farm labor did not appreciably decrease output. This interpretation gains plausibility if attention is called to the fact that the farm labor force, as defined in this work, represents not so much labor input as available labor in agriculture.

The above findings lead one to speculate that increased agricultural labor productivity during 1940-50 resulted primarily from reductions in farm labor which served to reduce the labor denominator in the per-worker farm income index without at the same time reducing its income numerator appreciably. By relating percent increases in farm income per worker to percent decreases in farm labor and percent increases in capital respectively, we find that the speculation is consistent with the resulting correlation coefficients ($+0.44^*$ and -0.002 respectively).[7] Stated in different words, these coefficients indicate that dif-

6. Includes land, buildings, livestock, equipment, and current inputs.

7. Computed from data in Tables 42 and 53. In dealing with farm capital in the aggregate, have we concealed possible relationships between changes in labor productivity and changes in certain types of capital during 1940-50? No. The correlations be-

ferential increases in per-worker farm income among counties during 1940-50 resulted largely from their differential rates of change in farm labor force rather than from those in farm capital. Considering the developed counties' more substantial declines in their farm labor force,[8] this then explains their continued success in pulling further ahead of the underdeveloped counties in terms of farm labor productivity during the 1940's. Interestingly enough, there is apparently no correlation (*rho* = +0.12) between industrial-urban growth and relative increases in the total value of farm output during the 1940's. This indicates that the greater increases in labor productivity in the developed counties had been achieved without increasing their total output at a rate higher than that observed in the underdeveloped counties. This finding lends support to the argument that the solution of depressed farm areas' resource and income problems need not lead to increased national surpluses.

The relative importance of labor and capital as determinants of the area counties' relative level of agricultural labor productivity can also be seen from the extent to which the ratio of capital to labor had been raised by changes in labor and by changes in capital. If per cent increases in capital per worker are related to per cent decreases in total labor, the resulting correlation coefficient is +0.85*. On the other hand, the correlation coefficient between per cent increase in per worker capital and per cent increases in total capital is only +0.22.

These findings need not mean that only labor markets had been relatively more efficient in the developed counties. One can readily assert differential capital market performances, if these counties' capital markets permitted their farmers to apply enough non-labor inputs to a point where the gap between rates of return and interest rates became narrower than might be expected in the retarded counties. That the gap between rates of return and interest rates had been narrowed more rapidly in the developed counties is suggested indirectly by the high correlation (*rho* = +0.71*) between industrial-urban growth and increases in all farm capital per worker during the 1940's.[9]

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tween per cent increases in farm output per worker, on the one hand, and per cent increases in the total value of each of the principal capital components, on the other, yield the following nonsignificant coefficients: –0.05 for land and buildings, –0.08 for livestock, –0.06 for implements and machinery, –0.01 for current inputs, +0.09 for all noncurrent inputs, and –0.14 for all non-real-estate inputs. (Data from Appendix III, Table 54.)

8. Correlation between decreases in farm labor and increases in nonagricultural payroll per capita yields a coefficient +0.61.*

9. Basic data employed thus far in this section are from Appendix III, Tables 52 and 53.

Significantly, the developed counties showed more substantial adjustments in their agricultural sector despite important equilibrating population movements during the 1940's. During the decade, the study area lost 37,473 Negroes or 18.7 per cent of its original 1940 Negro population through net out-migration (Table 43). Among counties, the rates of net migration varied greatly, ranging from +0.6 per cent in Hall County to −51.4 per cent in Banks County. The correlation coefficient (+0.62*) between industrial-urban growth (as measured by increases in nonagricultural payroll per capita, 1939-48) and the rate of net in-migration, 1940-50, clearly shows that net Negro out-migration had been more important in those counties with slower industrial-urban growth. A similar relationship (*rho* = +0.76*) was observed with respect to white migration, although this had been much less important. For the study area, this totaled 16,478 or 2.7 per cent of its 1940 white population. In terms of total (white and Negro) net migration, the net loss for the area came to 53,951 persons over the ten-year period or 6.6 per cent of its total 1940 population. Among the area counties, only four netted some in-migration (0.6-5.6 per cent), while all others suffered net losses from 1.9 to 35.1 per cent. The relationship between industrial-urban growth and total net in-migration rates is also positive and highly significant (*rho* = +0.73*).

While population movements responded to county (and regional) differences in employment opportunities and income levels, the fact remains that differential labor transfers have not been sufficient to prevent further divergences in agricultural labor productivity between the developed and underdeveloped counties. In view of the greater declines in the developed counties' farm labor force, these transfers failed even to offset county differentials in alternative employment opportunities open to farm people. Policy-wise, this seems to suggest that, under the framework of existing markets and development pattern, it would be ill-advised to rely solely on full-employment policies in solving the low-income problem.

EFFECTS OF INDUSTRIAL-URBAN DEVELOPMENT
UPON COMMERCIAL AND PART-TIME FARMS

We now turn our attention to an investigation of the manner with which the commercial and part-time[10] sectors of agriculture responded

10. Actually, the part-time sector in this chapter refers to what the Census Bureau called "other" farms which include part-time as well as residential and abnormal farms. For our purposes, the distinction between part-time and residential farms is not particularly meaningful, since many, if not most, of the latter represented part-

TABLE 43.   Estimated net in-migration (+) and out-migration (−) by race, April 1, 1940, to April 1, 1950[a]

(County ranks in parentheses)

County	Net Migration, *Total Population*, 1940-50		Net Migration, *White Population*, 1940-50		Net Migration, *Negro Population*, 1940-50	
	Absolute	Relative (1940 Pop. = 100)	Absolute	Relative (1940 Pop. = 100)	Absolute	Relative (1940 Pop. = 100)
Anderson, S.C.	−11,893	−13.4% (12)	− 5,050	− 7.7% (10)	− 6,843	−29.3% (16)
Cherokee	− 4,043	−12.1 (10)	− 2,698	−10.6 (15)	− 1,345	−17.3 (6)
Chester	− 5,160	−15.8 (14)	− 786	− 4.6 (8)	− 4,374	−28.0 (15)
Greenville	+ 7,640	+ 5.6 (1)	+10,610	+10.0 (2)	− 2,970	− 9.8 (4)
Lancaster	+ 2,900	+ 8.6 (7)	− 437	− 2.0 (6)	− 2,463	−21.6 (8)
Oconee	− 3,724	−10.2 (9)	− 2,256	− 7.3 (9)	− 1,468	−25.4 (14)
Pickens	− 3,644	− 9.8 (8)	− 2,547	− 7.9 (11)	− 1,097	−22.4 (9)
Spartanburg	+ 792	+ 0.6 (4)	+ 2,277	+ 2.3 (4)	− 1,485	− 4.9 (3)
Union	− 4,633	−14.8 (13)	− 1,827	− 9.1 (13)	− 2,806	−24.9 (12)
York	+ 1,539	+ 2.6 (3)	+ 4,587	+12.3 (1)	− 3,048	−14.2 (5)
Banks, Ga.	− 3,067	−35.1 (21)	− 2,727	−33.8 (21)	− 340	−51.4 (21)
Barrow	− 1,653	−12.7 (11)	− 1,086	−10.2 (14)	− 567	−23.1 (11)
Elbert	− 3,758	−19.2 (16)	− 1,067	−12.0 (12)	− 2,691	−34.8 (20)
Franklin	− 3,557	−22.8 (18)	− 2,796	−21.0 (18)	− 761	−33.5 (18½)
Gwinnett	− 944	− 3.2 (6)	− 254	− 1.0 (5)	− 690	−20.7 (7)
Hall	− 676	− 1.9 (5)	− 697	− 2.2 (7)	+ 21	+ 0.6 (1)
Hart	− 3,145	−20.3 (17)	− 2,245	−19.4 (17)	− 900	−22.7 (10)
Jackson	− 4,737	−23.6 (19½)	− 3,551	−21.5 (19)	− 1,186	−33.5 (18½)
Madison	− 3,165	−23.6 (19½)	− 2,370	−21.9 (20)	− 795	−30.5 (17)
Stephens	+ 449	+ 3.5 (2)	+ 464	+ 4.2 (3)	− 15	− 0.8 (2)
Walton	− 3,672	−17.7 (15)	− 2,022	−14.3 (16)	− 1,650	−25.0 (13)
All 21 Counties	−53,951	− 6.6%[b]	−16,478	− 2.7%[b]	−37,473	−18.7%[b]

[a] Computed from population counts in decennial population censuses of 1940 and 1950 and from birth and death statistics in annual vital statistics reports (*Vital Statistics of the United States*, Department of Health, Education, and Welfare, 1940-50). Net migration estimates are arrived at by (1) estimating the expected population on April 1, 1950, in the absence of migration and (2) taking the difference between the expected population and the actual census population on the same date. This difference indicates net in- or out-migration depending on whether the census population exceeds or falls short of the expected population. The expected population is calculated on the basis of the following formula: $P_{50} = P_{40} + B - D$, where P_{50} is the expected 1950 population in the absence of migration during 1940-50, P_{40} the census 1940 population, B the total number of live births during 1940-50 (by place of residence) and D the total number of deaths during 1940-50 (by place of residence).

[b] Corresponding unweighted averages are −12.0%, −8.3%, and −22.5% respectively.

to differential industrial-urban development within the study area during 1940-50, in particular, to possible differences in the degree of responsiveness between the two sectors. Because of the lack of a comparable breakdown by commercial and part-time farms in the 1940 census, we shall rely upon cross-sectional analyses for the year 1949-50. In that year there was a significant relationship (*rho* = +0.64*) between the level of industrial-urban development and farm income per worker on *all* farms. The relationship between industrial-urban development and farm income per worker on *commercial* farms yields a correlation coefficient of only +0.42*. On the other hand, the same relationship as applied to *part-time* farms gives a coefficient of +0.70* (Table 44). A comparison of these (rank correlation) coefficients suggests that the commercial sector of the area's agriculture had been less responsive to the influences of differential industrial-urban development than the part-time sector. How do we explain this? In this connection, we advance the hypothesis that this sectoral difference in the degree of responsiveness is to be explained by the difference in the type and magnitude of the adjustments undertaken in each agricultural sector in response to local industrial-urban development during 1940-50.

The Commercial Sector

In the 1950 census, only a very limited number of capital items was given separately for commercial and part-time farms. These items were stated in non-comparable units, and it is difficult to estimate the total value of farm capital for commercial and part-time farms. A crude index of capital per farm or per worker can be constructed on the basis of available information.[11] In these terms, the relationship between capital per commercial farm and industrial-urban development is expressed by a correlation coefficient of +0.47*. Commercial farms in the developed counties appear to have been more highly capitalized than those in the underdeveloped counties. The developed counties also reported somewhat larger numbers of workers per commercial farm in 1950. The correlation between workers per commercial farm and industrial-urban development yields a coefficient of +0.50*. If a

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time farms with smaller output (value of products sold less than $250). As for abnormal farms, their number (exactly four in 1950) was most insignificant in the area. Thus, our reference to all "other" farms as part-time farms does no violence to accuracy.

11. For information pertaining to the construction of such an index, see footnote b, Table 45.

TABLE 44.   Income per worker and index of capital per worker, commercial and part-time farms, 1949-50

(Ranks in parentheses)

County	FARM INCOME PER WORKER, 1949[a]				INDEX OF FARM CAPITAL PER WORKER, 1950[b]	
	All Farms	Commercial (A)	Part-Time (B)	B as % of A	Commercial	Part-Time
Anderson	$ 923(10	$ 980(11½	$ 682(11	70%(8	23 (5	20 (5
Cherokee	1,025.(6	1,026.(9	1,017.(2	99(1½	37 (13	21 (6½)
Chester	834(16	920(14	461(16	50(14	34 (11	29 (11
Greenville	1,071.(4	1,074.(6	1,066.(1	99(1½	30 (9	11 (3
Lancaster	899(12	930(13	797.(5½	86(4	51.5(20	8 (2
Oconee	950.(9	1,219.(13	670(12	55(13	36.5(13	43.5(14
Pickens	858(14	906(16	798.(5½	88(3	24 (6	23 (8
Spartanburg	1,089.(3	1,213.(4	716.(9	59(10	36 (13	18.5(4
Union	819(17	861(19	684(10	79(7	41.5(17	21.5(6½
York	957(7	979(11½	815(4	83(6	26 (7½	4 (1
Banks	676(21	911(15	417(18½	48(15	40.5(15½)	60 (20
Barrow	857(14½	1,022(10	465(15	45(17	21.5(4	53.5(17
Elbert	741(18	838(21	473(14	56(12	45 (18	33.5(12½
Franklin	682(20	858(20	361(21	42(19½	18.5(3	55 (18½
Gwinnett	857(14½	904(17	773(7	85(5	32 (10	25.5(9½
Hall	1,104(2	1,355(2	565(13	42(19½	12 (2	44.5(15
Hart	918(11	1,041(8	455(17	44(18	50.5(19	55 (18½
Jackson	1,047.(5	1,137.(5	747.(8	66(16	40 (15½	46 (16
Madison	732(19	879(18	417(18½	47(16	56 (21	61.5(21
Stephens	1,178.(1	1,541.(1	872.(3	57(11	11 (1	25 (9½
Walton	954(8	1,052(7	404(20	38(21	26.5(7½	34 (12½
21-County Averages	$ 937	$1,030	$ 682	66%	33	33
Rank Correlation Coefficient (with Nonagricultural Payroll Per Capita as the Independent Variable):	+0.644	+0.425	+0.701	+0.540	+0.275	+0.849

[a] Computed from data in Appendix III, Table 55.
[b] The index is based upon the following (per worker) capital items: value of land and buildings, value of current inputs, and the index of livestock. The latter is in turn based upon the number of cattle and calves, milk cows, and pigs and hogs per worker. For explanation and justification of the method used, see footnote b, Table 45. Basic capital data are compiled or computed from the 1950 agricultural census. Basic worker data are from Appendix III, Table 55.

measure of scale is constructed to reflect capital as well as labor inputs per farm, we find that there is a significant relationship ($rho = +0.56*$) between the degree of industrial-urban development of a county and the scale of its commercial farms (Table 45).

These capital and scale indices include the land component expressed in value rather than in physical terms. Examination of physical data showed no relationship between industrial-urban development and average size of commercial farm, in terms of either cropland or total farm land acreage (rho equals $+0.13$ and -0.03 respectively). If the land component is measured by average value of land and buildings per farm, the developed counties displayed distinct superiority over the underdeveloped counties ($rho = +0.74*$). Farm values tend to overstate the amount of capital inputs per commercial farm in the developed counties, since the higher land values of these counties reflect partly their greater competing nonagricultural land uses and more costly farm dwellings and better improved residential sites. The physical size of farms will understate the amount since higher land values of the developed counties undoubtedly stemmed in part from their greater past investments in *productive* land improvements.[12] At any rate, the scale of commercial farms would still be significantly associated with industrial-urban development ($rho = +0.47*$) if acres of cropland per farm were substituted for average farm values. These qualifications, together with an examination of original data, do suggest that the commercial farms of the developed counties did not have substantially more efficient scales than those of the underdeveloped counties.

