DETERMINANTS OF INCOME AND INCOME DIFFERENTIALS

BETWEEN BLACKS AND WHITES

IN THE SOUTH

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The problem with which this study is concerned is that of discrimination. Data from the United States Bureau of the Census is used to approach the problem through the concept of economic discrimination.

This study has two purposes. First, it tests the hypothesis that blacks in the South have been subjected to significant economic discrimination, and, in turn, to give quantitative estimates of its magnitude if the hypothesis is accepted. The secondary purpose is to make a comparison of the relative importance of the independent variables for blacks and whites.

The study is divided into five chapters, which are entitled (1) introduction, (2) review of the literature, (3) methodology, (4) analysis of data, and (5) summary and conclusions. In Chapter I, the problem is introduced, the purposes are stated, and the theoretical foundation is laid. Chapter II reviews the related literature; Chapter III presents the analytical methodology; Chapter IV contains the findings, and the study is summarized and the conclusions are drawn in Chapter V. Eleven of the twelve tables have been relegated to the Appendix.

The methodology is that of multiple regression. Two sets of multiple regression equations are used to achieve the stated purposes. The dependent variables are (1) wage and salary income, (2) total earnings, (3) self-employment income, (4) other income, and (5) total income. The independent variables are race, sex, size of place, highest grade of school completed, age, detail occupation, detail industry, and number of weeks worked.

The five dependent variables are predicted by the independent variables (race variable included) to compute the income differentials resulting from discrimination. To compare the relative importance of the variables, five regression equations (without the race variable) for blacks are compared to five similar equations for whites. The regression coefficients, coefficients of determination, and index numbers are analyzed at significance levels no greater than 0.05.

Two primary conclusions are reached. First, blacks in the South have been victims of significant degrees of economic discrimination. Second, the given set of variables not only affect the two color groups in different ways, but they also affect the same group in different ways for each of the five types of income.

DETERMINANTS OF INCOME AND INCOME DIFFERENTIALS BETWEEN BLACKS AND WHITES IN THE SOUTH

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CHAPTER I

INTRODUCTION

Discrimination is a multifacted phenomenon to which varying degrees of importance have been attached. As Lester C. Thurow suggests,

> Discrimination is important not only because it produces low incomes; it also diminishes the effectiveness of many of the instruments used in fighting poverty. If discrimination reduces Negro returns to education, for instance, education may be a poor weapon to reduce Negro poverty.[1]

Furthermore, the interrelationships among factors affecting discrimination make its existence a most complex one. On this point Thurow notes that

> Blacks have little political power because they have little economic power, but they also have little economic power because they have little political power. Lack of political and economic power may explain poor schooling, but low education levels reinforce that lack.[2]

This "vicious circle" described by Thurow strongly suggests that economic discrimination is a good place to launch an attack on the poverty cycle.

Moreover, economic discrimination has global significance. In fact, Gary S. Becker suggests that the practice of

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[1]Lester C. Thurow, Poverty and Discrimination (Washington, D. C., 1969), pp. 111-112.

[2]Ibid., p. 2.

discrimination in other countries is much more extensive than that which occurs in the United States. He gives the apartheid government of South Africa as one of the most blatant examples, but he also points out that in most underdeveloped countries there is much discrimination against women and persons of lowly origins.[3] His implications are that large-scale discrimination can seriously impede the economic progress of a country. These two perspectives--internal poverty and national economic progress provide adequate justification, as well as an imperative, for the study of discrimination and its consequences.

Discrimination has been prefaced by such terms as racial, social, political, as well as economic. Certainly, the terms do not connote mutually exclusive ideas; however, the major concern of this study will be economic discrimination.

Even though economic discrimination itself is multi-dimensioned, several economists have attempted to deal scientifically with its reality by analyzing its economic effects. Their results have often been received with little more than extreme skepticism and criticism, even though some of the studies made use of some of the most advanced statistical techniques. The primary purpose of this study is to test the hypothesis that blacks in the South have been subjected to

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[3]Gary S. Becker, The Economics of Discrimination (Chicago, 1957), pp. 1-2.

significant economic discrimination and in turn, to give quantitative estimates of its magnitude if the hypothesis is accepted. A secondary objective of this study is to determine which socioeconomic variables are most important in the determination of income for southern blacks as compared to southern whites.

Empirical studies are indeed useful in the accumulation of knowledge and the analysis of data. More often than not, however, the empirical analysis of data means little without the use of qualifying assumptions--a model or a theory. In fact, theory customarily provides the means for the evaluation of data. It is recognized that theories are not necessarily valid, or they would instead be laws or principles. They do, however, serve the useful purpose of providing a basis for the evaluation of data. There are four theories which are frequently employed in the evaluation of data used in discrimination studies. Summaries of these theories, which are presented below, will provide the theoretical foundations of the studies reviewed in Chapter II as well as the theoretical basis for this thesis.

In modern economic systems, wages (defined as payments going to workers for work performed during a specific time period) represent the largest portion of total income. It is apparent, then, that any study concerning personal income will necessarily deal with wages.

Relationship of Marginal Physical Product to Income

Basic principles of economics illustrate that wages are determined by the interaction of the demand for and the supply

of labor.[4] At the point where the quantities supplied and demanded are equal, the labor market is said to be in equilibrium. It is then generally argued that "the only wage at which equilibrium is possible is a wage which equals the value of the marginal product of the laborers."[5] This concept, known by economists as the Law of Marginal Productivity, "is regarded by most modern economists as the fundamental principle of wages. . . ."[6] Actually, even a person who is only vaguely aware of the world in which he lives recognizes that the equilibrium model described above is seldom found. J. R. Hicks expresses this realization quite adequately when he writes the following:

> But we cannot go on from this to conclude that this equality of wages and marginal products will actually be found in practice; for the real labor market is scarcely ever in equilibrium in the sense considered here.[7]

Market aberrations of various kinds are also in evidence--changes in the quantity and quality of the labor force, interference by labor unions, changes in consumer tastes, governmental interference, environmental changes, and discrimination are but a few such examples. Many of these market distortions can be conveniently classified as the effects of a dynamic society; discrimination, however, is not one of these effects.

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[4] J. R. Hicks, The Theory of Wages (London, 1932), pp. 4-9, 14-19.

[5] Ibid., p. 18. [6] Ibid., p. 9. [7] Ibid., p. 18.

The landmark work dealing with the economic aspects of discrimination is Gary Becker's The Economics of Discrimination.

Becker's Theory of Discrimination

Defining discrimination in terms of income differentials, Becker deals with discrimination in the market place, and he examines the influences of pecuniary as well as nonpecuniary motives. Central to Becker's analysis is his concept of a "discrimination coefficient" which he believes provides him with certain analytical advantages. He writes that

> By using the concept of a discrimination coefficient . . . it is possible to give a definition of a taste for discrimination that is parallel for different factors of production, employers, and consumers. The money costs of a transaction do not always completely measure net costs, and a discrimination coefficient acts as a bridge between money and net costs.[8]

Becker defines market discrimination by giving the following hypothetical example. If there are two groups, W and N, which are perfect substitutes for each other in production, then their wage rates will be the same in the absence of discrimination and nepotism. If W and N are perfect substitutes but have different wage rates, then market discrimination exists. Becker measures this market discrimination by means of the market discrimination coefficient, which he defines as the proportional difference between the wage rates of W and N. Clearly, if the assumption of perfect substitutability

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[8]Becker, The Economics of Discrimination, p. 6.

is not made, then wage rate differentials do not necessarily measure market discrimination.

Becker's analytic model is a general international trade model which is couched in terms of trade between two societies, with one being inhabited solely by N and the other solely by W. His other assumptions are the following:

(1) the societies are perfectly competitive--internally and externally;

(2) there are two homogeneous factors in each society--labor and capital;

(3) the two factors are perfect substitutes between societies;

(4) these societies trade factors rather than products;

(5) W exports capital and N exports labor;

(6) the amount of export for a society equals the total produced minus the amount that is domestically used.[9]

Becker notes that, when these assumptions are made, three results can be predicted in the case of full equilibrium conditions in the absence of discrimination. First, the payment going to each factor would be independent of whether it was employed by W or N. Second, the price of each product would be independent of whether it was produced by W or N. Finally,

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[9] Ibid., p. 12.

the unit payment to each factory would be equal to the value of its marginal product.[10]

This model yields quite different results, however, when discrimination is introduced. Becker observes that, if members of W decide to discriminate against labor and capital owned by N, W must forfeit money income in order to avoid contact with N's factors.[11] "This taste for discrimination reduces the net return that W capital can receive by combining with N labor," thereby reducing the amount of W capital exported.[12] Obviously, this taste for discrimination also reduces the income which accrues to N, and so less N labor is exported.

The resulting new equilibrium position would represent employment of less N labor by W and less W capital by N and, therefore, less than the optimim amount of output in both societies. Becker presents a mathematical proof to show that this change in resource allocation reduces the "equilibrium net incomes of both N and W."[13]

Thurow makes a graphic interpretation of these results as shown in Figure 1. The discrimination coefficient, according to Thurow, is dependent both upon the white demand curve for and the supply elasticity of black labor. To describe the graphs shown in Figure 1, he writes,

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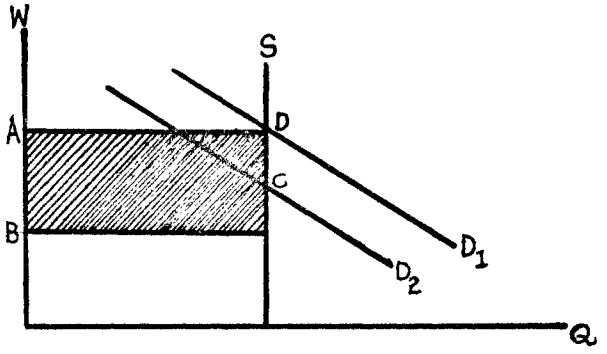
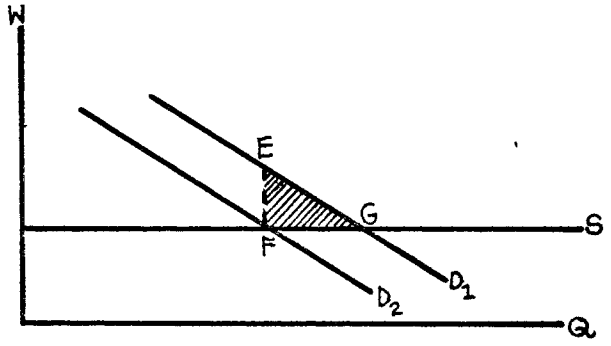
[10] Ibid. [11] Ibid.

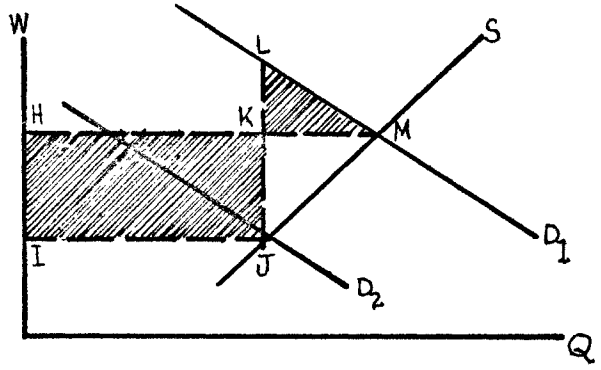
[12] Ibid. [13] Ibid., pp. 12-13, 24-30.



Gains



Losses



Gains and Losses

Fig. 1--Gains and Losses from Discrimination*

*Source: Lester Thurow, Poverty and Discrimination, p. 114.

> If the elasticity of supply (S) is zero (first panel), Negro wages (W) decline with a downward shift in demand from D_1 to D_2, but the quantity of Negro labor (Q) is constant. The return to the white community must rise since Negro wages are now less than their marginal product. In this panel white gains are equal to the rectangle ABCD. If the elasticity of supply is infinite (second panel), wages are constant and all of the adjustment occurs in the quantity of labor supplied. The white community loses the intermarginal product (producer's surplus) EFG; no gains are possible, since Negroes cannot be paid less than their marginal product. If the elasticity of supply is greater than zero but less than infinite (third panel), both gains and losses occur. The net gain or loss depends on the relative size of HIJK and LKM.[14]

Straightforward application of the marginal productivity theory suggests that, while the aggregate net incomes of N and W are reduced by discrimination, the returns to W capital and N labor decrease, but the returns to W labor and N capital actually increase. By making this analysis, Becker refutes the proposition that "capitalists from the dominant group are the major beneficiaries of prejudice and discrimination in a competitive capitalistic economic system." These errors in logic, however, are considered by the author to be less serious than still another; for example, he says that

> The most serious non sequitur in the mistaken analyses is the (explicit or implicit) conclusion that, if tastes for discrimination cause N laborers to receive a lower wage rate than W laborers, the difference between these wage rates must accrue as "profits" to W capitalists.[16]

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[14]Thurow, Poverty and Discrimination, pp. 114-115.

[15]Becker, The Economics of Discrimination, pp. 13-14.

[16]Ibid., p. 14.

In his discussion of the relationship between discrimination and segregation, Becker also refutes the opinion held by some that minority groups could avoid discrimination by the majority group by completely segregating themselves, economically, politically, and socially. Becker uses a previous conclusion to assist him in arriving at this conclusion about the relationship between discrimination and segregation. Since he had already shown that a reduction in trade between N and W would result in lower income for both societies, he extended the reasoning by showing that total segregation meant the total absence of trade between the two societies. This, of course, implies that all benefits which would have accrued from trade are lost; therefore, both societies lose economically.

In addition to the pure market discrimination which was introduced above, Becker considers discrimination by employers, employees, the government, and consumers. An employer is said to discriminate when he refuses to hire an individual whose marginal product exceeds his marginal cost. For example, if "w" equals the money wage rate and "an employer acts as if w(1 + d) were the net wage rate, with "d" being a discrimination coefficient measuring the intensity of his tastes for discrimination," he is, then, discriminating in the hiring of labor.[17]

Employer discrimination, as is true of all other forms of discrimination, is not costless. Becker writes, "Profits

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[17] Ibid., p. 31.

forfeited are the costs or deterrents to discrimination . . . ."[18] The presence of these recognized costs, then, forces each employer to perform a marginal analysis and, therefore, to determine whether discrimination is worth the lost profits thereby incurred.