On the other hand, in terms of factor combinations, the developed counties' commercial farms showed no consistent differences from the underdeveloped counties'. In 1950, there was no significant relationship between the index of industrial-urban development and that of capital per worker on commercial farms ($rho = +0.27$, Table 44). We conclude that (1) the dominant type of adjustment on commercial farms in response to local industrial-urban development has been changes in scale rather than changes in factor combination, but (2) these scale changes did not differ substantially between the developed and underdeveloped counties. Consequently, commercial farms of the former counties were not greatly more efficient in scale in 1950 than those of the latter counties. Underlying this finding is the fact that scale adjustments represent a relatively slow and difficult process because of the

12. *Supra*, pp. 142-44.

restrictions imposed by imperfections in the capital market, difficulties in land transfers, inadequate managerial talent, and the dependence of these adjustments upon adequate outflow of farm operators. Given relatively small scale differences, one would expect also relatively minor differences in physical labor productivity and farm income per worker in the commercial sector between the developed and underdeveloped counties. These findings explain then the relatively weak response of the commercial sector to local industrial-urban development and its positive income effect.

A further consideration is: To what extent do county differences in income per worker on commercial farms reflect actual differences in physical labor productivity (an indicator of the effect of scale on returns)? On the basis of our earlier findings, there can be little doubt that part of the developed counties' higher farm incomes can be attributed to existing imperfections in the product market. Because of the salutary effects of industrial-urban development upon the efficiency and competitiveness of local product markets, the developed counties' farmers tended to receive higher prices for their products and pay lower prices for their inputs. The creation of new markets for certain farm products as a direct result of local urban growth (and rises in per-capita income) also tended to give these farmers opportunities to engage in income raising product innovations. Product market imperfections tended to put the developed counties in a position to market greater proportions of some of their farm products (e.g., milk) in the most favorable form (fluid milk) in terms of price. Since income differences arising from these sources in no way imply differences in physical productivity (hence, the effect of varying scale upon returns), the use of income data tend to *overstate* the effect of the developed counties' greater scale upon labor productivity and per-worker income. If it were possible to secure income data which reflect *only* the income effect of scale, the relationship between per-worker income so obtained and industrial-urban development would be even weaker than that shown earlier (+0.42*).

The Part-Time Sector

In 1950, the part-time farms of the developed counties were no larger than those of the underdeveloped counties, as shown by the non-correlation (*rho* = −0.10) between industrial-urban development and the index of capital per farm (Table 45). Yet, with far less labor per farm, the part-time farmers of the former counties realized incomes

TABLE 45. Income, workers, and capital per farm, commercial and part-time, 1949-50, Southern Piedmont
(Ranks in parentheses)

County	Farm Income Per Farm, 1949[a]		Number of Farm Workers Per Farm, 1949[b]		Index of Capital Per Farm, 1950[c]		Index of Scale on Commercial Farms, 1949-50[c]
	Commercial	Part-Time	Commercial	Part-Time	Commercial	Part-Time	
Anderson, S. C.	$1,896(10)	$371(16)	1.936(7)	.744(9)	25.5(2½)	22.0(2)	32.5(2½)
Cherokee	1,951(8)	538(2)	1.901(8)	.528(18)	46.0(12)	48.0(12)	54.0(11)
Chester	1,788(13)	331(20)	1.945(5½)	.718(11)	45.0(11)	32.0(5)	50.5(10)
Greenville	2,154(3)	486(4)	2.006(2)	.455(20)	30.0(5½)	51.0(14)	32.0(2½)
Lancaster	1,631(17)	336(19)	1.753(14)	.422(21)	73.5(21)	45.5(10)	87.5(21)
Oconee	2,112(5)	527(3)	1.732(16½)	.786(8)	59.0(17½)	54.5(17½)	75.5(17)
Pickens	1,763(14)	469(7)	1.945(5½)	.588(13)	29.5(5½)	43.0(9)	35.0(4)
Spartanburg	2,513(1)	404(13)	2.072(1)	.564(15½)	37.0(9)	31.0(4)	38.0(6)
Union	1,693(15)	386(15)	1.967(4)	.492(19)	51.5(14)	56.0(19)	55.0(12½)
York	1,959(7)	401(14)	2.000(3)	.564(15½)	25.0(2½)	15.0(1)	28.0(1)
Banks, Ga.	1,552(19)	438(11)	1.704(18)	1.049(2)	58.5(17½)	49.5(13)	76.5(18)
Barrow	1,805(11½)	483(5)	1.765(13)	1.038(3)	34.0(7)	29.0(3)	47.0(8)
Elbert	1,451(20)	327(21)	1.731(16½)	.692(12)	57.0(16)	36.0(7½)	73.5(16)
Franklin	1,384(21)	346(17)	1.613(19)	.959(5)	36.0(8)	35.5(7½)	55.0(12½)
Gwinnett	1,665(16)	440(9)	1.842(10)	.569(14)	38.5(10)	52.5(15½)	48.5(9)
Hall	2,097(6)	410(12)	1.548(20)	.727(10)	47.0(13)	76.0(21)	67.0(15)
Hart	1,809(11½)	440(9)	1.738(15)	.966(4)	64.0(19)	47.0(11)	79.0(19)
Jackson	2,142(4)	601(1)	1.884(9)	.808(7)	52.5(15)	53.0(15½)	61.5(14)
Madison	1,592(18)	441(9)	1.811(12)	1.058(1)	72.0(20)	55.0(17½)	84.0(20)
Stephens	2,330(2)	480(6)	1.512(21)	.551(17)	26.5(4)	59.0(20)	37.5(6)
Walton	1,927(9)	341(18)	1.831(11)	.844(6)	44.0	33.5(6)	55.0
21-County Averages	$1,926	$434	1.869	.636			
Rank Correlation Coefficient (with Non-agricultural Payroll Per Capita as the Independent Variable)	+0.616	-0.071	+0.503	-0.859	+0.467	+0.097	+0.558

[a] Computed from data in Appendix III, Table 55.

[b] The index is simply the rank order of the sum of each county's ranks in terms of the following measures of capital components: value of land and buildings per farm, current inputs per farm, per cent farms with one or more tractors, and livestock per farm. The latter measure is in turn represented by a single rank index based upon each county's sum of ranks in terms of numbers of cattle and calves, milk cows, and pigs and hogs per farm. These procedures are employed because the 1950 census fails to provide sufficient data in value term, by commercial and part-time farms, for us to derive total capital data. Although its construction appears extremely crude, actually the index when ordered (i.e., ranked) gives us a very close approximation of the "first principal component" of a given number of variables (types of capital in this case). The first principal component may be defined as a new "derived" variable which accounts for a greater part of the total variation contained in the original variables than any other "derived" variable. While the first principal component does not account for all the variation, it represents the original variables taken as a group more adequately than any other single measure of capital per farm. Evidently, then, insofar as our index when ordered closely approximates the first principal component, it would be difficult to derive a better single measure of capital per farm. For those readers with some degree of familiarity with statistics, particularly multivariate analysis, the following passage from Kendall's *Notes on Multivariate Analysis* (Virginia Polytechnic Institute, Blacksburg, Virginia, Mimeo., 1954, p. 28) may be of interest: "Such a procedure, in fact, maximizes the average Spearman correlation between the original variates] as it can, so to speak, and will approximate ... the first principal component." In the same work Kendall ranked forty-eight counties according to the yields for each of the ten specified crops, summed the ranks for each county and compared the order of the rank-sums with that given by the first principal component. He found that the agreement was strikingly close as indicated by $rho = 0.99$ (*ibid.*). For Kendall's exposition on component analysis, see Chapter 2 (pp. 7-29) of his manuscript.

[c] This index is the sum of each county's ranks in terms of the following variables: number of workers per farm, value of land and buildings per farm, index of livestock per farm, per cent farms with tractors, and value of current inputs per farm. It is then simply the sum of the index of capital per farm (Col. 5) and the county rank (in parentheses) representing number of farm workers per farm (Col. 3). This index when ranked (number in parentheses) is also a close approximation of the first principal component. Since this index treats labor as a single component but not capital (whose components enter into the index separately), one might argue that too much weight is given capital. However, even if capital is treated as a single component, the resulting new index remains essentially unchanged. Thus, the correlation coefficient between this index and industrial-urban development is +0.567* as compared with +0.558* in the table.

(per farm) comparable to those received by their counterparts in the underdeveloped counties. This is clear from the high negative correlation ($rho = -0.86*$) between industrial-urban development and the number of workers per part-time farm and from the lack of relationship ($rho = -0.07$) between industrial-urban development and farm income per part-time farm. It is not surprising that we should find substantially higher income and capital, when stated in per-worker terms, in the developed counties. The correlation between industrial-urban development, on one hand, and income and capital per worker on part-time farms, on the other, yields coefficients of $+0.70*$ and $+0.85*$ respectively (Table 44).

What sort of inferences can we draw from these relationships? Let us begin by noting that the greater diversion of available family labor force from part-time farms to off-farm employment was achieved in the developed counties apparently without compensating increases in capital inputs and without lowering per-farm incomes to a level below that prevailing in the part-time sector of the underdeveloped counties. This leads to two important conclusions: (1) Increased ratio of capital to labor, primarily through decreases in labor, had been the dominant type of adjustment within farm firms of the part-time sector; and (2) the modern part-time farms represented small subsistence units of the past with much initially underemployed family labor with the result that later diversion of even a substantial part of this labor[13] to off-farm work did not appreciably decrease output per farm. Insofar as the diversion of labor can be made without increased capital and without much loss of farm income,[14] we may readily assert that this type of adjustment not only can be effected easily but offers very strong inducement to small farmers faced with off-farm employment opportunities.

The strong negative relationship ($rho = -0.86*$) between workers per part-time farm and industrial-urban development is consistent with our earlier findings that the extent to which farm labor may work off-farm (without changing residence) was determined by the availability of nonfarm work within reasonable commuting distances and that nonfarm jobs were rationed in favor of nearby residents.[15] The more abun-

13. Much of it was female because of the importance of textiles in the area.

14. It is well to add that the greater diversion of the developed counties' labor from the part-time sector to off-farm employment may well have reduced their real output per farm to a level below that of the underdeveloped counties. This, however, was apparently offset by the more favorable prices (received and paid) that accrued to the former counties' farmers under their more efficient product markets.

15. *Supra,* pp. 156-60.

dant job opportunities of the developed counties were therefore limited largely to the farm families of the same counties. This conclusion is supported by the high positive correlation (*rho* = +o.72*) between per cent of all farm-operator man-years spent on off-farm work in 1949 and the degree of industrial-urban development. That the relative importance of off-farm work varied greatly among counties in 1949 is clear from the fact that in four of the area counties nearly 40 per cent of their total number of operator man-years were spent on off-farm work while in four other counties the figure was only 14-17 per cent.

In summary, the dominant type of adjustment in the part-time sector was change in factor combination primarily through reductions in formerly underemployed family labor. Adjustments of this type were (1) easily effected, (2) dependent upon the availability of local off-farm employment opportunities, and (3) unaccompanied by noticeable falls in output. It is not difficult to see then why this sector should have been highly responsive to local industrial-urban development which gave rise to nonfarm employment. Nor is it difficult to see why extensive adjustments of this type reported by the developed counties should have raised their per-worker farm income substantially above that in the underdeveloped counties. Finally, we conclude that it is because of the totally different nature of their internal adjustments that the two agricultural sectors showed different degrees of responsiveness to the positive income effect of local industrial-urban development. Our empirical findings are, therefore, quite consistent with our hypothesis. Insofar as the part-time sector displayed far greater responsiveness, the continued divergence during 1940-50 in labor productivity and income per worker in agriculture between the developed and underdeveloped counties appears to be explainable largely by developments in this sector.

A Comparison

Data in Table 45 clearly show that in all counties the commercial sector reported higher farm income per worker than the part-time sector. If farm income per worker on part-time farms is stated as a percentage of that on commercial farms, important county variations readily came to light. In 1949, this percentage ranged from a high of 99 per cent in Greenville and Cherokee counties to a low of 38 per cent in Walton County. County variations in this respect are significantly correlated (*rho* = +o.54*) with those in the degree of industrial-

urban development. In other words, in terms of per-worker farm income, the part-time sector was more nearly equal to the commercial sector in the developed counties than in the underdeveloped counties. This is in line with our earlier conclusion that per-worker incomes in the part-time sector differed much more substantially between the developed and underdeveloped counties than did those in the commercial sector.

A more interesting question is: Why did the part-time sector consistently report lower income per worker than the commercial sector, despite the latter's slower response to the salutary forces of local industrial-urban development? Certainly, the part-time sector appeared to have had no less capital per worker than the commercial sector. In 1950, on a per-worker basis, the part-time sector of the study area as a whole, as compared with the commercial sector, reported larger numbers of acres of cropland, cattle and calves, milk cows, and hogs and pigs, but less current inputs. The sectorial differences are by no means consistent from one county to another. If a variance analysis is made, we find that the part-time sector differed significantly from the commercial sector with respect to only milk cows and hogs and pigs per worker. The number of tractors per worker, however, almost certainly gave some edge to the commercial sector, although it is not susceptible to measurement for lack of separate census counts for commercial and part-time farms. While it is difficult to state meaningfully the exact sectorial differences in capital per worker, it is probable that in 1950 the two sectors were about equal in this respect, with the part-time sector perhaps having a slight edge.

How then do we explain the observed sectorial differences in farm income per worker? Examination of census state economic area data reveals that, for the economic areas comprising the study area, the part-time sector reported consistently higher average operator age than the commercial sector, although the difference was small. Far more important is the adverse effect of off-farm employment upon the age composition (hence, average labor productivity) of the "residual" labor devoted to agriculture. Off-farm employment of farm persons tends to select those in the most productive age groups.[16] Since the labor force estimates used in this work are not refined to allow for age differences among workers, the unfavorable age composition of the labor

16. See, for instance, Vernon W. Ruttan's prize-winning article, "The Impact of Urban-Industrial Development on Agriculture in the Tennessee Valley and the Southeast," *Journal of Farm Economics*, XXXVII (February, 1955), 48.

force on part-time farms accounts in part (perhaps in large part) for the relatively low level of income per worker in this agricultural sector. A further consideration is that part-time farming tends to suffer in efficiency since on farms where the bulk of family income comes from nonfarm sources the role of farming is subordinated to that of off-farm activities. Finally, sectorial differences in the average size of farm firms may well explain some of the observed differences in farm income per worker between the two sectors.

There appear to be many likely explanations for the sectorial income differences, but not all explanations imply differential efficiency. While it is plausible to conclude that part-time farming represents a relatively inefficient way of farming, the sectorial difference in efficiency may be rather unimportant. Also, the relative efficiency of part-time farming improves with local industrial-urban growth, and the application of strict efficiency criteria to part-time farming may be inappropriate for two reasons. First, part-time farming is often considered a means of cushioning the effect of possible industrial unemployment. Secondly, in more extreme cases, part-time farms are little more than rural residences. To apply strict efficiency criteria to such cases is almost tantamount to applying them to a case where a homeowner paints his house on weekends. At any rate, since part-time farming, as a method of farm reorganization, cuts across the agricultural and nonagricultural sectors, its income effect should be judged only after the inclusion of added income from nonfarm sources. When so viewed, the part-time sector compared favorably with the commercial sector in income per person gainfully engaged.

Although as a concluding note to this chapter a summary section is appropriate at this point, we shall defer its presentation to the next chapter in which an overall review of all our findings will be presented. The latter chapter will also include several significant conclusions and policy recommendations that follow from our investigation of the 1940-50 decade.