Employee discrimination arises because of the assumed preference on the part of employees for not working with members of a particular group such as N. For some reason, employees who work with members of N will consider their net wage rate to be $w_n(1 - d)$, where "w_n" is the unit money wage rate received for working with N and "d" represents the employee's discrimination coefficient.[19] The unit cost of discrimination can be measured, in this case, by the following formula:

$$c = \frac{w_n - w_w}{w_n};$$

"w_n" is the money wage rate received for working with N, and "w_w" is the money wage rate received for working with W.[20] Becker argues that employees must also perform marginal analysis in order to determine whether discrimination will maximize their net return. "If c is greater than d, an employee chooses to work with N; if c is less than d, to work with w; and if c = d, he is indifferent between W and N."[21]

If it is assumed that consumers have a taste for discriminating against members of N, then, according to Becker, a

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[18] Ibid., p. 32. [19] Ibid., p. 47.

[20] Ibid. [21] Ibid., p. 48.

consumer's net price paid for a good or a service would be $P_n(1 + d)$, where P_n is the money price of the good or service produced or sold by N and d represents the consumer's taste for discrimination.[22] When the money price of an output produced by W, (P_w), equals $P_n(1 + d)$, the consumer is indifferent to the producer or seller of the output. The primary implication of Becker's model is that consumers compare the prices of products produced by W and N and then make purchases which will maximize their utility.[23]

According to Becker, governmental discrimination will largely be determined by the group or groups which hold a political majority. He says that, if discrimination is the dominant issue, voters will vote according to which party has a discrimination coefficient closest to their individual ones. If there are only two parties, then the resulting governmental policy will be a compromise reflecting a discrimination coefficient somewhere between those of the two political parties.[24]

The points presented thus far represent the core of Gary Becker's theory of discrimination. Fifteen years after it was first published, it still serves as the primary theoretical basis for most studies done in the area of economic discrimination. There are several variations of Becker's work in

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[22] Ibid., p. 57. [23] Ibid., pp. 56-58.

[24] Ibid., pp. 62-64.

circulation and at least one well-reasoned alternative theory offered by Lester C. Thurow.

Lester C. Thurow's Alternative Theory of Discrimination

Thurow interprets Becker's discrimination coefficients as being equivalent to tariffs in the theory of international trade; consequently, he has strong objections to Becker's theory:

> Applying the theory of tariffs to a world of perfect competition has serious limitation in a world where much of the impact of discrimination comes from the monopoly powers of the discriminator rather than from his ability to distort perfect competition with trade barriers.[25]

This is not the only disagreement which Thurow has with Becker, for Thurow feels that it is probably more accurate to say that whites seek to maximize a utility function which has social distance, rather than physical distance, as its principal argument.[26] By this, Thurow means that whites do not object to associating with blacks as long as they do not mingle on the same social level. To give a commonplace example, while whites do not object to having black servants in their homes, they would not invite a black couple for bridge. Those two objections strike at the very core of Becker's analysis.

According to Thurow, virtually all types of discrimination can be subsumed into the following seven general categories:

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[25]Thurow, Poverty and Discrimination, p. 117.

[26]Ibid.

(1) employment, (2) wages, (3) occupation, (4) human capital, (5) capital, (6) monopoly power, and (7) price.[27] Even though there are obvious interrelationships among several of these categories, some distinctions can still be made. The most important assumption which Thurow makes in the examination of these categories of discrimination was "that a rational discriminator (for example, a monopolist named "whites") is trying to maximize his gains from discrimination, including economic gains and increases in social distance."[28]

Employment discrimination, theorizes Thurow, results in monetary gains for whites; at the same time they receive no offsetting monetary losses. Specifically, if the burden of unemployment can be disproportionately shifted to blacks, then the total white employment will go up, thereby increasing the total white income. However, in order to maximize white gains from employment discrimination, "Negroes should be distributed across occupation, industries, and geographic areas in such a way that their employment is equal to the maximim expected unemployment in each category and they can be forced to bear the entire burden of unemployment in each."[29] If the expected unemployment rate exceeds the total black labor force, then maximization of white gains from employment discrimination will necessitate the distributing of the black labor force primarily

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[27] Ibid., pp. 117-118. [28] Ibid., p. 118. [29] Ibid., p. 119.

throughout the highest paying occupations, industries, and geographic areas. If whites were concurrently distributed across the lowest paying occupations, then a given unemployment rate for blacks would carry with it a higher opportunity cost than would the same unemployment rate for whites. To follow this procedure, however, would create a direct conflict with the goal of maximization through occupational discrimination. This dilemma leads Thurow to suggest the following: "Conflicts between different discriminators represent one of the major problems faced by them as a group."[30]

Under certain conditions, whites could also gain from wage discrimination. Thurow claims that, if "quantitative controls" over black employment were coupled with wage discrimination, then white incomes could be increased by optimally distributing blacks throughout all occupations and thereupon appropriating part of each Negro worker's marginal product.[31] If blacks were optimally distributed in terms of resource allocation, then their distribution would provide for their optimal marginal productivity rates. Obviously, blacks would be maximizing income if their wage rate equaled their marginal productivity. If whites are to benefit by appropriating part of the marginal product of the black labor force, the given percentage appropriated would represent a larger absolute amount. This analysis applies to the hypothetical case in which the marginal productivity of blacks is unaffected by

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[30] Ibid., p. 118. [31] Ibid., p. 119.

incentives. In the alternative case, Thurow says, "wages should be set in each occupation to maximize the difference between the marginal product and the wage rate; quantitative employment controls could then equalize the differences across occupations."[32]

White income gains from occupational discrimination when whites are disproportionately distributed across the highest-paying occupations. When such is the case, whites clearly would receive a larger portion of the income pie. Thurow points out, however, that this kind of tampering with the occupational distribution does indeed have costs--white capital and/or labor may actually incur income losses because of less qualified individuals in the occupations.[33] From this, it is obvious that, though individual white discriminators may gain from their discriminatory practices, the aggregate white community could suffer income losses as a result of both occupation and wage discrimination.

"Limiting investment in Negro human capital can increase white incomes in several ways," writes Thurow. He further observes that spending less on black human capital would mean that more white income would be available for consumption by whites in the short run. Discrimination against black human capital could also mean white income gains in the long run. Relatively fewer expenditures on black human capital would then mean more available funds for white schools, on-the-job

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[32] Ibid., p. 120. [33] Ibid., p. 121.

training, and other forms of human capital investment, and this, in turn, would probably mean an increased rate of return to white human capital.