SUMMARY AND CONCLUSIONS

SUMMARY

Southern Piedmont before and after Industrialization, 1860-1900 and 1900-40

The fact that agricultural incomes differ greatly between communities is well known. Observed community average farm incomes, far from tending toward equality over time, have pulled increasingly further apart. If the past trend is allowed to continue, community-wide poverty (in a relative sense) will become even more pronounced in the future. As poverty is socially undesirable and economically indicative of uneconomic resource allocation, its elimination should clearly be an integral part of any sound public policy. This at once points to the necessity of identifying the forces that bring about long-time geographical disparities in farm income.

There are many theories that have been advanced in explaining geographical income disparities within agriculture. The more popular explanations may be grouped broadly as follows: (1) those which rest on some "original" difference between communities (e.g., community differences in the natural ability of the human agent, in the indifference pattern, in the quality of the agricultural land, or in the distribution of windfall gains in general); (2) those which rest on some "dynamic" difference (e.g., a differential rate of local industrial-urban development) between communities; and (3) those which rest on the ground that communities have not been uniformly affected by the varying pattern of secular drifts in farm commodity prices. But when evaluated from the standpoint of their plausibility in explaining the persistent, increasing differences in average community farm income over time, intuitive arguments and available empirical evidence presented earlier seem to indicate that it is improbable that "original" differences in certain community attributes can qualify as sufficient

explanations. This is not to say that "original" differences are irrelevant in explaining short-run income differences. On the contrary, windfall gains and losses in general are quite capable of giving rise to important short-run income disparities. Certain "original" community differences in human attributes (leisure preference and natural ability) are sufficient to lead to sustained, though not necessarily increasing, income differentials even under perfect markets. As Schultz put it, however, "it may be held that, whereas there are now poor and rich communities in agriculture, they are still essentially more alike than they are unlike one another, in the distribution of natural human endowments."[1]

Varying amounts of leisure do not necessarily reflect community differences in the leisure preference pattern. Frequently, greater leisure enjoyed by a community is mistaken for the cause, rather than the consequence, of the community's low level of income. For instance, a common argument is that Southern farmers are poor because they fish and hunt as much as they do. It is undoubtedly more plausible to hold that Southern farmers fish and hunt as much as they do because they have little else productive to do on their farms. This need not mean that the application of their labor has reached the point where its marginal productivity is equal to zero. But it does mean that if, by a thorough-going farm reorganization, labor productivity can be raised sufficiently in Southern agriculture, Southern farmers may well do as little fishing and hunting as their Northern counterparts.

Certainly, the long-run relative income position of an agricultural community depends not so much on its current relative income position as on its relative ability to adapt its agriculture to changes in demand and technology. This ability is a function of the relative efficiency of local factor markets. It is reasonable to suppose that the agriculture of a community under relatively efficient factor markets will in the long run be relatively prosperous even if its initial "given" conditions are highly unfavorable. A sufficient explanation of persistent, increasing income differences lies, therefore, in those community differences that are sufficiently dynamic to offset equilibrating factor transfers between communities and still leave the high-income communities with relatively more efficient local factor markets. In the Piedmont study area, such a dynamic factor was found in its rapid, but highly uneven, industrial-urban development since 1900.

The Piedmont study area offers a rather singular opportunity to

1. Schultz, "Reflections on Poverty . . . ," *op. cit.*, p. 4.

compare empirically the effects of community differences, both "original" and "dynamic," upon the incomes of the area's agriculture over a period of some eight decades. As a consequence of the highly uneven cotton culture in the Piedmont before the Civil War and the favorable prices of this staple, there was an important source of windfall gain to some of the area counties, resulting in widely different rates of capital formation in agriculture. By 1860, the resource combination in agriculture also differed widely among counties so that the cotton counties reported substantially higher ratios of capital to labor than the non-cotton counties. Since land quality, resource endowments, and windfall gains in general (or their effects) can always be shown as part of the existing capital, community differences in the simple ratio of capital to labor can be taken to describe a large number of "given" or "original" community differences. Under conditions of perfectly immobile factors, such an "original" difference could have led to sustained, or even increasing, income differentials in the Piedmont. Available empirical evidence has shown clearly that during 1860-1900 initial income differences largely disappeared, so that by 1900 all area counties were in virtual long-run equilibrium with respect to one another. Migration estimates and time-series data on per-worker value of farm capital leave little doubt that the equilibrating income movement was the result of factor transfers. Even under limited factor transfers permitted by the existing imperfect markets, an "original" difference seemed to be incapable of sustaining income differences over time.

Available data also indicate that equilibrating factor transfers, as measured by comparative migration estimates for the area counties, were even more substantial after 1900.[2] Yet, in spite of this, the period 1900-40 was noted for the increasing divergence in (farm) incomes in the Piedmont. Underlying this movement were the highly dynamic, but uneven, local industrial-urban development and its positive contributions to the efficiency of the local factor and product markets. The intensive investigation in Chapters IV through VI has shown that the uneven local industrial-urban growth has been sufficient to offset the substantial equilibrating factor movements and still leave the developed

2. During 1900-40, the average rate of net out-migration per decade from the underdeveloped counties exceeded that from the developed counties by 12.4 per cent. In contrast, this difference was only 3.5 per cent before 1900. Although (because of the paucity of county vital statistics before 1900) the latter is arrived at on the basis of the actual estimates for 1850-60, it probably overstates rather than understates the actual difference in the migration patterns of the two groups of counties during 1860-1900 in view of the convergent income trend throughout that period.

counties with relatively more efficient local factor (and product) markets. This the cotton-induced "original" difference had clearly failed to do.

The fact that the area counties were becoming more alike during 1860-1900 is also evident from a number of other socio-economic indexes. By 1900, the Southern Piedmont study area had recaptured much of its earlier homogeneity, which was lost during the ante-bellum period following the invention of the cotton gin. At the turn of the present century, the area was remarkably homogeneous in terms of its type of farming, rate of tenancy, farm organization, crop yields, banking resources, transportation facilities, and population characteristics (e.g., illiteracy rate and age composition).[3] It is unlikely that later farm income differentials—which were found to be positively and significantly associated with the degree of local industrial development—can be attributed to the unequal prior conditions to any important extent.

The detailed manner with which local industrial-urban development influenced the functioning of local factor and product markets and the organization of local agriculture has been presented in Chapters IV, V, and VI. By way of summarizing the more important findings, we may list the following:

1. The greater alternative employment opportunities open to the developed counties' farmers had raised the value imputed to the human agent in agriculture and, at the same time, precipitated farm reorganization, causing the number of farm workers to decline (via out-migration and local nonfarm employment) in these counties during 1900-40.

2. In spite of their far more substantial net (relative) out-migration, the underdeveloped counties registered actual increases in the number of their farm workers.

3. Because of the higher rate of capital accretion and lower interest rates, agricultural investment had proceeded at a more rapid pace in the developed counties. The latter counties also showed greater investment in their human agent and agricultural land.

4. As a result, the capital-labor ratio in agriculture—which was not significantly different between the two groups of counties in 1900—had become significantly and substantially higher in the developed counties by 1940.

5. In view of the relative homogeneity of the type of farming in

3. Although the cotton-induced county differences in the race composition of the population remained important throughout the entire study period, the effect of these differences upon farm incomes has been carefully evaluated and found to be of no significance.

the Southern Piedmont since the Civil War, these observed county differences in the capital-labor ratio reflect primarily county differences in (a) the relative prices of capital and labor, (b) the extent of external and internal capital rationing, and (c) the existing farm organization (rather than county differences in the production functions).

6. Concurrent with the developed counties' greater increases in the ratio of capital to labor in agriculture was their more extensive farm reorganization along two lines—the development of part-time farming and the enlargement of full-time farms.

7. The growth of urban centers, by creating new or greater demand for certain farm products, gave rise to favorable income-raising opportunities for reorganization in the enterprise (product) combination of the developed counties' farm firms. Urbanization and rising incomes also enabled the developed counties' farmers to market greater proportions of certain products (e.g. milk) in the most favorable form (e.g. fluid milk) price-wise.

8. As a result of a combination of the above factors, the developed counties by 1940 reported not only significantly higher gross farm income per worker, but also significantly higher net income and net returns to labor and management per worker.

9. Our investigation also appears to indicate that these differences between the developed and underdeveloped counties cannot yet be attributed to county differences in personal capacities, or preferences for leisure and a particular way of life, or the age composition of the farm labor force.

10. In the final analysis, the persistence of important county differences in their per-worker net labor returns is indicative of fundamental impediments to intercounty movement of labor within agriculture. These impediments may be traced to (a) the inflexibility in the terms of the prevailing leasing contracts and the indivisibility of existing rental units, (b) the adherence of farm-operators to non-economic considerations based upon the concept of a traditional "agricultural ladder" which tends to focus their attention on improving their tenure status rather than their income position, (c) the insignificance of full-time, regular wage laborers in agriculture in the study area counties, and (d) the immobility of owner-operators, arising from the fact that their movement is not independent of the imperfect manner with which local capital and land markets functioned.

Under a long-run setting, characterized by rapidly rising (per capita) incomes in the nonfarm sector of the economy and a relatively low

income elasticity of demand for agricultural products, the solution of the resource and income problems of American agriculture must lie in increased labor productivity without at the same time increasing total production *proportionately.* During the past several decades, this has meant steady reductions in the total farm labor force, accompanied by improved production techniques. Even allowing for future population increases, this trend will continue for some time to come. It is clear from our findings that the performances of the factor markets of the developed counties have been more nearly consistent with the requirements called for by these changes. It is against this background that we consider the developed counties' factor markets more efficient.

Southern Piedmont under General Economic Prosperity, 1940-50

During 1940-50, the highly uneven pattern of industrial-urban development in the study area continued virtually unchanged from the earlier pattern established during 1900-40. Also in line with the past trend, the same industrial-urban counties continued to gain in farm income per worker over the same agricultural-rural counties during the decade. This took place within a small relatively homogeneous area and in spite of the fact that the 1940's were a period of unprecedented resource mobility and full employment. This suggests that, unless one takes a very long view, full-employment conditions (therefore, full-employment policies), while necessary, may not be sufficient to solve the income and resource problems of today's low-income farm areas. Our findings further indicated that in the Southern Piedmont the relatively strong positive income effect exerted by industrial-urban development upon local agriculture was largely the result of the ability of such a development to absorb formerly underemployed farm labor. Differential increases in farm labor productivity during 1940-50 between the developed and underdeveloped counties were found to be related to differential rates of labor force decline, rather than to differential rates of capital increase.

Investigation on the pattern of net population movements to and from the study area counties revealed a high degree of negative association between industrial-urban growth and the rate of net out-migration during 1940-50. It is then clear that equilibrating population transfers did take place during the decade. In view of the developed counties' greater increases in per-worker farm income and more substantial decreases in farm labor force, it is equally clear that the differential migration pattern had not been sufficient to arrest the movement

of income away from equilibrium or to offset the greater capacity of the developed counties to absorb internally substantial portions of their farm labor force through either off-farm employment or intra-county, rural-urban migration.

During 1940-50, the study area's agriculture continued to respond to the positive income effect of local industrial-urban growth. There appears to be a noticeable difference in the degree of responsiveness between the commercial and part-time sectors. The hypothesis that this difference may be explained by the type of dominant adjustment found in each sector and by the relative ease with which each may be made seems to be consistent with our findings. By way of summary, these findings may be listed as follows:

A. With respect to the part-time sector:

1. The dominant type of adjustment in response to local industrial-urban development was one of increased ratio of capital to labor.

2. Adjustment of this type was easily effected since it was achieved in the study area primarily through simple decreases in family labor force in agriculture (via off-farm employment) with little or no concurrent increases in capital inputs or consolidation of existing farm firms.

3. The ease with which this adjustment was made brought about substantial differences in the ratio of capital to labor between the developed and underdeveloped counties.

4. In line with the law of diminishing returns, these county differences in turn brought about important county differences in labor productivity in this agricultural sector. Differential labor productivity was also accentuated by the presence of small farms with much initially underemployed family labor where reductions in farm labor were not subsequently accompanied by proportional declines in output.

B. With respect to the commercial sector:

1. The dominant type of adjustment as induced by local industrial-urban development was one of increased scale.

2. Adjustment of this type was not easily effected since its feasibility and success presuppose an adequate outflow of farm operators, relatively efficient local land and capital markets, as well as a level of managerial skill that some operators did not possess.

3. Scale adjustment, therefore, proceeded slowly even in the developed counties so that by 1950 scale differences in the commercial sector between the developed and underdeveloped counties were not nearly as striking as factor-ratio differences in the part-time sector.

4. Within the range relevant to the Piedmont, returns to scale appeared relatively constant, with the result that labor productivity on commercial farms did not differ substantially between the developed and underdeveloped counties of the study area.

5. Even more so than the developed counties, the underdeveloped counties had to rely on this form of farm reorganization.

Finally, the greater responsiveness shown by the part-time sector suggests that the continued divergence in labor productivity and income per worker in agriculture between the developed and underdeveloped counties was explainable largely by developments in this sector during 1940-50. The above findings also further confirm the earlier statement that during the 1940's increases in agricultural labor productivity in the study area were largely brought about by reductions in an underemployed farm labor force rather than by increases in capital.

This greater responsiveness of the part-time sector does not mean that this sector enjoyed greater agricultural labor productivity than the commercial sector. As a matter of fact, although workers on part-time farms had on the average no less, perhaps more, capital to work with than those on commercial farms, the former realized lower average farm income in all counties. At a glance, this suggests that part-time farming represents a less efficient way of utilizing existing agricultural resources. In this connection an important consideration is that, perhaps to a large extent, lower labor productivity on part-time farms can be accounted for by the age selectivity of local nonfarm employment which left the residual labor force on part-time farms with an unfavorable age composition. At any rate, it is probably inappropriate to apply strict efficiency criteria to part-time farms. Moreover, since part-time farming, as a method of farm reorganization, cuts across the agricultural and nonagricultural sectors, its income effect should be judged only after the inclusion of added income from nonfarm sources. When so viewed, the part-time sector compared favorably with the commercial sector in income per person gainfully engaged.

<div align="center">CONCLUSIONS</div>

A Generalization

This study has shown that in the Piedmont, long-time, increasing farm income disparity resulted from the uneven pattern of industrial-urban development within the area and that "given" or "original" differences among counties, though capable of creating short-run income differences, appear to lose their income-differentiating potential over

time even under highly imperfect factor mobility. May we generalize on the basis of this finding? Statistically speaking, generalization may be extended only to a hypothetical universe consisting of counties similar in characteristics to the study area counties. Our selected counties may then be looked upon as a sample drawn from such a hypothetical universe.[4] Generalization about the universe consisting of all areas of this country is permissible only if a "representative" (random or otherwise) sample from this universe is taken under study.

Even so, our findings throw considerable light on the process by which industrial-urban development increases the efficiency of local factor and product markets. It is frankly difficult for the writer to visualize a set of reasonable local conditions which might prevent markets from responding to such a development in the manner this study has described. Since there can be no doubt that efficient markets mean efficient economic organization and resource utilization, a generalization about the ability of industrial-urban development to exert positive income effect upon local agricultural (and, thus, explain longtime farm income disparity among areas) is probably not too hazardous—statistical considerations aside.

At this point, the reader undoubtedly recalls numerous exceptions (such as Iowa) where high farm income has persisted in spite of lack of substantial local industrial-urban development. A reconciliation, however, is possible by simply adopting Schultz's broad formulation of his "matrix" approach. Briefly, this hypothesizes that persistent, indeed increasing, community differences in average farm income are to be explained by the dynamic, but uneven, pattern of economic development whose locational matrices are primarily industrial-urban in composition.[5] In our attempt to lend empirical meaningfulness to the proposition, we have narrowly identified the income-differentiating force by an index based upon value added by manufacture per capita or nonagricultural payroll per capita. This approach works well in a

4. It is also possible to treat findings concerning the study area counties in a purely descriptive sense without drawing statistical inferences (about the universe) as is normally implied in the application of significance tests. In this case, the significance tests serve the purpose of determining the probability of obtaining a given statistic strictly as a result of such random elements (apart from sampling errors) as observation errors and transitory forces. Even here, however, our group of twenty-one counties may be viewed as a random sample from an infinite, hypothetical population. If the data used are census enumerations, this population then consists of the same twenty-one counties subject to an infinite number of repeated enumerations. Since even complete censuses, our primary source of data, are subject to errors (presumed to be random), the population so defined is meaningful.

5. Schultz, "A Framework for Land Economics . . . ," *op. cit.*, pp. 205-6.

small area, since all points of such an area may be said to occupy a similar position relative to some major industrial-urban matrix. Even within Iowa, the relationships established in this work may be expected to hold true generally.[6] But under Schultz's broad formulation, Iowa would be considered within the effective confines of a powerful industrial-urban matrix centered upon Chicago. On the other hand, some sections of the South, though more industrialized than Iowa, are not well integrated into any such major matrix. The fact that these sections show lower farm income than Iowa does not constitute an exception viewed from Schultz's thesis. Unfortunately, the difficulty in delineating the effective confines of major matrices seriously compromises the meaningfulness of this hypothesis from a testing standpoint.

A Look at the Future

In the Southern Piedmont, the relatively strong positive income effect exerted by industrial-urban development upon local agriculture was largely the result of the ability of such a development to absorb formerly underemployed farm labor. Adjustment of this type substantially increases farm income per worker since it reduces the number of workers in agriculture without affecting total output appreciably. Bearing this finding in mind, what can we say of the future if the uneven pattern of industrial-urban growth continues as it has in the past (i.e., if growth continues to be concentrated in those areas that already have substantial development)? A reasonable speculation is that the income effect of industrial-urban development will diminish in the future as farm labor underemployment disappears in the developed areas. With continued disappearance of disguised unemployment in these areas, further transfers of farm labor to the nonagricultural sector will be accompanied by increasingly larger decreases in total farm output, lowering the increases in per-worker income. Meanwhile, the underdeveloped areas still with substantial underemployment will continue to move up in farm labor productivity at about the same rate if out-migration and off-farm employment (though limited) of their redundant farm labor proceed as in the past.[7]

6. For example, Bachmura discovered a significant relationship between farm income level and the pattern of industrial-urban development (as measured by the level of nonfarm income) in that state. See his thesis, "Geographic Differentials . . . ," ch. VI.

7. This prognostication about declining geographical farm income disparities in the future assumes the projection of certain basic forces in accordance with their past trends. If economic development and/or its geographical concentration should take an upturn in the future, agricultural underemployment in the underdeveloped areas may increase. Likewise, if technological developments should take a jump ahead in agri-

This speculation even today is not without some factual support. The nation as a whole—which in 1940 had undoubtedly less under-employment than the study area—lost some ground relative to the Southern Piedmont during the 1940's with respect to agricultural labor productivity.[8] On the other hand, within the study area, the decade witnessed a trend toward increasing income disparity between the developed and underdeveloped counties. As the resource and income problems within agriculture are gradually solved in the developed areas, the benefits of further industrial-urban growth in these areas will accrue in increasing proportions to their less fortunate neighbors. Such a diffusion of effects may take the form of increased inter-area migration as local nonfarm job rationing lessens.

Even today, after a long period of general economic prosperity, there exist in many farm areas serious income and resource problems accompanied by gross underdevelopment as well as underemployment of human resources. Certainly, in the Piedmont, a decade of full-employment witnessed only increased income (farm or total) disparity between the developed and underdeveloped counties. Relative to the nation as a whole, the latter counties did no better than holding their own during 1940-50. It is plausible then to conclude that, within the framework of existing markets and development pattern, other remedial action programs must supplement full-employment policies, if quicker and fuller relief is to be given to the depressed farm areas.

culture—and their benefits would fall largely to farms in the developed areas—this would work against our prognostication. This follows since the macro effect of technological advancements in an industry with inelastic demand is freed resources and since the burden of resource transfers would be borne primarily by the underdeveloped areas whose agricultural efficiency would have further declined relative to that of the developed areas as a result of the latter's adoption of improved technology. On the other hand, if policymakers should recognize that improved credit and technical assistance are necessary complements to out-migration in achieving rapid increases in agricultural productivity in the underdeveloped areas and if action programs should be instituted in this connection, then more extensive farm reorganization and greater increases in local farm incomes would result in these areas even if no increase in their rate of out-migration takes place.

8. Data in Table 42 and accompanying footnotes show that per-worker farm income was $296 in the Southern Piedmont in 1940 or 47.1 per cent of the national average ($628). By 1950, the area average ($1,023) had risen to 52.2 per cent of the national average of $1,957. This closing of the gap (in a relative sense) would be more significant if income from off-farm employment is included. In terms of median (net cash) income of farm families and unrelated individuals from all sources, the average for the study area in 1950 was fully 64 per cent of the U. S. median of $1,567. In fact, in that year, two area counties reported median incomes only 4 per cent below the national median.

Policy Implications of Findings

With Respect to Underdeveloped Countries.—It may be recalled that this work deals with an American experience that highlights an important consequence of a sustained economic development. This consequence is found in serious resource and income problems encountered by many farm areas as economic development proceeds apace. Although this work has little to offer in the way of suggestions to the usual development problems, its findings may nonetheless give some helpful guides to today's underdeveloped countries in avoiding certain pitfalls.

Within the context of economic development, agriculture's role is generally a declining one relative to other economic sectors.[9] In a system where the decision-making is decentralized, resource transfers from a declining sector to the others is achieved under the pressure of sectorial income gaps. In this connection, the greatest pressure is applied by economic bankruptcy. In agriculture, however, the threat of bankruptcy is far less real since it can be, and has been, postponed by farm firms by simply accepting lower returns to unpaid family labor and management. Many agricultural areas also tend to be remote in relation to centers of industrial-urban development. This tends to aggravate already serious adjustment problems in agriculture. Unlike similar adjustments in other sectors, downward adjustments in farm labor often require difficult long-distance migration. The great disparity in the type of skills and ways of life connected with farm and nonfarm work further complicates the process of resource transfers among sectors. These and other factors suggest why agriculture tends to become a *persistent* problem industry in an atmosphere of general economic development, acting as a drag on the growth process. The argument suggests the desirability of appropriate public policies with respect to agriculture.

In coming to the aid of a declining agriculture, governments have in the past shown an unmistakable tendency of rushing headlong into shortsighted, misguided agricultural policies. Actually, two avenues

9. Except in countries where there exists a comparative advantage (hence, specialization) in agricultural production and where increases in world demand for export farm products are therefore sufficient to make continuously expanding agricultural output in these countries consistent with general economic development. It is also worth noting that in countries where the income level is so low that hunger and starvation are still a widespread reality, demand elasticities for farm products may remain high for many years even under rapidly rising incomes. The relative decline of agriculture is, however, bound to come in the long run as economic development continues, unless the country in question should fall in the above exception.

are open to them: (1) To adopt measures designed to assure "reasonable" resource incomes through subsidies (either direct, as in production payments, or indirect, as in price support and/or protective tariffs) while permitting, even encouraging, resources, principally labor, to remain in agriculture even though the required changes call for downward adjustments; or (2) to adopt measures designed to achieve the same income objective for agriculture by facilitating the adjustment process. It is perhaps superfluous to add that the latter alternative is preferable, agricultural fundamentalist considerations aside.

In this country, the lawmakers have cast their lot with the first alternative. However sound this alternative might have been viewed from the standpoint of political expediency or agricultural fundamentalist ideas to which many subscribe, few public policies are as wasteful. If this country has shouldered the burden without apparent ill effect, few other countries could have done so with equal ease. For the underdeveloped countries, it is perhaps imperative that they avoid the costly mistake that Turkey made in borrowing the price-support program from the United States. Agriculture rightly deserves much attention in these countries since the great bulk of their resources is tied up in agricultural production. Improved production and management techniques, when properly modified to suit local conditions, should be freely borrowed and adopted from the more advanced nations. But the real long-run purpose of improved technology—*to free agricultural resources for general economic development rather than to increase total farm production*—should be clearly recognized. Exclusive concern with improved techniques in their agricultural policies is defensible only during early stages of development. During the early stages, the elasticities of demand for basic food and fiber may be expected to be relatively high so that few resources would be freed by productivity-raising technological innovations in agriculture. But as today's underdeveloped countries reach more advanced stages of economic development, they should pay equal attention to the transfer and fuller utilization of the freed resources in order to realize the full benefit of improved technology in agriculture. Only when these basic facts are recognized by policy-makers can we hope for long-range agricultural policies that are consistent with a high rate of economic development.

Of more immediate interest to the underdeveloped countries is the following observation. At the outset, in order to minimize agriculture's lagging tendency and the need for government actions to keep the lag

within acceptable bounds, the underdeveloped countries would do well to consider seriously the possibility of decentralizing geographically economic development. Our findings on the nature of modern poverty within American agriculture leave little doubt that geographical concentration of economic development increases the magnitude of agriculture's adjustment problems. Without disregarding altogether external economies of geographical concentration[10] and location theory, it would be well to avoid extreme concentration as exemplified by the pattern in such a country as Venezuela where the bulk of the development projects is centered around the capital city.

Finally, in the light of our findings and certain generally-understood relationships between economic development and agriculture, we present the following summary drawn from the American experience to serve as possible guides to the underdeveloped countries in formulating their long-range development policies.

1. Persistent fundamental agricultural maladjustment—characterized by the presence of resources, chiefly labor, in quantities that depress resource incomes in agriculture below equilibrium returns—is a probable consequence of economic development. Rising per-capita real income, together with income-inelastic demand for basic food and fiber, requires continuous transfers, from agriculture to other industries, of resources that are being accumulated (capital) and reproduced (labor) in the agricultural sector. Failure to do so leads to underemployment of resources in agriculture.

2. The extent of maladjustment under a given development setting varies directly with the degree of geographical concentration in the pattern of economic development. An uneven development pattern not only renders the needed adjustments of a given magnitude more difficult but gives rise to areas of poverty within agriculture.

3. The American development pattern has been characteristically uneven. Farm areas favorably situated in relation to major centers of economic development have encountered relatively few difficulties in adjusting their agriculture to changing conditions. Farm areas less favorably situated with respect to major centers or lacking industrial-urban development of their own, even today after a decade and half of unprecedented general economic prosperity, still face serious resource and income problems. They constitute the essence of America's current low-income problem.

10. It should be emphasized that too much concentration can lead to external diseconomies.

4. American agricultural problems have been aggravated by short-sighted farm legislations which have tended to hamper rather than facilitate the needed agricultural adjustment. The present program, because of its fantastic cost and controversial nature, has diverted public attention from the solution-seeking programs.

5. These problems have also been complicated by a combination of (a) extremely rapid technological innovations in American agriculture (a good thing in itself) largely as a result of the prodigious research efforts of the nation's land-grant colleges and the successful technical-educational training programs for farm persons under the auspices of the extension system, and (b) a disconcerting failure to implement any follow-up program to achieve a fuller utilization of the agricultural resources freed by modern technology, thereby preventing a full realization of the technological benefits. Underlying this argument is the basic fact that, given the price- and income-inelastic nature of the demand for farm products, the real purpose of technological innovations in agriculture is to free resources for general economic development, rather than to increase total farm output. Stated somewhat differently, the real outcome of technological innovations in agriculture is freed resources. This adds to the burden already imposed by economic development on agriculture of transfering agricultural resources to other industries. Here again, because of the uneven geographical pattern of economic development in this country, neither the ability to adopt modern technology nor the burden of resource transfers has been shared equally by all farm areas. Unfortunately, remote, underdeveloped farm areas, already the victim of economic development, seldom find themselves in a position to participate fully in general technological advancement. At the same time, as a result of their increased relative inefficiency they are called upon to bear most of the burden of resource transfers. It is not surprising then that the low-income American farm areas, *left on their own*, have been unable thus far to close the income gap between them and the rest of the nation. As a matter of analogy, their situation may be likened to that of a man pursuing a receding horizon.

With Respect to American Public Policies.—Insofar as long-time geographical farm income disparities do not appear to be attributable to such factors as geographical differences in the ability[11] and prefer-

11. Acquired ability, a function of education and income, is capable of explaining some of the observed geographical income differences. As long as the human agent's native ability (to acquire knowledge) is essentially alike in all areas, income differences so explained may still be indicative of uneconomic resource allocation, since the

ence pattern of the human agent, two policy conclusions are possible: (1) Poverty within agriculture, the essence of the nation's low-income problem, implies uneconomic resource allocation and merits the attention of policy-makers. (2) The situation may be corrected by appropriate public policies. Earlier we have argued that although the maintenance of full-employment is a necessary condition it is not a sufficient condition to an early solution of the low-income problem. Such a solution would seem to require supplementary remedial actions.

Our basic finding that geographical farm income level is related to the pattern of industrial-urban development leads to the policy implication that one possible course of remedial action would be to encourage industrialization in low-income rural communities. Elsewhere in this work, extensive findings indicate that the positive income effect of industrialization is transmitted to local agriculture through its salutary influences upon local market performances. This implies that the farm income level of an area may be raised by increasing local market efficiency directly without resorting to industrialization as an intermediary.[12] In this connection, all public policies for the purpose of improving market performances in the low-income areas are clearly appropriate. Since the needed adjustment in these areas is in the direction of reduced labor in agriculture, improved market performance is synonymous with an accelerated outflow of persons dependent on agriculture. A suggestive list might include the following policy measures:

1. Provision for improved and extended nonfarm placement services in depressed rural areas. These services should include not only improved employment information but also comprehensive services (perhaps credit or even subsidies to help defray the costs of transition) to farm persons during and for some time after their migration.

2. Gradual cutback of the price-support program. Though benefiting most the large-scale farmers who are least in need of help, the program has nonetheless imparted enough benefit to the low-income farmers to impede their outmovement from agriculture. Funds thus released may be used to implement the solution-seeking programs.

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situation would seem to imply an underdevelopment of the human agent (as distinguished from underemployment of given labor) in the low-income areas.

12. The statement taken by itself undoubtedly appears tautological. However, the argument that the low-income phenomenon is attributable to market imperfections which can be remedied, rather than to given preference and personal ability which do not lend themselves to policy treatment is not tautological.

3. Reorientation in the vocational training of the farm people in recognition of the fact that technological innovations and low elasticities of the demand for farm products, together with the current surplus of farmers, point unmistakably toward continued out-migration of the farm people.

These measures seek to hasten the adjustment process by encouraging more rapid decline in the farm labor force of the low-income areas. In such areas, with their characteristic agricultural-rural make-up, this decline is possible only through out-migration. The subsequent farm reorganization is one of consolidating small existing units into more efficient farm firms. A significant finding (Chapter VII) with respect to this type of farm reorganization is that scale adjustment is an extremely difficult and slow process, being dependent upon the ability of the remaining farmers to overcome such market and personal impediments as difficulties in land transfers, capital rationings, and lack of managerial skill required for the operation of enlarged units (usually with fundamentally different enterprise combinations and optimal farming practices). The reorganization itself would require above all the support of an efficient capital market and competent technical assistance. It is unfortunate that the low-income farm areas should suffer from a low educational level and inefficient capital markets for want of local industrial-urban development and at the same time be confronted with the task of reorganizing the farm firms through scale adjustment.