"In addition to direct gains (or losses) from restricting investment in Negro human capital, restricting capital investment may be one of the best methods of enforcing effective employment, occupation, or wage discrimination."[34] The importance of human capital discrimination can be seen in Thurow's assertion that the result of it is the "creation of a monopoly power that can be used to practice other types of discrimination."[35]

Capital discrimination, as described by Thurow, can assume two forms: It can mean preventing blacks from making efficient use of the capital markets, or it can mean making it difficult to use capital produced within the black community. White capital, too, runs the risk of an income loss because its rate of return may be greater if employed in the black community. Thurow concludes, from his examination of capital discrimination, that net gains or losses would depend on the ability of whites to appropriate the marginal product of black capital.

Monopoly power discrimination "occurs when Negroes are not permitted to enter areas where monopolies result in factor returns above those prevailing in the competitive

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[34] Ibid., p. 122. [35] Ibid., p. 123.

areas of the economy."[36] This kind of discrimination is found in both labor and capital markets. Since wage rates in areas where monopoly power exists are not directly related to skills, the costs of this type of discrimination are presumably less because losses from training new people would be minimal.

Thurow's analysis of price discrimination is consistent with generally accepted price theory. Whites can gain from selling price discrimination against blacks as long as the black price elasticity of demand for the good is less than one. Thurow argues that buying price discrimination was identical to wage discrimination, depending on the elasticity of the black labor supply.

These various kinds of discrimination, according to Thurow, have three enforcers. Government can serve as a discriminator as well as a proponent through both legislation and law enforcement. Community, or social, pressure may serve to enforce discrimination as well. "The main mechanism, however, comes from the interlocking nature of the different types of discrimination."[37] In Thurow's model, regardless of who the enforcer is, whites may seek to maximize the difference between absolute incomes, relative incomes, or both. In any case, social distance can be maximized.

Finally, Thurow suggests that in Becker's model there is little that governments or blacks can do to end discrimination,

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[36] Ibid., p. 124. [37] Ibid., pp. 126.

but such is not the case in the alternative theory. Since many of the effects of discrimination rest on the monopoly and monopsony powers of whites, "governments and Negroes can attempt to break down these powers in government, labor, and business institutions."[38]

Edgeworth and Bergmann--The Crowding Hypothesis

F. Y. Edgeworth in 1922 introduces what has come to be known as the crowding hypothesis. His model differs from those of Becker and Thurow in that crowding, which produces lower wage rates for the minority group, results from social and political pressures rather than market-place discrimination. In his article which deals with the question of whether women should receive equal pay for equal work, Edgeworth asserted that the crowding of women into relatively few occupations is the "main factor in the depression of their wages."[39] Edgeworth explains that this crowding effect is created by excluding women from certain occupations and thus forcing them to be maldistributed, or crowded, into the remaining ones. Pressure exerted on employers from the comparatively better organized male trade unions is assigned the major portion of the responsibility for the crowding of women. The result of this crowding, according to Edgeworth, is sub-optimal production and distribution.

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[38] Ibid., p. 130.

[39] F. Y. Edgeworth, "Equal Pay to Men and Women for Equal Work," The Economic Journal, XXXII (December, 1922), 431-457.

This crowding can be effected (1) by "direct veto"--that is, through overt "no females allowed" policy, (2) by "withholding facilities for the acquisition of skilled trades," or (3) by "regulating that women entering an industry should conform in every particular to arrangements which are specifically suited to male workers."[40] Male workers justified their exclusion of women by arguing that their presence reduces the wages of men. Edgeworth feels that women should counter this oppression through concerted action.

Barbara Bergmann applies Edgeworth's crowding hypothesis to the situation of blacks in the United States when she observes that some jobs are available to blacks, while others are not. Those which are open to blacks are relatively low in status and concentrated in a relatively few occupations. She further observes that the occupations from which Negroes are excluded tend to be highly unionized and suggests that crowding may be caused largely by unions.[41]

Bergmann theorizes that in order to employ all the workers in the crowded market, the marginal productivity would have to be pushed to abnormally low levels, and this, in turn, would cause wage rates of blacks to fall. She notes, however, that the effect of crowding blacks would be to raise white productivity levels and therein white wage rates. Finally, the

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[40] Ibid., p. 439.

[41] Barbara Bergmann, "The Effect on White Incomes of Discrimination in Employment," Journal of Political Economy, LXXIX (March/April, 1971), 294-313.

crowding of blacks into a few occupations also serves to lower the wage rates of the few blacks who do manage to escape the crowded occupations. This occurrence largely is caused by the low opportunity costs to blacks associated with the lower wage rates.[42]

In summary, it should be noted that these theories of discrimination have three common elements. First, they show that discrimination can result in lower money incomes for the group which is discriminated against. Second, all three theories show that the discriminator can receive, in some instances, larger money incomes for his efforts. Finally, they all hypothesize that discrimination is quantifiable in monetary terms. Several authors have attempted to do exactly that, and Chapter II is devoted to the review of several of these studies.

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[42] Ibid.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter presents summaries of published studies made by several social researchers. All of these studies attempt to quantify and measure discrimination or, at least, the economic effects of discrimination. This list is not exhaustive, but it does provide a fairly comprehensive review of the related literature.

Gary S. Becker

Appropriately, a review of the literature on the economics of discrimination begins with the work of Gary Becker whose purpose was to study secular changes in discrimination over time. In chapter nine of The Economics of Discrimination, Becker acknowledges that changes do take place over a period of time in certain variables which impinge on economic discrimination and that changes in these variables subsequently could affect discrimination. These changing variables include "organizations dedicated to eliminating discrimination," regional population composition, the amount of immigration, and the "underlying technology."[1]

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[1]Becker, The Economics of Discrimination, p. 108.

In this chapter, Becker makes several preliminary observations concerning the relative occupational distributions of nonwhites and whites. He divides the occupations into three major categories--skilled, semiskilled, and unskilled--which he views as "the occupational hierarchy." His first observation is that "there were relatively fewer skilled Negroes than whites in each census year from 1890 to 1950."[2] His second observation is that whites also outnumbered nonwhites in the semiskilled occupations in every census year from 1890 to 1940. Becker claims that his analysis revealed two more important facts: (1) that blacks have been lower in the occupational hierarchy than have whites and (2) that the position of blacks in the occupational hierarchy was rising over time.[3]

These last two observations might seem to suggest a reduction in the practice of discrimination over time; Becker, however, points out that the position in the occupation hierarchy of whites had been rising simultaneously with that of blacks. Therefore, changes in the relative occupation distributions of whites and blacks would have to be considered in order to detect changes in discrimination. To this end, he developes a numerical measure of occupational position.

This numerical measure consists of the "average wage and salary income received by whites in each skill category."[4]

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[2] Ibid., p. 110. [3] Ibid. [4] Ibid., p. 112.

To attain this measure, he uses Morton Zeman's estimated incomes received by whites in 1940 in different census occupational categories in the North and South. Becker then uses these estimates to compute ratios showing the relative positions of the two color groups in the occupational hierarchy. Also Becker employs this measure to apply distributional weights to each of the three occupational classes. After employing this technique, he notes that "the relative position of Negroes has been remarkably stable over time."[5] In addition, he says, "Thus, in comparing 1950 with 1910, Negroes in the North had about a 5 per cent higher relative occupational position and in the South about 2 per cent lower position."[6]

Becker concludes that virtually all of the absolute increase in the occupational position of blacks was caused by forces increasing the absolute position of whites as well, that "changes in variables affecting the relative position of Negroes presumably either were minor or offset one another," and that "a large secular decrease in discrimination against Negroes could have occurred only if changes in other variables offset its effects."[7] His final conclusion is that a large secular decrease in discrimination did not occur during the period 1910 to 1950.