The public neglect in these areas (education and credit) undoubtedly accounts in part for the failure of the low-income areas to improve their relative income position despite substantial and sustained out-migration. While it is plausible to argue that out-migration from these areas has not been sufficient, it should be recognized that out-migration only lays the groundwork for the needed adjustment. To complete this difficult process there is a need to expand greatly the type of *supervised* credit now provided by the Farmers' Home Administration. This credit, since it is granted largely on the basis of potential earnings after reorganization rather than present earnings and asset ownership, fits the low-income farmers' credit needs admirably. Being a supervised credit, it is also accompanied by valuable technical aid to the borrowers.

The adjustment process can also be hastened by measures designed to promote industrialization in the low-income rural communities. These measures may be called indirect in that they seek to improve

local market performances via local industrialization. More important is the fact that this approach opens the way to two alternative methods of farm reorganization, enlargement of existing commercial farms through consolidation and conversion of small units into part-time farms. Scale adjustment called for under the first alternative, though still difficult, is facilitated by improved education and local capital markets as a consequence of local industrial-urban development.

More significant, however, is the ease with which the new alternative may be carried out. Reorganization along the line of part-time farming requires only simple transfers of a part of available family labor force from the family farm to off-farm employment. The adjustment is not hampered by the impediments in the capital and land markets or the lack of operators' managerial skill. It requires only off-farm employment opportunities which local industrial-urban development provides as it proceeds apace. Where changes in the enterprise combination do take place in response to increasing opportunity cost of labor, they are of the type (e.g., from cotton or tobacco to timber) that can be executed with ease. While part-time farming hardly represents the most efficient way of farming, its total effect upon the income of the farm family is immediate and fully capable of removing poverty from within agriculture. At any rate, since in more extreme cases part-time farms are little more than rural residences and since part-time farming is often looked upon as a hedge against possible industrial unemployment, the application of strict efficiency criteria in this regard is not altogether appropriate.

There is also reason to believe that with many farm families part-time farming ultimately represents an intermediate step in the total transition process. As local off-farm employment and wage rates increase and as nonfarm employment is better understood by farm persons, the tendency to cling to some farming operations will continue to decline until the family farm becomes in effect a rural residence. This trend will undoubtedly take an upturn if the maintenance of the historical base for acreage allotment purposes begins to lose its significance under decreasing price-support or if the historical base is protected against reductions resulting from underplanting. The great popularity of the current soil-bank program, which provides such a protection, among part-time farmers of the Piedmont seems to support this argument.[13] In Greenville County where part-time farming predominates,

13. Large commercial farms make practically no use of the program.

half of the current cotton allotment (15,741 acres) is being placed in the soil bank.

As is already evident on many well-adjusted "part-time farms" in the Piedmont, farming in a broad sense will continue even on these nominal farms but only in its most extensive form, centered around a timber enterprise. For some low-income farm areas (e.g., parts of Eastern Kentucky), this is likely the only economic use of existing farmland consistent with equilibrium conditions. In such areas, unless some nonfarm opportunities are provided locally, the required out-migration, as Cochrane fears, will almost certainly be of a magnitude that seriously disrupts or even destroys their existing social organization.[14]

Along this line, there is much more that can be said for lessening the required out-migration by providing local employment opportunities. Migration (particularly if it is over long distances) entails painful economic and social adjustments on the part of migrants and their families as well as communities at both ends of the migration routes. The reality and magnitude of the adjustment problems faced by Southern migrants and recipient Northern communities are reflected in a recent series of reports on Chicago's "hillbilly" problems in the *Chicago Tribune* (March, 1957). The accounts are grossly exaggerated and unfair to Southern migrants (indiscriminately labelled hillbillies); nonetheless, they indicate the painful nature of the adjustments involved. As for Southern rural communities, continued out-migration means losses of their productive youth, shrinkages in their local tax base as a result of declining property value and possibly total income, reductions in already inadequate public services, and a perverse exportation of capital (in the form of education invested in migrating youth) to capital-abundant communities. If out-migration is relied upon too heavily in the adjustment process, the federal government may in the end still be faced with important transfer payment obligations to Southern communities.

Field workers engaged in the national rural development program have often reported a lack of aspiration among many low-income families. It seems that, in a sociologist's sense of the word, they are "adjusted" and seemingly happy with their lot. Undoubtedly, there are such families, although we suspect their number may be exaggerated. In these cases, higher incomes, if their attainment entails a great deal of

14. Willard W. Cochrane, "Appraisal of Recent Program Changes," *Journal of Farm Economics*, XXXIX (May, 1957), 296.

effort and risk, would not be a sufficient inducement. Such families may well shun opportunities to migrate or to enlarge their farm firm. However, even they may find a higher level of living irresistible if it is within their easy reach. Local industrialization and part-time farming provide such an all but irresistible opportunity.

In view of its many virtues, part-time farming as a form of farm reorganization merits attention and promotion if an early solution of the low income problem is a social goal. But part-time farming is possible only where there is local industrialization. Without disregarding completely other efficiency considerations, a sound public policy may well give a high priority to the encouragement of industrial growth in the depressed rural areas. In this connection, policy-makers might consider the following suggestive list of courses of action: (1) Examine the appropriateness of revising existing minimum wage laws to allow for the free play of regional wage differentials; (2) incorporate rural underemployment in defining "labor-surplus" areas and implement more effective programs to create industrial employment in rural communities so defined; (3) examine possible ways and means of removing a major obstacle to industrialization in such rural areas—i.e., inadequate local public services, a situation aggravated by sustained out-migration (along this line, two alternative approaches suggest themselves: direct government programs to raise the level of local public services and indirect programs to help prospective firms meet local deficiencies by means of special privileges, e.g., rapid amortization); (4) conduct comprehensive resource surveys in the depressed rural areas.

Finally, local industrial-urban development, as findings in Chapter IV suggest, brings in its wake improvements in local product markets as well as beneficial changes in the size, composition, and nature of the demand confronting local agriculture.[15] These salutary outcomes would be denied to the low-income farm areas if their agricultural resource and income problems are to be solved solely by means of out-migration.

The above arguments should not be taken to mean that policy-makers need only be concerned with the program of encouraging industrial growth in the low-income areas. We fully recognize that no one single program is fully adequate for all areas and that an effective program must be a well-coordinated, well-integrated whole consisting

15. These changes are in the direction of increasing the aggregate demand for locally-produced farm products and rendering it more elastic as a result of induced increases in local demand for such products as fluid milk, fruits, vegetables, and specialty products.

of all programs that directly or indirectly contribute to the needed adjustment process in agriculture. Programs designed to hasten out-migration, to improve capital markets, or to encourage industrial growth are all technical complements in the sense that a given area's incomes (per worker or per capita) can be raised more rapidly and to higher levels when all three programs are employed than when any one is taken alone. What the above arguments do mean is that in terms of the evidence we have uncovered the industrialization program deserves a prominent place in the total program for those low-income areas where such a program is feasible.

Some Related Aspects.—Lest agricultural fundamentalists should hastily find us guilty of arbitrarily placing economic efficiency ahead of the non-monetary values that farm families might hold, we hasten to add that all our policy implications are drawn with the view of enabling low-income farm families to maximize their monetary and non-monetary returns. The suggested programs, if carried out, would broaden, not narrow, the range of alternatives open to these farm families. No coercion is implied. Indeed, the maximization principle is meaningful only when real alternatives are present. It is true that the anticipated increases in income levels would follow from the suggested programs only if income considerations, relative to such non-monetary considerations as the alleged goodness of farm life, bulk large in the hierarchy of values held by low-income farm families. On the basis of our findings and other available evidence we suspect that in general this is true. However, this is a question of fact, not of value.

Some economists have questioned the efficacy of industrialization as a solution to rural poverty. Their argument in short rests on the fact that many low-income rural communities offer few or no locational advantages to industrial concerns. The firms they are likely to attract are generally small, labor-intensive, low-productivity establishments whose demand and supply conditions are said to be not unlike those confronting typical farm firms. The influx of such industrial concerns would not change the basic economic conditions of the depressed areas. Bishop cautioned, "If local industrial development becomes an end in itself, it may lead to shattered hopes [of achieving steadily rising incomes] and perpetuate inefficient resource use."[16]

In this connection, we should like to call attention to three points. First of all, the type of industries that the depressed rural communities

16. C. E. Bishop, "National Rural Development Program," *Journal of Farm Economics*, XXXIX (May, 1957), 276-77.

can attract can be upgraded by public policies to improve local public services. Secondly, even small low-productivity industrial concerns are typically corporate enterprises employing hired labor for which some positive (considerably above zero) wage must be paid. Inefficiency in their resource use would not be as great as on typical farm firms which represent family enterprises relying upon unpaid family labor. This argument gains weight when one considers the traditional rigidity in wage rates and the operation of the current minimum wage law.[17] Both factors tend to limit the employer's ability to postpone readjustments required by changing conditions through the simple expediency of paying lower wage rates. (The situation visualized here is one in which industrial concerns in the low-income areas sell in competitive markets but possess varying degrees of monopsony power in local labor markets.) Industrial concerns even in the low-income areas (where workers have few or no local alternatives) are confronted with only two effective alternatives, to suffer economic bankruptcy or to make the necessary adjustments in response to changing conditions. Typical farm firms on the other hand can postpone bankruptcy and tolerate resource underemployment almost indefinitely by simply accepting lower returns to unpaid family labor (and management). Indeed, when pressed by subsistence, there is nothing to prevent it from maximizing the farm's total product by pushing the application of available family labor to a point where its marginal productivity is zero. This an industrial concern employing hired workers who receive positive wages clearly cannot do. Of course, if external employment opportunities are for some reason closed to people from the low-income areas, underemployment is preferable to unemployment. But external opportunities do exist. In this context, local unemployment precipitates out-migration, while underemployment tends to postpone it and perpetuate inefficiency in resource use.

Finally, even if the low-income rural areas should have so few locational advantages that they can attract, with the help of local subsidies, only poorly-capitalized marginal concerns which often turn out to be short-lived, all is not necessarily lost. In this connection, it is interesting to note several findings of a recent survey of the impact

17. Although the minimum wage law tends to prevent individual firms possessed with varying degrees of monopsony power in the local labor market from falling into inefficiency by postponing readjustment through the simple expediency of paying wages below the legal minimum, it should be recognized that a minimum wage law which ignores regional wage differentials tends to retard industrialization in the low-income areas.

of a moderate-sized, low-productivity apparel firm upon a small high-land county of Tennessee. The firm, while in operation from 1949 until its failure early in 1957, represented the county's only major industrial experience in its history. In the peak year, the company's payroll (about half a million dollars), together with induced increases in other local incomes, probably caused a near-doubling in the county's income relative to what it was before the establishment of the firm.[18] More importantly, although the firm failed recently, its income effect had been sufficient to "upgrade" local people's wants in a way that is conducive to greater labor mobility in response to income differentials. It is noteworthy that this occurred in a social setting marked by extreme isolation and rigid values. It appears that much of the uneasiness concerning rural industrialization may be unwarranted. What one might rightly question is whether a coordinated incentive program administered by a body capable of rising above inter-community rivalry may not be superior to present competitive subsidization of industries by local communities. We hasten to agree with Bishop, on the other hand, that rural industrialization should not be taken as an end in itself. As we have suggested earlier, it should be clearly recognized as only one of the means of solving rural poverty. Its effectiveness is greatest when applied in conjunction with other appropriate action programs.

18. This estimated income effect, though based upon certain data shown in the study, is crude. It is however a conservative estimate. For the original study, see Charles McDaris, "Industrialization of a Rural Community by a Company in the Apparel Industry" (unpublished M.A. thesis, Vanderbilt University, 1957).

ADJUSTMENT PROCEDURES FOR COUNTY BOUNDARY CHANGES

PERHAPS AS A consequence of Georgia's electoral set-up which is based on the county-unit system, county boundaries in that state have been extremely unstable. Two of our Georgia area counties, Stephens and Barrow, were formed as recently as 1905 and 1914 out of five older counties, one of which is outside of the study area. Before 1900, changes in county boundaries, either because of formations of new counties or otherwise, were even more frequent. This means that we are confronted with the bothersome and labor-consuming task of adjusting reported data at different points of time to allow for such changes, so that comparability may be maintained over time and time-series analyses may be meaningful. County boundaries of 1940 are taken as the basis of adjustment; hence, all earlier county data are adjusted, when necessary, to approximate the boundaries of 1940. The adjustment, at best, can only be crude. Yet, in order to maintain the identity of our counties over time, some standard procedure of adjustment must be developed at the outset. Briefly, the general principle we are to follow is to allocate, for the years before boundary changes, the data of the parent counties to the new counties (which were yet to be formed) or existing recipient counties so as to approximate their data, had changes already taken place.

A list of county boundary changes since 1850 follows:

1. Hart County was formed out of Elbert and Franklin in 1853.

2. Banks County was formed out of Habersham and Franklin in 1858.

3. Oconee County was formed out of Pickens in 1868.

4. Banks County gained a part of Jackson during the 1870's.

5. Cherokee County was formed out of Spartanburg, Union, and York in 1897.

6. Stephens County was formed out of Habersham and Franklin in 1905.

7. Barrow County was formed out of Gwinnett, Jackson, and Walton in 1914.[1]

To determine the extent to which various counties are involved in these boundary changes, we have made extensive use of maps and census data on county area and enumerated population of minor civil divisions within counties. After lengthy consultations, we have arrived at the following bases of adjustment:

A. *In terms of population*

1. To adjust Elbert's data to approximate its boundaries of 1860-1940, transfer 28.2 per cent of its 1850 unadjusted (census) data to Hart.

2. To adjust Franklin's data to approximate its boundaries of 1910-1940, (a) transfer 16.4 per cent of its 1850 data to Hart, 24.5 per cent to Banks, and 9.2 per cent to Stephens; and (b) transfer 15.6 per cent of its 1860-1900 data to Stephens.

3. To adjust Pickens' data to approximate its boundaries of 1870-1940, transfer 55.0 per cent of its 1850-60 data to Oconee.

4. To adjust Jackson's data to approximate its boundaries of 1920-40, (a) transfer 4.4 per cent of its 1850-70 data to Banks and 22.1 per cent to Barrow; and (b) transfer 23.1 per cent of its 1880-1910 data to Barrow.

5. To adjust Spartanburg's data to approximate its boundaries of 1900-40, transfer 15.1 per cent of its 1850-90 data to Cherokee.

6. To adjust Union's data to approximate its boundaries of 1900-40, transfer 12.5 per cent of its 1850-90 data to Cherokee.

7. To adjust York's data to approximate its boundaries of 1900-40, transfer 22.2 per cent of its 1850-90 data to Cherokee.

8. To adjust Habersham's data (this county is not included in the study area) to approximate its boundaries of 1910-40, (a) transfer 16.8 per cent of its 1850 data to Banks and 23.6 per cent to Stephens (and 22.4 per cent to White, an outside county); and (b) transfer 38.8 per cent of its 1860-1900 data to Stephens.

9. To adjust Gwinnett's data to approximate its boundaries of 1920-40, transfer 9.1 per cent of its 1850-1910 data to Barrow.

1. Information on boundary changes is obtained from (1) William Curry Harllee, *Kinfolks* (New Orleans: Searcy and Pfoff, 1934), pp. 15-21 and 56-62, and (2) various notations and footnotes contained in census tables.