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[5] Ibid., p. 113. [6] Ibid., p. 114. [7] Ibid.

Elton Ryack

In 1961, Elton Ryack published an article, entitled "Discrimination and the Occupational Progress of Negroes," which was actually a partial rebuttal of the findings Becker made in The Economics of Discrimination. In this Ryack endeavors to find answers to the following questions: (1) Has there been an advancement in the occupational position of blacks since 1940; and (2) if so, can it be attributed to a reduction in discrimination?[8]

Ryack's disagreement with Becker's findings centers around Becker's method of weighting the occupations. He believes that Becker made a serious error in the calculation and use of these weights. The alleged error lay in the fact that Becker used "constant weights of relative income for the three classes of skills and [did] not take into account the sharp narrowing of income differentials which has occurred since 1940."[9] Ryack argues that, since blacks are more heavily concentrated in the semiskilled and unskilled occupations than are whites, the relative improvement in the occupational distribution of blacks is seriously understated when constant relative income weights are used.

After making the necessary corrections in the weighting procedure, Ryack reports that the relative improvement of

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[8]Elton Ryack, "Discrimination and the Occupational Progress of Negroes," Review of Economics and Statistics, XLIII (May, 1961), 210.

[9]Ibid.

blacks, based upon their occupational distribution, is 15 per cent in the North between 1940 and 1950 and 18 per cent in the South for the same time period.[10] Therefore, he concludes that the relative occupational position of blacks was substantially better in the 1950's than it was before World War II. Ryack is quick to point out, however, that this improvement was not the result of a lessening in discrimination. Instead, he sees the change as being the effect of a tightening labor market.[11] This means that, as the demand for labor increased, employers were forced to rely more and more on black labor; this explains, according to Ryack, the relative occupational advancement of blacks during that time period.

James D. Gwartney

In a more recent study, "Variance in Discrimination Among Occupations," James D. Gwartney sought to focus on the "intensity of discrimination among occupations."[12] His theoretical framework is clearly reliant on Becker's discrimination theory. Gwartney initially assumes that nonwhite and white labor are homogeneous with respect to each other. This assumption then allows him to say that discrimination should be measured in terms of income differentials between nonwhites and whites. Gwartney claims that discrimination could be

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[10] Ibid., p. 211. [11] Ibid., p. 214.

[12] James D. Gwartney, "Variance in Discrimination Among Occupations," The Southern Economic Journal, XXXVIII (October, 1971), 141-155.

detected not only through income differentials but also through employment rate differentials.[13] Expressed differently, in the presence of discrimination:

$$\frac{w_n}{w_w} < 1$$

and

$$\frac{L_n}{L_w} < 1$$

where w_n = the nonwhite wage rate

w_w = the wage rate of whites

and L_n = the employment rate for nonwhites

L_w = the employment rate for whites

Gwartney points out that wage incentives for whites and wage disincentives for nonwhites serve to alter the occupational distribution by moving whites to highly discriminatory (against nonwhites) occupations and nonwhites to relatively low discriminatory occupations.[14] High discriminatory occupations, by definition, are those in which nonwhites receive significantly lower wage rates than whites. Gwartney, therefore, expects nonwhites to emigrate from those occupations and whites to migrate toward them.

Gwartney standardizes whites and nonwhites with respect to educational attainment, regional composition, and scholastic achievement for each of ten major occupational categories. His findings indicate that the employment ratio ($\frac{L_n}{L_w}$), when

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[13] Ibid., p. 143. [14] Ibid.

standardized for the three variables listed above, is greater than 2.2 for both laborers and service occupations which indicates that nonwhites were heavily distributed in labor and service occupations--the lower paying jobs.[15] At the other extreme, Gwartney finds the employment ratio for managers, officials, and sales to be 0.33 and for craftsmen 0.49.[16]

Summarizing his findings, Gwartney reports that employment discrimination was strongest in managerial, sales, and crafts occupations--as measured by employment rate differentials between whites and nonwhites. He also notes that the white-nonwhite income differential was largest for managerial, sales, and crafts occupations. This result is the same for both North and South, but the differential is relatively greater in the case of farmers and farm managers in the South.

Except for professionals, Gwartney indicates that there were relatively more nonwhites in high skill and achievement occupations in the North than in the South. In both cases, however, the nonwhite-white mean income ratio was larger in the North.[17] Finally, he reports that, while the "cardinal" intensity of discrimination within occupations varied between regions, "the ordinal measure of discrimination between occupations is remarkably similar."[18]

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[15] Ibid., p. 146. [16] Ibid.

[17] Ibid. [18] Ibid.

Gwartney also published a related article entitled "Discrimination and Income Differentials."[19] In this study Gwartney seeks

> to break down the income differential between whites and nonwhites into two categories: (a) a differential resulting from differences in productivity factors not directly related to employment discrimination, and (b) a residual unaccounted for by differences in productivity factors and which may result largely from employment discrimination.[20]

Using the Becker discrimination model as his theoretical framework, Gwartney endeavors to standardize the two populations (whites and nonwhites) for major differences in productivity factors that affect income.

As an introductory hypothesis, he states that "the greater the intensity of employment discrimination against nonwhites, the lower [will be] the nonwhite wage rate, and thus earnings, relative to that of whites of similar employability."[21] Gwartney continues by suggesting that total employment income is not only a function of wages but also of "related monetary compensation," and nonpecuniary benefits such as working conditions.[22] Therefore, he argues that employment discrimination could exist even in the presence of equal money wage rates.

Gwartney recognizes that employment discrimination is not completely separate and distinct from other kinds of

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[19] James Gwartney, "Discrimination and Income Differentials," The American Economic Review, LX (June, 1970), 396-408.

[20] Ibid., p. 396. [21] Ibid. [22] Ibid.

discrimination. This realization leads him to qualify any possible results by writing, "The magnitude of income differences resulting from differences in productivity factors will give some indication of the possible intensity of color discrimination in education and other areas . . . ."[23]

The author uses Laspeyres and Paasche indexes to obtain his results and regression analysis to support those results.[24] He also estimates wage and salary income for males twenty-five years old or over using mean and median earnings data as well as the Coleman report.[25] With the aid of these, Gwartney discovers that from 23 per cent to 27 per cent of the income differential resulted from differences in quantity of education and scholastic achievement and the unexplained income differential ranged between 15 per cent and 25 per cent for nonfarm occupations and 13 per cent to 19 per cent for urban areas.

He concludes that one-third to three-fifths of the income differential remained unaccounted for after adjustment for the productivity factors examined. It is his belief that this residual may indeed have resulted from employment discrimination.

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[23] Ibid.

[24] The Laspeyres index is the ratio of the nonwhite mean income multiplied by the employment distribution of the white population to the white mean income multiplied by the employment distribution of whites. The Paasche index is the ratio of the white mean income multiplied by the nonwhite employment distribution to the white mean income multiplied by the white employment distribution.

[25] The Coleman Report is a study done for the U. S. Office of Education by James Coleman, et al. It estimates differences in scholastic achievement between whites and nonwhites.

Alan B. Batchelder

Allen B. Batchelder made a study in which he examines "statistical data showing the economic position of American Negroes relative to whites in 1949 and 1959."[26] In this work he raises and answers the following questions: "First, given the racial turbulence of the 1950's, did the American Negro's relative income position decline, hold steady, or improve during the fifties? Second, what explanations can be found for the changes that took place, particularly the changes for men?"[27]

To answer these questions, Batchelder uses income data from the United States Bureau of the Census. He employs the term "income" to express a combination of wage and salary income, self-employment income, and "other" income, with the latter category including rent, dividends, interest, and transfer receipts. Batchelder observes that, even though median income was generally rising during the period 1949 to 1959, the relative position of blacks declined. In fact, he illustrates, expressing black median income as a fraction of white median income, that this income ratio declined absolutely from 1949 to 1959. Such was the case not only for the "conterminous United States," but for each separate region--North-east, North Central, West, and South--as well.

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[26]Alan B. Batchelder, "Decline in the Relative Income of Negro Men," The Quarterly Journal of Economics, LXXVIII (November, 1964), p. 525.

[27]Ibid.

The same group of data, however, yields almost exact opposite results when black women were compared to white women. Batchelder shows that the median income of black women increased with respect to the mean income of white women during the 1949 to 1959 period, a trend which is consistent in each of the census regions (as enumerated above). He even finds the 1959 black-white income ratio to be above 95 per cent in each of the regions except the South.[28]

Batchelder points out, in spite of these two results, that the median income of black women relative to that of black men did not experience a significant increase for the period.[29] The results given by the percentage changes above are misleading because the income ratio between white women and white men declined during the period.

These findings lead Batchelder to conclude the following:

> First, the changing role of American women in the 1950's was different for Negro than for white women. Second, the income of Negro women became increasingly important during the 1950's relative to the income of Negro men, first, . . . because Negro women in the South and West earned more relative to Negro men and, second, . . . because a substantially larger per cent of Negro women worked in 1960 than in 1950.[30]

After he had reported his findings about changes in relative incomes for the period, the author seeks to discover the causes which brought about the observed changes. Batchelder reasons that the decline in the income position of

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[28] Ibid., p. 531. [29] Ibid., p. 533. [30] Ibid., pp. 533-534.

blacks relative to whites could have resulted from similar changes in productivity. Specifically, the labor quality of black men could have declined relative to the labor quality of white males. An alternative explation is that discrimination against black men increased during the period examined. Greater relative unemployment rates also could have explained the relative decline in the income of black men. In search of an answer, he examines all of these possibilities.

With respect to education, Batchelder surmises that, while nonwhites did make quantitative gains relative to those for whites, these gains were probably more than offset by reductions in the quality of education for nonwhites.[31] He observes that, while nonwhites are younger, on the average, than the white population, this fact probably played a small part in accounting for the increased difference between the median incomes of white and nonwhite males.[32] Batchelder also notes that the relative growth of the nonwhite labor force might have tended to depress nonwhite income relative to white income.[33] In addition, he points out that the ratio of nonwhite male unemployment rates to white male unemployment rates did not change significantly enough during the period to affect substantially the relative income of nonwhite men to that of white men. Also, the percentage of nonwhite men working part-time as compared to white men did nothing to explain the differential further.

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[31] Ibid., pp. 536-538. [32] Ibid., p. 539. [33] Ibid., p. 540.

Using index numbers of the relative occupational status of whites and nonwhites constructed by Herman P. Miller and others constructed by Norval D. Glenn, Batchelder concludes that any gains resulting from changes in the relative occupation distributions of the two male groups must have taken place within occupations because there appeared to be very little gain for nonwhite men accross occupations.[34] He writes, "It would appear that Negro men moved into the lowest income end of each high-income occupation while whites continued to monopolize the jobs at the increasingly distant upper end of the occupation."[35]

He finally concludes that black men made no progress in closing the income gap between themselves and white men during the 1950's, and he suggests that the "much weaker" labor market of the fifties was primarily the reason. To illustrate the point, Batchelder produces a trend for the nonwhite-to-white income ratio for the sixties in which he observes that "the nonwhite-to-white income ratio for men averaged .50 for 1958-60 and fell to .49 for 1962."[36]

Rashi Fein

Rashi Fein's article is a follow-up of the Batchelder article reviewed immediately above, and his purpose is to

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[34] Ibid., pp. 545-547. [35] Ibid., p. 547.

[36] Ibid.

report a sharp reversal of Batchelder's trend. He writes, "In 1963 the ratio rose to .52 and in 1964 it rose further to .58. . . . For females the ratio which averaged .61 for 1958-60 and rose to .67 for 1962 stayed at .67 in 1963 and rose further to .71 in 1964."[37]

By suggesting that the timing of this reversal indicates the importance of increasing aggregate demand, Fein offers support for Batchelder's idea concerning the importance of the labor market.

Harry J. Gilman

In 1965, Harry J. Gilman published an article entitled "Economic Discrimination and Unemployment." In it he uses 1940, 1950, and portions of the 1960 census data in attempting to answer two questions:

1. To what extent can the persistently high level of the unemployment rate for nonwhite than for white male workers be accounted for by differences between the two groups in their distributions by occupation, education, age, industry, region, and like characteristics?
2. Are the residual differences--those that remain after standardization for such differences as skill--related to other aspects of market discrimination against nonwhites that have been revealed in other studies?[38]

Gilman employs several multiple regressions which include the following independent variables: color, per cent of expected unemployment on the basis of the industry distribution,

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[37]Rashi Fein, "Relative Income of Negro Men: Some Recent Data," The Quarterly Journal of Economics, LXXX (May, 1966), 336.

[38]Harry J. Gilman, "Economic Discrimination and Unemployment," The American Economic Review, LV (December, 1965), 1078.

number of school years completed, per cent between the ages of twenty-five and fifty-five, and per cent wage and salary employees. These variables are used to predict unemployment rates in all occupations, unemployment rates in the craftsman through professional occupations, and unemployment rates in low-skill occupations.

His research reveals that standardization by color for the independent variables listed above serve to eliminate much of the apparent excess in the nonwhite male aggregate unemployment rate.[39] When standardization for the major and intermediate occupation groups is effected, 40 per cent to 50 per cent of the unemployment-rate differential is explained away. Gilman notes, moreover, that apparently standardization for these factors significantly reduces the unemployment-rate differential more in the low-skill occupations than in the high-skill occupations.[40]

To answer his second question--that concerning causes of the unemployment-rate differential residual--the author first tests the "Differential-Skill Hypothesis." The essence of this hypothesis is that the residual differences in the non-white-white male unemployment rates are caused by "incomplete statistical control over the skill factor."[41] By "skill factor" Gilman means quantity of education, quality of education, and the specific amounts of on-the-job training received by

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[39] Ibid., p. 1085. [40] Ibid., p. 1086. [41] Ibid.

the two groups. His findings indicate that, by and large, the data contradict the hypothesis.