10. To adjust Walton's data to approximate its boundaries of 1920-40, transfer 10.3 per cent of its 1850-1910 data to Barrow.

B. *In terms of area*

1. For Elbert, transfer 28.2 per cent of its 1850 unadjusted (census) data to Hart.

2. For Franklin, (a) transfer 16.4 per cent of its 1850 data to Hart, 24.5 per cent to Banks, and 12.3 per cent to Stephens; and (b) transfer 20.8 per cent of its 1860-1900 data to Stephens.

3. For Pickens, transfer 57.2 per cent of its 1850-60 data to Oconee.

4. For Jackson, (a) transfer 4.4 per cent of its 1850-70 data to Banks and 17.2 per cent to Barrow; and (b) transfer 18.0 per cent of its 1880-1910 data to Barrow.

5. For Spartanburg, transfer 18.2 per cent of its 1850-90 data to Cherokee.

6. For Union, transfer 22.2 per cent of its 1850-90 data to Cherokee.

7. For York, transfer 12.5 per cent of its 1850-90 data to Cherokee.

8. For Habersham (outside of the study area), (a) transfer 16.8 per cent of its 1850 data to Banks and 14.7 per cent to Stephens (and 22.4 per cent to White, an outside county); and (b) transfer 24.2 per cent of its 1860-1900 data to Stephens.

9. For Gwinnett, transfer 10.4 per cent of its 1850-1910 data to Barrow.

10. For Walton, transfer 10.5 per cent of its 1850-1910 data to Barrow.

In making adjustments, we have used criterion A for all data on population, migration, education, and manufacturing, and criterion B for all data on land area and agriculture. For certain indexes, e.g., population density and agricultural per-worker indexes, both criteria may be used.

COMPUTATION OF NET INCOME FROM AGRICULTURE AND IMPUTED NET RETURNS TO FACTORS, 1939

I. *Net Income from Agriculture*

THE NET INCOME from agriculture, as defined in Chapter V, is arrived at by deducting from the enumerated value of farm products sold, traded, or consumed on farms (*United States Census, 1940, Agriculture*, II, County Table XVII) the following items of production expenses:

a. *Depreciation*[1] *on Service Buildings* obtained by multiplying the census value of service buildings by a depreciation rate of .06 per year. This rate is taken from BAE's *Income Parity for Agriculture* (preliminary, 1945, Part II, Section V, p. 27). The value of service buildings which was not enumerated in the 1940 census is estimated by multiplying the 1940 enumerated value of all farm buildings by the 1930 ratio of census value of service buildings to that of all farm buildings—assumed to be applicable in 1940.

b. *Depreciation on Machinery and Implements* obtained by multiplying the census value of machinery and implements by a depreciation rate of .10 per year. This rate is decided upon somewhat arbitrarily. However, it is considered reasonable since the national weighted average rate of depreciation in 1939 was 14.04 per cent[2] and since the degree of farm mechanization—which requires a somewhat higher rate of depreciation—was much lower in Georgia and South Carolina. The national rate is, however, used in computing depreciation charges for Ohio, Massachusetts, and the United States.

c. *Gasoline, Distillate, Kerosene, and Oil* as enumerated in the 1940 census (*Agriculture*, I, County Table X).

1. All depreciations include allowance for repairs and maintenance.
2. Bachmura, "Geographical Differentials . . . ," *op. cit.*, p. 113.

d. *Feed for Domestic Animals and Poultry* as enumerated in the 1940 census (*ibid.*).

e. *Livestock Purchased* as enumerated in the 1940 census (*ibid.,* II, County Table XVI). This item does not include the value of hatching eggs, day-old chicks, and horses and mules.

f. *Commercial Fertilizers* as enumerated in the 1940 census (*ibid.,* I, County Table X).

g. *Liming Materials (Lime, Marl, Gypsum, etc.)* as enumerated in the 1940 census (*ibid.*).

h. *Real-estate Taxes on Farm Land and Service Buildings* obtained by computing the average tax per 100 dollars of farm real property levied against full- and part-owners (*ibid.,* County Table VIII) and by applying this rate to all farm real property, excluding farm dwellings, whether owned or rented (*ibid.,* County Table I). The elimination of dwellings is made on the basis of the method described in (a).

i. *Personal Property Taxes* obtained by computing the average tax per farm levied against full- and part-owners (*ibid.,* County Table VIII) and by applying this rate to the total number of farms in each county (*ibid.,* County Table I).

II. *Imputed Net Returns to Factors*

The allocation of the net income thus computed to the factors of production in agriculture is made according to Method A worked out by D. Gale Johnson in his JFE article on "Allocation of Agricultural Income" (*Journal of Farm Economics,* XXX [November, 1948], 725-27). The procedure followed is briefly as follows:

a. *Computation of Net Return to Land and Service Buildings:* The gross return to land and all buildings is estimated by "blowing up" the total gross cash rent (*United States Census, 1940,* Special Report, *Cash Rent*) on rented land to include all land. This estimated gross rent on all land and buildings is then diminished by (1) the depreciation on service buildings [see item I (a) above], (2) the depreciation on dwellings arrived at by taking a rate of 3.6 per cent per year (BAE, *op. cit.,* Part II, Section V, p. 27), and (3) the estimated total farm real-estate (including dwellings) taxes levied [see item I (h) above]. The net rent so computed is then multiplied by the 1940 ratio of the estimated value of land and service buildings to the total census value of all land and buildings. This ratio is determined on the same basis

explained in I(a) above. The net rent[3] thus arrived at is the estimated net return to land and service buildings.

b. *Computation of Net Return to Non-Real-Estate Capital:* The net return is obtained by multiplying the census value of non-real-estate inventories in 1940 (*Agriculture*, I, County Table I) by estimated rates of interest considered appropriate for each county. Non-real-estate inventories include machinery and implements and livestock. In calculating the appropriate county interest rates, the census average mortgage interest rate (*ibid.*, County Table VIII) of 1940 is taken as the basis adjusted upward by a flat 9 per cent in all counties. This adjustment rate, arrived at by dividing the national average short-term interest rate (5 per cent) by the national average long-term interest rate (4.6 per cent),[4] is assumed to be applicable to all counties.

c. *Computation of Net Return to Labor:* Net return to labor is computed as a residual. It is simply the difference between the total net income from agriculture and the total net returns to land and capital.

3. Cash rent, rather than cash and share rents, is used because of the lack of data on share rent on a county basis. Although in the South cash rent makes for a very small part of total rent paid, there is much to be said for the use of cash rent alone in estimating net returns to land. Landlords with share tenants are strictly speaking co-entrepreneurs in agricultural production in view of the risks they share with their tenants. These landlords also participate in the management of farm firms. Hence, the "rent" they receive includes theoretically not only rent proper but also returns to management and risk-bearing.

4. Johnson, "Allocation of Agricultural Income," *op. cit.*, pp. 726 and 747.

SUPPLEMENTARY TABLES

TABLE 46.   Total population by counties, Southern Piedmont, 1800-50[a]

County	1800	1810	1820	1830	1840	1850
Elbert[b]	10,094	12,156	11,788	12,354	11,125	12,959
Franklin	6,859	10,815	9,040	10,107	9,886	11,513
Gwinnett	. . . . . .	. . . . . .	4,589	13,289	10,804	11,257
Habersham	. . . . . .	. . . . . .	3,145	10,671	7,961	8,895
Hall	. . . . . .	. . . . . .	5,086	11,748	7,875	8,713
Jackson[c]	7,736	10,569	8,355	9,004	8,522	9,768
Madison[d]	. . . . . .	. . . . . .	3,735	4,646	4,510	5,703
Walton[e]	. . . . . .	1,026	4,192	10,929	10,209	10,821
Anderson[f]	20,052	22,897	27,022	17,169	18,493	21,475
Pickens[f]	. . . . . .	. . . . . .	. . . . . .	14,473	14,356	16,904
Chester	8,185	11,479	14,189	17,182	17,747	18,038
Greenville	11,504	13,133	14,530	16,476	17,839	20,156
Lancaster	6,012	6,318	8,716	10,361	9,907	10,988
Spartanburg	12,122	14,259	16,989	21,150	23,669	26,400
Union	10,237	10,995	14,126	17,906	18,936	19,852
York	10,250	10,032	14,936	17,790	18,383	19,433
8 Ga. Co.'s[g]	24,689	34,566	49,930	82,748	70,892	79,629
8 S. C. Co.'s	78,452	89,113	110,508	132,507	139,330	153,246
All 16 Co.'s[h]	103,141	123,679	160,438	215,255	210,222	232,875
Georgia	162,686	252,433	340,985	516,823	691,392	906,185
South Carolina . . .	345,591	415,115	502,741	581,185	594,398	668,507
Ohio	45,365	230,760	581,434	937,903	1,519,467	1,980,329
Massachusetts	422,845	472,040	523,287	610,408	737,699	994,514
U.S. (000)	5,308	7,240	9,634	12,866	17,069	23,192

[a] Compiled from *United States Census, 1870*, V. I, *Population*.

[b] Formed on December 10, 1790 from Wilkes County, population 31,500.   It is estimated that 1/6 of Wilkes' population was in what became Elbert in 1790.

[c] Formed from part of Franklin on February 11, 1796.   In 1801, Clarke was formed from part of Jackson.

[d] Formed from part of Jackson, Clarke, Elbert, Franklin, Oglethorpe on December 11, 1811.

[e] Lost part to Newton on December 24, 1821.

[f] Before December 20, 1826, Anderson and Pickens together formed Pendleton District.

[g] Gwinnett, Habersham, and Hall were part of Cherokee Indian land before the treaty of 1818. Scattered squatters, however, had moved into the area long before 1818.   Hence, census returns fell short of the actual total population of our Georgia counties for the years 1790, 1800, and 1810.

[h] The total area, hence its total population, was comparable throughout this period, 1790-1850, except for: (a) that part of Jackson which was lost to Clarke in 1801 and not subsequently regained from Clarke through the formation of Madison in 1811; (b) that part of Walton lost to Newton in 1821; and (c) that part of Madison taken from Oglethorpe in 1811.

TABLE 47. Total population by counties, 1900–40[a]

County	1900	1910	1920	1930	1940	Relative 1940 Index (1900 = 100)	Rank
Greenville........	53,490	68,377	88,498	117,009	136,580	255.3	1
Spartanburg......	65,560	83,465	94,265	116,323	127,733	194.8	2
Anderson........	55,728	69,568	76,349	80,949	88,712	159.2	7
York............	41,684	47,718	50,536	53,418	58,663	140.7	10
Pickens..........	19,375	25,422	28,329	33,709	37,111	191.5	3
Oconee..........	23,634	27,337	30,117	33,368	36,512	154.5	9
Hall.............	20,752	25,730	26,822	30,313	34,822	167.8	5
Lancaster........	24,311	26,650	28,628	27,980	33,542	138.0	11
Cherokee........	21,359	26,179	27,570	32,201	33,290	155.9	8
Chester..........	28,616	29,425	33,389	31,803	32,579	113.8	15
Union...........	25,501	29,911	30,372	30,920	31,360	123.0	14
Gwinnett[b].......	23,257	26,201	30,327	27,853	29,087	125.0	13
Walton[b]........	18,785	22,778	24,216	21,118	20,777	110.6	16
Jackson[b]........	18,486	23,200	24,654	21,609	20,089	108.7	17
Elbert...........	19,729	24,125	23,905	18,485	19,618	99.4	21
Franklin[c].......	14,939	17,894	19,957	15,902	15,612	104.5	19
Hart............	14,492	16,216	17,944	15,174	15,512	107.0	18
Habersham[c][d].....	8,326	10,134	10,730	12,748	14,771	177.4	4
Madison.........	13,224	16,851	18,803	14,921	13,431	101.6	20
Barrow[b]........	10,038	12,207	13,188	12,401	13,064	130.1	12
Stephens[c].......	8,039	9,728	11,215	11,740	12,972	161.4	6
Banks...........	10,545	11,244	11,814	9,703	8,733	82.8	22
All 22 Co.'s......	539,870	650,360	721,629	769,646	834,570	154.6	..
Georgia..........	2,216,331	2,609,121	2,895,832	2,908,506	3,123,723	140.9	..
South Carolina....	1,340,316	1,515,400	1,683,724	1,738,765	1,899,804	141.7	..
Ohio.............	4,157,545	4,767,121	5,759,394	6,646,697	6,907,612	166.1	..
Massachusetts....	2,805,346	3,366,416	3,852,356	4,249,614	4,316,721	153.9	..
U.S. (000)........	75,995	91,972	105,711	122,775	131,669	173.3	..

[a] Compiled or computed from *United States Census*, 1900–1940, *Population.* All data have been adjusted for changes in boundaries. For details, see the footnotes below and Appendix I.

[b] Barrow was formed out of Jackson, Gwinnett, and Walton in 1914. It is estimated that into this new county went 23.1% of Jackson, 9.1% of Gwinnett, and 10.3% of Walton (in population). The above 1900–10 data for Barrow and the parent counties were those adjusted to their respective 1920–40 boundaries. The unadjusted census data were: *for Jackson*, 24,039 in 1900 and 30,169 in 1910; *for Gwinnett*, 25,585 in 1900 and 28,824 in 1910; *for Walton*, 20,942 in 1900 and 25,393 in 1910.

[c] Stephens was formed out of Franklin and Habersham in 1905. It is estimated that into this new county went 15.6% of Franklin and 38.8% of Habersham (in population). The above 1900 data for Stephens and the parent counties were those adjusted to their respective 1910–40 boundaries. The unadjusted census data for 1900 were: Franklin 17,700 and Habersham 13,604.

[d] Habersham, a county outside of the study area, is included because of its involvement in county boundary shifts with our area counties.

TABLE 48. Estimated farm labor force, 1880-1940[a]

	1880[b]	1900[b]	1900[c]	1930[d]	1940[d]	1940[g]	1940[h]
Anderson, S.C..	8,552	13,739	11,576	12,362	12,431	10,133	11,589
Cherokee......	4,237	4,800	3,917	5,243	5,586	4,469	4,895
Chester.......	6,242	6,555	5,802	5,041	5,007	4,662	4,648
Greenville.....	8,314	11,341	9,344	11,802	11,423	7,559	9,577
Lancaster.....	4,309	6,494	5,727	4,861	5,376	3,713	4,399
Oconee.......	4,134	6,451	5,182	6,541	7,120	5,011	6,727
Pickens.......	3,686	5,364	4,513	5,613	6,091	4,945	5,646
Spartanburg...	8,306	14,768	11,199	13,759	13,654	10,175	11,717
Union........	5,391	5,490	4,735	4,148	3,778	3,588	3,682
York.........	6,416	9,804	7,987	8,191	8,042	6,889	6,825
Banks, Ga.....	1,945	2,857	2,634	2,520	2,384	1,804	2,289
Barrow.......	1,902	2,711	2,263	2,631	2,611	2,271	2,523
Elbert........	3,342	4,375	4,077	3,774	4,013	3,087	3,776
Franklin......	2,432	4,069	3,563	3,746	3,863	2,891	3,811
Gwinnett.....	4,681	6,298	5,126	6,118	6,313	4,529	5,743
Hall.........	4,065	4,439	4,046	4,410	4,466	3,493	4,352
Hart.........	2,281	3,916	3,339	3,903	4,302	3,647	4,465
Jackson......	3,334	4,995	4,161	4,612	4,208	3,673	4,162
Madison......	2,031	3,586	3,290	3,804	3,694	2,924	3,672
Stephens......	1,358	2,164	1,494	1,843	1,953	1,335	1,941
Walton.......	3,757	5,042	4,008	4,607	4,345	3,921	4,156
All counties...	90,715	129,258	107,983	119,529	120,660	94,719	110,595
Georgia.......	374,078	512,336	e	429,695	442,031	375,543	404,083
South Carolina.	242,437	312,542	e	262,940	283,956	260,761	254,914
Ohio..........	691,672	757,248	e	371,652	427,740	257,267	313,796
Massachusetts.	86,225	86,626	e	47,302[f]	60,506[f]	35,945	·31,960[f]
U.S...........	11,138,220	14,628,357	e	10,310,705	11,057,712	8,372,222	9,343,396[i]

   [a] Computed from *United States Census*, 1880-1940, *Population*. Data adjusted to allow changes in county boundaries.
   [b] Farm labor force defined to include all rural male residents aged fifteen and over. No detailed age distribution was available on a county basis for 1880 and 1900. For 1880, county labor force was arrived at by summing the enumerated number of males aged eighteen and over and the estimated number of males aged fifteen to seventeen. The latter estimate was based on the proportion (15.91%) of males aged fifteen to seventeen in Georgia and South Carolina. This proportion was assumed to apply to all counties. The estimated total number of males aged fifteen and over was then diminished by the proportion of total population urban. For 1900, the proportion (54.00%) of males aged fifteen and over for Georgia and South Carolina was assumed to apply to all counties. This proportion was multiplied by the rural male population of each county to arrive at its farm labor force.
   [c] Farm labor force defined to include all male residents aged fifteen and over outside of incorporated places. This number was then diminished by the estimated number in unincorporated mill villages. For details, see text, p. 70.
   [d] Farm labor force defined to include all rural-farm males aged fifteen and over.
   [e] Not possible to estimate.
   [f] Because of the importance of urban-farm population in Massachusetts, its estimates include all urban-farm males fifteen and over. Elsewhere, urban-farm population was negligible, much less than 1 per cent of the rural-farm population.
   [g] Farm labor force defined to include the number of persons fourteen and over engaged in agriculture as reported in *United States Census, 1940, Population*, V. II, Tables 46 and 23.
   [h] Farm labor force defined to include all rural-farm population fifteen and over adjusted for off-farm nonfarm work and sex. For details of adjustment, see text, Table 4, footnote d.
   [i] As compared with the official BAE estimate of 11.671 million (commonly regarded as too high) and D. Gale Johnson's estimate of roughly 10 million. (See Johnson, "Functioning of the Labor Market," *op. cit.*, p. 77.)

TABLE 49. Total bank deposits on December 31 deflated by BLS wholesale price index (1926 = 100), 1900-50[a]

(Thousands of Dollars)

County	1900	1905	1910	1920	1930	1940	1950[b]
Developed:							
York..................	552	1,641	2,504	5,746	8,861	8,705	14,111
Greenville.............	1,568	3,733	5,823	11,972	23,567	28,581	50,720
Spartanburg...........	1,207	3,080	4,136	8,963	14,342	13,870	27,762
Barrow...............	58	342	665	1,679	948	850	1,590
Lancaster.............	206	547	1,336	2,348	2,504	2,776	5,454
Anderson.............	971	2,128	3,367	8,042	6,626	9,067	15,084
Group Totals..............	4,562	11,471	17,831	38,750	56,848	63,849	114,721
Underdeveloped:							
Jackson...............	161	321	639	1,615	1,409	924	2,663
Gwinnett..............	116	233	741	2,051	2,039	1,842	3,320
Franklin..............	0	225	479	1,504	1,072	843	1,639
Hart.................	91	167	241	1,008	402	284	1,049
Madison..............	0	168	349	947	202	468	687
Banks................	32	75	225	388	0	0	0
Group Totals..............	400	1,189	2,674	7,513	5,124	4,361	9,358

[a]Data for the years 1900-40 are compiled from *Rand McNally's Bankers' Directory*. County totals are obtained by summing data for individual banks located in each county. During the thirties, a consolidation movement took place in South Carolina, causing many independent banks of the study area to become branches of several banking chains with head offices in Charleston or Columbia, S. C. Insofar as the *Bankers' Directory* published only totals for the chains, individual branch data for 1940 were secured through correspondence. Data for 1950 are compiled from the *County and City Data Book, 1952*, Bureau of the Census.

Bank Deposits—which include both demand and time deposits, since no differentiation was made in earlier data—have been deflated by the following indexes (1926 = 100): 56.1 for 1900, 60.1 for 1905, 70.4 for 1910, 154.5 for 1920, 86.4 for 1930, 78.6 for 1940, and 158.6 for 1950.

[b]If savings and loan association capital is included in bank deposits (since it may be considered as time deposits), the above 1950 totals become: $16,349 for York, $61,961 for Greenville, $31,254 for Spartanburg, $2,112 for Barrow, $6,970 for Lancaster, $21,584 for Anderson, and $140,230 for the developed group; $3,026 for Jackson, $3,786 for Gwinnett, and $10,188 for the underdeveloped group. Data on association capital from *County and City Data Book, 1952*.

TABLE 50. Farm loans by selected lenders, 1940 and 1950[a]

(Thousands of dollars)

| County | SHORT- AND INTERMEDIATE-TERM LOANS | | | | LONG-TERM LOANS | | | |
| | Bank Loans | PCA Loans | | Total[c] | Bank Loans | FLB Loans[d] | | Tota[l] |
	1950[b]	1940	1950	1950	1950[b]	1940	1950[e]	1950[f]
Developed:								
York	$ 356	$ 98	$ 240	$ 596	$ 205	$ 1,134	$ 344	$ 549
Greenville	434	92	163	597	325	1,465	587	912
Spartanburg	422	156	263	685	254	2,159	866	1,120
Barrow	141	97	375	516	99	200	118	217
Lancaster	112	50	130	242	78	439	113	191
Anderson	406	151	332	738	256	1,361	803	1,059
Group Totals	$ 1,871	$ 644	$ 1,503	$ 3,374	$ 1,277	$ 6,758	$ 2,831	$ 4,048
Underdeveloped:								
Jackson	$ 105[g]	$ 87	$ 211	$ 316	$ 51[g]	$ 470	$ 219	$ 270
Gwinnett	78	44	81	159	139	493	131	320
Franklin	47	60	135	182	31	367	131	162
Hart	10	91	333	343	43	368	272	315
Madison	73[g]	19	53	126	27[g]	330	193	220
Banks	36[g]	15	22	58	9[g]	177	60	69
Group Totals	$ 349	$ 316	$ 835	$ 1,184	$ 350	$ 2,205	$ 1,006	$ 1,356
Georgia	$ 22,803	$ 7,100	$ 24,413	$ 47,216	$ 21,942	$ 37,590	$ 18,986	$ 40,928
South Carolina	7,936	4,761	13,940	21,876	6,174	23,627	12,027	18,201
Ohio	69,069	10,821	33,871	102,940	80,281	72,928	19,774	100,055
Massachusetts	5,284	1,014	2,985	8,269	7,853	10,991	6,027	13,878
U.S.	$2,906,115	$349,495	$967,740	$3,873,855	$1,008,359	$2,583,901	$991,439	$1,999,788

[a] Compiled: (1) for national bank loans, from data secured by correspondence from each.; (2) for state bank loans, from data obtained by correspondence from the State Superintendents of Banks of Georgia and South Carolina; (3) for PCA loans, from data supplied by the Production Credit Corporation of Columbia, S.C.; (4) for FLB loans, from data made available by the Federal Land Bank of Columbia, S.C.; (5) for state and U.S. totals, from the BAE's *Agricultural Finance Review*, May, 1941, 1951 and 1952; the FCA's *Annual Report*, 1939-40 and 1949-50. Totals include CCC-guaranteed loans.

[b] Only 1950 loan data are available for all counties. The Georgia Department of Banking has only recent records in its file.

[c] The totals actually consist of non-comparable parts. Bank data represent loans outstanding on December 31, 1950, whereas PCA data pertain to loans closed, (i.e., extended) during the year. Insofar as December represents the low point in loans outstanding and insofar as the average loan term is less than a year (the rate of turnover is greater than one), the above data understate bank loans relative to PCA loans.

[d] Include FLB loans and LB Commissioner loans (Federal Farm Mortgage Corporation-held loans).

[e] Actually loans outstanding on December 31, 1951, except for state and U.S. data which are for December 31, 1950. However, the 1951 data are very close to the 1950 data as a comparison of state and U.S. data for the two years indicated.

[f] Sum of all long-term loans outstanding on December 31.

[g] Because of the location of the city of Commerce, Jackson County, it is assumed that only half of the farm loans extended by the Commerce banks went to farmers in Jackson County. The other half is allocated equally to Banks and Madison counties.

Table 51. Estimated net in-migration (+) and out-migration (−), white population, 1900-40[a]

County	1900-10[b]	1910-20[c]	1920-30[d]	1930-40[e]	Total 1900-40[f]
Developed:					
York.............	− 1,885	+ 68	+ 768	+ 1,459	+ 410
Greenville.......	+ 5,900	+ 5,900	+ 11,804	+ 7,407	+ 30,846
Spartanburg.....	+ 2,713	− 3,869	+ 6,821	+ 630	+ 6,295
Barrow.........	+ 156	− 1,234	− 1,165	− 573	− 2,816
Lancaster.......	− 1,410	− 1,560	− 1,552	+ 1,648	− 2,874
Anderson........	+ 3,780	− 4,444	− 1,083	− 1,714	− 3,461
Group Totals.......	+ 9,254	− 5,304	+ 15,593	+ 8,857	+ 28,400
Underdeveloped:					
Jackson.........	+ 1,118	− 2,369	− 2,555	− 3,412	− 7,218
Gwinnett........	− 1,669	− 1,579	− 5,125	− 1,960	− 10,333
Franklin........	− 23	− 2,266	− 4,567	− 1,646	− 8,502
Hart............	− 1,676	− 2,513	− 3,327	− 1,536	− 9,052
Madison........	+ 271	− 555	− 3,175	− 2,888	− 6,347
Banks..........	− 1,417	− 2,004	− 2.270	− 1,835	− 7,626
Group Totals.......	− 3,396	− 11,286	− 21,019	−13,277	− 49,078
Georgia............	− 10,676	− 9,003	− 7,207	+ 2,769	− 24,117
South Carolina......	− 7,723	− 10,038	− 7,122	+27,734	+ 2,851
Ohio..............	+152,537	+390,993	+266,274	−49,252	+760,552
Massachusetts......	+376,235	+ 79,607	+ 59,086	−71,310	+443,618
U.S.[g] (000 omitted).	+ 5,168	+ 2,219	+ 5,411	+ 663	+ 13,461

[a]Compiled (a) for 1900-10, from *United States Census, 1900, Vital Statistics*, Part I, Table 19 and Part II, Table 1; (b) for 1910-20, from U.S. Bureau of the Census, *Birth Statistics, 1921*, and the tabulated data of the Georgia State Department of Public Health, 1921; (c) for 1920-30, from Bureau of the Census. *Birth Statistics* and *Birth, Stillbirth, and Infant Mortality*, 1922-27, and the tabulated data of the Georgia State Department of Public Health, 1921-27, and the similar data of the South Carolina State Board of Health, 1925-27; (d) for 1930-40, from Bureau of the Census, *Birth, Stillbirth and Infant Mortality*, 1931-36, and *Vital Statistics of the U.S.*, 1937-40. All data, as in all other tables, have been adjusted to allow for changes in county boundaries during 1900-20. (See Appendix I, for details on adjustment procedures.)

[b]The difference between actual census population 1910 and estimated population 1910. The latter was arrived at by applying the formula $P_{00} (1+r)^{10}$, where P_{00} was the actual census population of 1900 and r the 1900 crude rate of natural increase, assumed to apply to each year 1900-10. For the counties of our study area, the crude rate of natural increase of South Carolina—the characteristics of our area's population being more similar to those of South Carolina's—was used instead, since no county birth and death data were available for Georgia and South Carolina in that year (1910).

[c]The difference between actual census population 1920 and estimated population 1920. The latter was arrived at by applying the formula $P_{10} (1+r)^{10}$, where P_{10} was the actual census population of 1910 and r the 1921 crude rate of natural increase for each county—the 1921 data were used in place of the 1920 data because tabulated death data for 1920 were not available at the Georgia Department of Public Health—assumed to apply to each year 1910-20. Estimates so computed include war casualties as out-migrants, since r in the above formula is not influenced by such deaths. Thus our estimates, to the extent that war deaths were not offset by higher wartime birth rate, tend to exaggerate net out-migration and understate net in-migration.

[d]The difference between actual census population 1930 and estimated population 1930. The latter was arrived at by adding to the actual population of 1920 the total number of births during the decade 1920-30 and subtracting from that sum the total number of deaths 1920-30.

[e]Same method as that described in d.

[f]The net migration estimates for the decades 1900-20 are not strictly comparable to those for the decades 1920-40. For 1900-20 where the formula $P (1+r)^{10}$ was used, net migration estimates actually included not only the migrants but their subsequent natural increases or decreases as well; whereas, in our estimates for 1920-40, any births accruing to the migrants after their migration and, by the same token, any subsequent deaths among these migrants were considered "local" births and deaths, hence net migration estimates of 1920-40 included *only* the original migrants. As an illustration, let us suppose that county A during a certain decade, say 1930-40, received 100 in-migrants as against no out-migrant—a net in-migration of 100 persons—and that two babies were born to them after their migration into county A (and were living at the census enumeration date in 1940), according to the first method, net in-migration will be 102, but, according to the second method, the figure will only be 100.

[g]1. Reported birth and death data were for the total registration area in the Continental United States. In 1920, in terms of population, only 59.8% of the U.S. was in the registration area which was not completed until 1932 when Texas finally qualified as a registration state. For this reason, the U.S. data in the above table for the years 1920-40, where actual birth and death counts were used in our migration estimates, were arrived at only after proper adjustments having been made to the reported birth and death data for the year 1920-32. For the earlier years 1900-20, even though the national crude rate of natural increase was based on birth and death data for an incomplete registration area, it was assumed to apply to the entire continental U.S.
2. Contrary to the general practice before and after 1930-34, the Bureau of the Census during the latter five years classified Mexicans as colored. For the sake of comparability, we have reallocated Mexican births and deaths (1931-34) and the Mexican population itself (1930) back to the "white" classification.

TABLE 52. Estimated net in-migration (−) and out-migration (+), Negro population, 1900-40[a]

County	1900-10	1910-20	1920-30	1930-40	Total 1900-40
Developed:					
York..........	− 1,309	− 4,090	− 4,448	− 2,369	− 12,216
Greenville......	− 2,898	+ 558	+ 3,150	+ 1,019	+ 1,829
Spartanburg....	+ 612	− 793	+ 1,307	− 1,400	− 274
Barrow........	− 223	− 629	− 1,191	+ 161	− 1,882
Lancaster......	− 1,636	− 2,093	− 3,294	− 832	− 7,855
Anderson.......	− 2,306	− 4,413	− 6,400	− 1,309	− 14,428
Group Totals......	− 7,760	− 11,460	− 10,876	− 4,730	− 34,826
Underdeveloped:					
Jackson........	− 513	− 219	− 3,121	− 980	− 4,833
Gwinnett.......	− 578	− 754	− 1,327	− 415	− 3,074
Franklin.......	− 351	− 93	− 2,100	− 642	− 3,186
Hart..........	+ 174	+ 26	− 2,130	− 420	− 2,350
Madison.......	+ 643	− 364	− 2,643	− 711	− 3,305
Banks.........	− 235	− 82	− 1,688	− 224	− 2,229
Group Totals......	− 1,090	− 1,486	− 13,009	− 3,392	− 18,977
Georgia...........	− 71,971	− 48,304	−194,764	− 86,058	−401,097
South Carolina.....	−130,160	−106,524	−161,038	− 76,998	−474,720
Ohio..............	+ 14,104	+ 70,900	+122,576	+ 26,132	+233,712
Massachusetts.....	+ 5,232	+ 4,479	+ 5,307	+ 1,545	+ 16,563
U.S...............	−286,135	−651,123	+748,194	+115,692	− 73,372

[a]For sources and other explanatory notes, see the footnotes of the preceding table.