Continuing his search for an answer to his second question, Gilman subsequently tests the "Differential-Wage-Rigidity Hypothesis," which states that the residual differences in the unemployment rate are at least partially owing "to the existence of greater wage rigidity for nonwhite workers in the presence of discrimination against them."[42] The author points out that, in the case of flexible wage rates, discrimination can take the form of higher wages for whites rather than higher unemployment for nonwhites. In the presence of "legal or quasi-legal" pressure toward the equality of white and nonwhite wages, discrimination takes on the form of higher unemployment rates for nonwhites.

With respect to the "Differential-Wage-Rigidity Hypothesis," the author finds the data to be inconclusive. If there had been an increase in the differential-wage rigidity over time, Gilman believes that it would have explained part of the unemployment differential. In fact, he suspects this to be the cause of a substantial portion of the unexplained differential.

John P. Formby

John P. Formby examines market discrimination against nonwhite wage and salary earners in an article which he entitled "The Extent of Wage and Salary Discrimination Against Non-White Labor." His study is designed to serve four purposes:

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[42] Ibid., pp. 1090-1091.

(1) to calculate the extent of wage and salary discrimination against nonwhites between the ages of twenty-two and sixty-four for the years 1949 and 1959;

(2) to show the changes in such discrimination over that period;

(3) to show regional differences in the extent of such discrimination; and

(4) to show the relationship between the extent of such discrimination and human capital.[43]

Formby applies Becker's theory of discrimination to the 1950 and 1960 census data in order to achieve the stated purposes. His approach to the data is essentially one of measuring the economic costs of wage and salary discrimination to the U. S. economy. He finds this economic cost to be $4 billion in 1949 and $6.6 billion in 1959. The measured per capita increase in the income differential is almost 20 per cent. During this period, wage and salary discrimination increases against nonwhite males in the South and decreases in the North and West for nonwhite females.[44]

Formby uses the number of years of school completed as an estimate of human capital. He devises a ratio of "per capita income differentials-to-per capita potential income for nonwhites" for various educational categories; and he

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[43]John P. Formby, "The Extent of Wage and Salary Discrimination Against Non-White Labor," The Southern Economic Journal, XXXV (October, 1968), 140.

[44]Ibid., p. 150.

observes that, as this ratio rises with human capital, discrimination also rises and vice versa.[45] This same relationship becomes an inverse one when applied to nonwhite females.

Walter Fogel

The study made by Walter Fogel in 1966 attempts to measure the relationship between a given amount of education and income for persons with Spanish surnames, Puerto Ricans, Chinese, Filipinos, American Indians, Japanese, and Negroes. Fogel gives much weight to what he describes as the "visible dissimilarity" hypothesis. It states that, ceteris paribus, the greater the rate of assimilation of a minority group into the majority's society, the greater will be the decrease in discrimination against the minority group.[46] In other words, the greater the "visible dissimilarity" between members of the minority group and members of the majority group, the greater the degree of discrimination to be felt by the visible minority.

As a simultaneous consideration, Fogel likewise examined the hypothesis that prejudice against some minority groups is an increasing function of their relative population in a community.[47] Assigning primary importance to the "visible dissimilarity" hypothesis, he expects to find that education

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[45] Ibid.

[46] Walter Fogel, "The Effect of Low Educational Attainment on Incomes: A Comparative Study of Selected Ethnic Groups," The Journal of Human Resources, I (Fall, 1966), 23.

[47] Ibid., p. 25.

means less to Negroes in the generation of income than to any of the other minority groups under consideration. His methodology is to standardize each minority population for education and then to measure its respective incomes. To accomplish this, he computes an index of income for the males of each ethnic group "from median incomes for eight levels of educational attainment, each weighted by the number of persons who had completed the corresponding level of educational attainment."[48]

Fogel finds that standardization of the distribution of educational attainment for the various minority groups reveals that this variable accounts for 12 to 14 per cent of their incomes. He further finds that the measured amount of income discrimination varies with the ethnic groups, giving support to his "visible dissimilarity" hypothesis.[49] By comparison, the data do not support the "relative size" hypothesis. Perhaps the most significant finding made by Fogel is that education alone would not completely eliminate the income differences between minority groups and the majority group.

Finis Welch

Finis Welch makes what he calls "an interpretation" of income differences in the rural South.[50] Because he recognizes

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[48] Ibid., p. 28. [49] Ibid., p. 33.

[50] Finis Welch, "Labor-Market Discrimination: An Interpretation of Income Differences in the Rural South," Journal of Political Economy, LXXV (June, 1967), 225-240.

the cumulative effects of discrimination and thus the difficulties involved in attempting to measure the effects of current discrimination, he chooses instead to make an interpretation based on what he describes as external factors. Specifically, he attempts to evaluate differences in "quality and quantity of schooling." He assumes education to be "a distinct factor of production complementary to physical [unskilled] labor and capital."[51]

Welch uses 1959 data for ten southern states to study rural males twenty-five years old or older. He attempts to identify the portions of per capita income which are attributable to each of the following: (1) differences in the number of years of school completed; (2) differences in the ownership of physical property; (3) inferior quality of schooling; and (4) market discrimination against physical labor and education. To this end, Welch develops a mathematical model which is applicable to a market composed of two groups. The production function is identical for both groups, and it relies on three variables--physical labor, education, and a third factor representing "all non-labor inputs."[52]

The author sets out to examine two kinds of discrimination--that against producers and that against employees. Although Becker considered both of these types of discrimination with a somewhat similar model, there is one basic difference between

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[51] Ibid., p. 225. [52] Ibid., p. 228.

the two. Central to Welch's analysis is his assumption that education and physical labor can be considered as totally separate factors of production. This assumption allows him to consider laborers with different amount of education as complements rather than substitutes.[53] He points out that this concept of complementarity could be extended to include differences in other factors between workers--for example, race. Theorizing that varying degrees of complementarity could be achieved, depending upon the factors involved, he suggests that "net" complementarity was of prime importance. In a summary comparing Becker's model with his own, Welch writes:

> An advantage of this interpretation is that although integration can lead to discrimination it may nevertheless result in increased wages to both Negroes and whites. Also, this interpretation does not imply, as does the Becker model, that monopoly rents accrue to those who hire only Negroes at a lower wage rate.[54]

After standardizing the two populations for age and farm capital, Welch observes the relative income ratio of nonwhites to whites to increase from 0.39 to 0.48. Perhaps more importantly, he finds that the marginal increase in income brought about by a marginal increase in education is greater, both relatively and absolutely, for whites than for nonwhites. To make this point more impressive, Welch states, "A nonwhite with no schooling will receive 81 per cent of the income of

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[53] Ibid., p. 227. [54] Ibid., p. 228.

a similar white. Yet, for nonwhites, school attendance increases income at a rate which is only 28 per cent of the corresponding increase for whites."[55] Welch reveals that in monetary terms a single unit of schooling up to eight years yields an average return of $1160 for whites, but only $320 for nonwhites. His conclusion is obvious--"school attendance is simply a better investment for whites."[56]

The author assigns this differential to the inferior quality of nonwhite schooling and market discrimination against education. His results indicate that quality differences account for 37 per cent of the discrimination against schooling, and that discrimination against schooling for nonwhites discourages its acquisition.[57]

Ralph H. Turner

Written twenty years ago, Ralph H. Turner's article, "Foci of Discrimination in the Employment of Nonwhites," is apparently one of the first attempts to quantitatively measure discrimination. His methodology is to view "inequality of status" as being dichotomous--discrimination could be a function of unequal qualification for the status in question, or of some function other than qualification, which could be called discrimination.[58]

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[55] Ibid., p. 235. [56] Ibid. [57] Ibid., p. 239.