Table 53. Total farm income, labor force, and capital, all and current, 1939-1949, Southern Piedmont[a]

County	Farm Income[b] (000 omitted)[c]		Farm Labor Force[d]		All Farm Capital[e] (000 omitted)		Current Farm Capital (000 omitted)	
	1939	1949[c]	1939	1949	1939	1949	1939	1949
Anderson, S.C...	$ 4,031	$ 7,718	11,589	7,539	$ 20,853	$ 51,318	$1,002	$ 2,803
Cherokee.......	1,565	3,979	4,895	3,566	7,215	19,532	343	1,348
Chester........	1,467	2,980	4,648	3,256	6,967	14,669	307	975
Greenville.....	2,574	6,275	9,577	5,343	20,101	45,174	1,047	1,992
Lancaster......	1,462	2,450	4,399	2,482	6,544	14,078	327	808
Oconee.........	1,813	3,610	6,727	3,580	8,514	17,510	365	953
Pickens........	1,541	2,819	5,646	2,970	9,339	23,381	384	1,708
Spartanburg....	4,324	10,077	11,717	8,452	22,620	58,891	980	3,069
Union..........	824	1,871	3,682	2,117	4,515	10,456	242	605
York...........	2,006	5,396	6,825	5,085	12,153	30,251	534	2,783
Banks, Ga......	539	1,055	2,289	1,434	2,458	5,944	115	530
Barrow.........	803	1,946	2,523	2,032	4,079	9,190	195	1,418
Elbert.........	924	1,857	3,776	2,263	4,022	10,589	178	634
Franklin.......	1,002	1,980	3,811	2,620	4,850	11,890	247	1,481
Gwinnett.......	1,394	2,887	5,743	3,166	6,828	18,892	366	1,762
Hall...........	1,074	3,301	4,352	2,873	4,849	18,000	311	5,448
Hart...........	1,260	3,319	4,465	3,284	5,383	12,629	306	920
Jackson........	1,086	3,329	4,162	2,981	5,341	12,463	291	1,810
Madison........	946	2,347	3,672	2,884	4,350	9,955	222	925
Stephens.......	319	855	1,941	690	2,033	4,479	96	323
Walton.........	1,754	3,839	4,156	3,645	6,352	17,297	368	1,621
Totals.........	$32,708	$73,890	110,595	72,262	$169,366	$416,588	$8,226	$33,916
U.S.[i]	5,870	16,617[f]	9,116	8,490[g]	43,198	108,607	1,943	7,442[h]

[a] Computed from censuses of agriculture of 1940, 1945, and 1950 and censuses of population of 1940 and 1950.

[b] Value of farm products sold, traded, or consumed on farms less the cost of fuel, feed, fertilizer, and livestock bought. These subtractions are made with a view of allowing for disparity in the relative importance of production costs, arising from county differences in type of farming which, though insignificant before the forties, had become quite important in recent years. The adjusted income data are believed to be more meaningful than the gross figures.

[c] Data adjusted for unusually large yield variability among counties in 1949. The 1950 Census of Agriculture omitted two important items, the value of farm products consumed on farms and fertilizer expenditures. The relative importance of both these items varied widely among the area counties.

1. The value of farm consumption is estimated by assuming no changes in *real* farm consumption since 1945 and by multiplying the 1945 census value by 127% to allow for price changes. It is to be noted that estimates so arrived at for Georgia and South Carolina differ from USDA estimates (*Agricultural Statistics, 1952*, p. 695) by only 1.96-2.83%.

2. The value of fertilizer used is estimated by using the following data: (a) Average 1949 fertilizer price in Georgia and South Carolina ($45.85 per ton) taken from USDA, *Production Expenses of Farm Operators* (January, 1956), p. 2; (b) Average rate of fertilizer applied per acre by type of crop in the Southern Piedmont—505 lbs. for cotton, 305 lbs. for corn, 310 lbs. for wheat, and 330 lbs. for oats—taken from BAE, *Cotton Farming in the Southern Piedmont, 1930-51* (June, 1952), p. 17; (c) an arbitrary rate of 100 lbs. of fertilizer per acre of all other field crops, including hay; and (d) census 1950 county crop acreage data for cotton, corn, wheat, oats, and other crops. The above average price and rates of application of fertilizer are assumed to be applicable to all counties in the study area.

[d] For 1949, the census 1950 rural- and urban-farm population fifteen and over is broken down into three groups: the number of farm-operators (assumed to be all males), the number of male non-operator farm residents fifteen and over, and the number of female farm residents fifteen and over. The number in each group is then subjected to a series of adjustments to allow for nonfarm work, school attendance, and, in the case of females, lower productivity and labor-participation rate and higher school-attendance rate. Farm labor force estimates are arrived at by summing up the three adjusted totals and estimated hired farm workers.

The census number of farm-operators is adjusted downward by the number of census-reported man-days operators worked off-farm (either on farm or nonfarm jobs) during 1949, after the number of man-days is converted into the number of man-years on the basis of 250 man-days = 1 man-year.

The number of male non-operator farm residents fifteen and over—the difference between the census total number of male farm residents fifteen and over and the census number of operators—is diminished by the number of man-years spent off-farm. The latter number is estimated by taking a rate of off-farm work twice that of operators to allow for school attendance and greater off-farm activities of the non-operator male population fifteen and over.

TABLE 54. Total value of non-current farm capital and its components, land and buildings, livestock, and equipment, 1940-1950, Southern Piedmont[a]

(In thousands of dollars)

County	ALL NON-CURRENT FARM CAPITAL		LAND AND BUILDING		LIVESTOCK		IMPLEMENTS AND MACHINERY	
	1940	1950	1940	1950	1940	1950	1940	1950[b]
Anderson, S.C..	19,851	48,515	16,628	39,637	2,044	3,135	1,179	5,743
Cherokee......	6,872	18,184	5,746	14,704	822	1,299	304	2,181
Chester.......	6,660	13,694	5,380	10,508	902	1,603	378	1,583
Greenville.....	19,054	43,182	16,438	37,000	1,670	2,263	946	3,919
Lancaster......	6,217	13,270	5,111	10,612	800	1,115	306	1,543
Oconee........	8,149	16,557	6,676	13,112	1,022	1,475	451	1,970
Pickens.......	8,955	21,673	7,485	18,119	961	1,298	509	2,256
Spartanburg...	21,640	55,822	18,518	46,797	2,008	2,814	1,114	6,211
Union.........	4,273	9,851	3,506	7,798	603	1,005	264	1,048
York..........	11,619	27,468	9,530	21,655	1,340	2,194	749	3,619
Banks, Ga.....	2,343	5,414	1,834	4,167	385	478	124	769
Barrow........	3,884	7,772	3,220	5,784	444	769	220	1,219
Elbert........	3,844	9,955	3,049	7,806	583	879	212	1,270
Franklin......	4,603	10,409	3,675	8,052	660	967	268	1,390
Gwinnett......	6,462	17,130	5,222	13,847	943	1,194	297	2,089
Hall..........	4,538	12,552	3,665	10,065	630	1,184	243	1,303
Hart..........	5,077	11,709	4,073	9,109	719	968	285	1,632
Jackson.......	5,050	10,653	4,119	7,980	667	961	264	1,712
Madison.......	4,128	9,030	3,342	7,044	559	773	227	1,213
Stephens......	1,937	4,156	1,599	3,375	250	383	88	398
Walton........	5,984	15,676	4,765	11,989	768	1,279	451	2,408
Totals........	161,140	382,672	133,481	309,160	18,780	28,036	8,879	45,476
U.S. (millions).	41,255	101,165	33,642	75,255	4,553	12,892	3,060	13,018[c]

[a] Compiled from censuses of agriculture of 1940 and 1950.
[b] Value of implements and machinery not available in the 1950 census. This value is estimated for 1950: (1) by multiplying the 1945 census value of implements and machinery by 150%—which number represents the price index for 1950 with 1945 = 100 (USDA, *Agricultural Statistics*, 1952, pp. 684-85)—to allow for price changes and (2) by adding to the adjusted 1945 values the estimated value of the increases in the number of tractors and motor-trucks—the latter value is arrived at by applying an average value of $1,500 for each machine acquired in excess of the 1945 number. This method of estimate implicitly assumes no real increases in other farm implements and machinery.
[c] From *Agricultural Statistics*, 1952, p. 625.

The census number of female farm residents fifteen and over is likewise adjusted downward by that rate. In addition, the number so adjusted is further multiplied by a man-year equivalence ratio of 0.25 to allow for higher female school-attendance rate and lower productivity and labor-force participation rate.

Finally, the sum of the three adjusted totals represents only the family labor force in agriculture. This sum is increased by the estimated number of hired farm workers before arriving at the final farm labor force. The number of hired workers is estimated by first computing the average wage rate for each economic area in which one or more of the area counties are located from the census and, then, by dividing each county's total farm wage bill for the census year by this rate.

For 1939, the method of estimate is similar to that described above, with only three exceptions: (1) the man-year equivalence ratio applied to female farm workers was taken to be 0.10 in 1939, female labor-force participation rate being lower in that year as compared with 1949; (2) in allowing for off-farm work done in 1939, only nonfarm work was taken into account; therefore, (3) hired workers were not added to the estimates to avoid double counting since most hired workers were also farm residents whose numbers were the basis of our estimates. For a detailed description of the method used for 1939 and discussions relating to various farm labor estimates, see Chapter III of the text, pp. 70-75. Lastly, it should be mentioned that in developing the basic method described above the writer benefited a great deal from the technique first employed by Frank T. Bachmura in his unpublished Ph.D. dissertation, "Geographic Differentials in Returns to Corn Belt Farmers: 1869-1950" (University of Chicago, 1953), Ch. III.

[e] Includes current capital defined to comprise outlays on fertilizers, feed, fuel, and livestock purchased. This item is the sum of current and non-current (Appendix Table 54) farm capital.

[f] Sum of census value of farm products sold and estimated value of products consumed on farms (*Agricultural Statistics*, 1952, p. 695) less certain expense items (see fn. b).

[g] Sum of our estimated number of family workers (6,644,725) and *MRLF*'s number of hired workers (1,845,000).

[h] Sum of census costs of feed, fuel, and livestock purchased and estimated cost of fertilizer (*Agricultural Statistics*, 1952, p. 701). County estimates of cost of fertilizer are arrived at by the method shown in footnote c above.

[i] Income and capital are in millions of dollars; labor force in thousands of workers.

TABLE 55. Total farm income, number of workers, and number of farms, all, commercial, and part-time farms, 1949-50, Southern Piedmont

County	Total Farm Income, 1949[a] (in thousands of dollars)			Number of Farm Workers, 1949[b]			Number of Farms, 1950[c]		
	All Farms	Com-mercial	Part-Time	All Farms	Com-mercial	Part-Time	All Farms	Com-mercial	Part-Time
Anderson......	$ 6,956	$ 5,974	$ 982	7,539	6,099	1,440	5,800	3,151	2,649
Cherokee......	3,655	3,017	638	3,566	2,939	627	2,732	1,546	1,186
Chester........	2,715	2,434	281	3,256	2,647	609	2,209	1,361	848
Greenville......	5,724	3,782	1,942	5,343	3,522	1,821	5,756	1,756	4,000
Lancaster......	2,232	1,773	459	2,482	1,906	576	2,452	1,087	1,365
Oconee........	3,400	2,222	1,178	3,580	1,822	1,758	3,288	1,052	2,236
Pickens........	2,548	1,490	1,058	2,970	1,644	1,326	3,101	845	2,256
Spartanburg....	9,206	7,698	1,508	8,452	6,347	2,105	6,796	3,063	3,733
Union.........	1,734	1,392	342	2,117	1,617	500	1,709	822	887
York..........	4,868	4,319	549	5,085	4,411	674	3,574	2,205	1,369
Banks.........	970	686	284	1,434	753	681	1,091	442	649
Barrow........	1,742	1,462	280	2,032	1,430	602	1,390	810	580
Elbert.........	1,677	1,393	284	2,263	1,662	601	1,828	960	868
Franklin......	1,786	1,450	336	2,620	1,690	930	2,018	1,048	970
Gwinnett......	2,713	1,832	881	3,166	2,026	1,140	3,104	1,100	2,004
Hall..........	3,172	2,657	515	2,873	1,961	912	2,522	1,267	1,255
Hart..........	3,015	2,702	313	3,284	2,596	688	2,206	1,494	712
Jackson........	3,120	2,603	517	2,981	2,289	692	2,071	1,215	856
Madison.......	2,182	1,863	319	2,884	2,119	765	1,893	1,170	723
Stephens.......	813	487	326	690	316	374	888	209	679
Walton........	3,478	3,255	223	3,645	3,093	552	2,343	1,689	654
Totals.....	$67,706	$54,491	$13,215	72,262	52,889	19,373	58,771	28,292	30,479

[a] Gross value of farm products sold, traded, or consumed on farms minus the cost of feed, fertilizer, fuel, cotton ginning, livestock purchased, seed, and equipment repairs. In arriving at an estimate of the value of products consumed on commercial and part-time farms, the total estimated value, as obtained through the method shown in footnote c, Table 53, is allocated to the two agricultural sectors in the following manner:

1. The average value of farm consumption per farm reporting a total value of all farm products of $1-1,500 (taken to be equivalent to part-time farms of 1950) is obtained from the *Census of Agriculture of 1945* (V. I, County Table VIII) for each county. The average value for farms reporting $1,500 or more of farm products (taken to represent commercial farms of 1950) is similarly obtained.

2. These average values of farm consumption per farm are used as weights and applied to the number of commercial and part-time farms in 1950. The total value of farm consumption is then allocated accordingly to the two agricultural sectors.

The methods used to allocate total fertilizer expenditures, ginning cost, and income adjustments arising out of cotton- and peach-yield variability are too complicated to permit complete elaboration.

[b] 1. The total number of farm workers on all farms is taken from Table 53.

2. The number of farm workers on commercial farms is arrived at by:

a. Estimating the number of farm persons aged fifteen and over on commercial farms in 1950. This estimate is made by assuming identical mean farm family size for the commercial and part-time sectors. The total number of farm persons fifteen and over obtained from the census for each county is thus allocated to the two sectors on the basis of the number of commercial and part-time farms.

b. Adjusting the number of farm persons on commercial farms, so estimated, in accordance with the method used earlier (see footnote d, Appendix Table 53), but using census data for commercial farms instead of those for all farms, to arrive at the estimated number of farm workers on commercial farms.

3. The number of farm workers on part-time farms is obtained by subtracting the estimated number of farm workers on commercial farms from the total.

[c] Compiled from *Census of Agriculture, 1950*, I, County Table 6.

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