[58] Ralph H. Turner, "Foci of Discrimination in the Employment of Nonwhites," American Journal of Sociology, LVIII (November, 1952), 247.

Turner claims that a given act of discrimination could have many different references--that is, it may be brought about for a number of different reasons. These various references, or reasons, are what Turner chooses to call "foci of discrimination." He uses 1940 census data to measure the effects of educational attainment, occupation, and employment to guage the effects of discrimination.

Turner found that approximately "39 per cent of the occupational deficiency of nonwhites may be attributed to the factor of education."[59] He writes, "The residual three-fifths is attributable to discrimination and types of qualification not indicated by educational attainment."[60] Turner also relates that approximately 75 per cent of the excessive unemployment for blacks was due to discrimination and/or "non-educational attainment" qualifications. At this point, Turner interjects that nonwhites are disproportionately concentrated in occupations where the unemployment rates are high, and that this fact is a large contributor to the excessive unemployment for nonwhites.[61]

David P. Taylor

David P. Taylor uses disaggregated data from the personnel offices of eighty firms in the Chicago area to study the relationship between discrimination and occupational wage

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[59] Ibid., p. 249. [60] Ibid. [61] Ibid.

differentials in unskilled labor markets.[62] He examines two occupations: (1) materials handler, and (2) janitor. Taylor chooses regression analysis as his analytical tool, and examines the effects of the following variables: (1) age, (2) education, (3) seniority, (4) prior work experience, (5) marital status, (6) weight, (7) distance traveled to work, (8) industry, (9) location, (10) racial composition in the neighborhoods, and (11) establishment size.

Initially he discovers that Chicago area employers are quite capable of practicing discrimination and, in some cases, do so in violation of state and federal laws, and presidential orders.[63] This kind of discrimination served to keep blacks out of certain jobs. His regression analysis also indicates that blacks, in the two unskilled occupations studied, received significantly less pay than whites in the same occupations, even after the factors enumerated above were taken into account.[64]

In addition, Taylor points out that the "distance traveled to work" variable reveals that blacks consistently traveled further to reach their places of work, thus adding even more to the real cost of discrimination for blacks. Taylor concludes by claiming that his findings present a strong case

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[62]David P. Taylor, "Discrimination and Occupational Wage Differences in the Market for Unskilled Labor," Industrial and Labor Relations Review, XXI (April, 1968), 375-390.

[63]Ibid., p. 376. [64]Ibid.

that racial discrimination has a significant impact on the operation of the market for unskilled laborers.

Orley Ashenfelter

In 1970, Orley Ashenfelter published a study entitled "Changes in Labor Market Discrimination Over Time."[65] He seeks to offer evidence on the effects that changes in discriminatory practices may have had on the relative earnings of nonwhites in the pre- and post-war periods. He is particularly concerned with two hypotheses: (1) the effect which cyclical swings in aggregate labor market activity may have had on discrimination, and (2) "estimating the extent of the change in the relative earnings of nonwhites in the postwar period which may be attributed to changes in discrimination."[66]

In addition, as a tertiary hypothesis, Ashenfelter proposes to test the extent to which discrimination is negatively related to aggregate labor market activity. His arguments for expecting this kind of relationship, which, incidently, were shared by Elton Ryack, are given as follows:

> (1) In a tight labor market, the perceived cost of discriminating against qualified nonwhites increases because of the general scarcity of labor. (2) A tight labor market provides a better environment for dissolving the restrictive practices in some unions and crafts.[67]

Ashenfelter adopts Becker's theoretical discrimination framework by employing the "discrimination coefficient"

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[65]Orley Ashenfelter, "Changes in Labor Market Discrimination Over Time," The Journal of Human Resources, V(Fall, 1970), 403-430.

[66]Ibid., p. 404. [67]Ibid., p. 411.

and "net-cost-minimizing" concepts. Several regression equations are used to make estimates of wage and salary income with the following serving as independent variables: time, the aggregate unemployment rate, and relative unemployment rates , where the unemployment rate for nonwhites is expressed as a fraction of the unemployment rate for whites.

Among other things, Ashenfelter finds a large upward trend in the relative earnings of nonwhite females and the virtual absence of a trend in the earnings of nonwhite males.[68] He also finds "substantial evidence in favor of the hypothesis that the relative extent of unemployment has a negative effect on relative nonwhite earnings, and very little evidence that aggregate labor market tightness has had any appreciable effect on relative nonwhite earnings in the postwar period."[69] He states that part of the observed increase in the relative earnings in nonwhite females is due to secular changes in discrimination over the postwar period. These secular changes apparently had the opposite effect for nonwhite males, actually causing small declines in their relative earnings.[70]

Since those results cover the time period 1950 to 1966, one might be tempted to assume that the Civil Rights Act of 1964 significantly altered the trend, since it could have served to reduce discrimination. Ashenfelter noted, however, that if such had been the case, his equations should have

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[68] Ibid., pp. 414-415. [69] Ibid., p. 415.

[70] Ibid., pp. 420-421.

underpredicted nonwhite earnings for the period 1964 to 1966. He therefore compares the actual nonwhite earnings for the period with the predicted nonwhite earnings from his regression and finds little evidence to support the assumption that the 1964 Civil Rights Act had caused any measurable change in discrimination during that time period.[71]

In a positive vein, Ashenfelter finds that the occupational distribution of nonwhites relative to that of whites has been improving. Over the time period 1910 to 1966, nonwhites did appear to be moving from lower paying to higher paying occupations; nonwhite females had significant relative movement out of farming and into clerical occupations, and out of service and into professional and technical categories.[72] In spite of the movement, however, Ashenfelter believes the magnitude of these changes to be very small.

In conclusion, the author does not find much evidence in the postwar period that movements in aggregate labor market conditions tend to be associated with changes in discrimination.

Ritchie H. Reed and Herman P. Miller

Ritchie Reed and Herman P. Miller, in an article entitled "Some Determinants of the Variation in Earnings for College Men," examined several determinants of the variation in earnings of men with college degrees. The authors attempt to assess "the relative importance of a variety of factors thought

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[71] Ibid., p. 422. [72] Ibid., p. 425.

to influence the earnings of men with college degrees."[73] They use regression analysis to study the effects which several variables have on earnings, where earnings include money received from wages and salaries, or from the operation of a farm, business, or professional practice. The variables regressed against earnings are age, college rank as measured by the index of freshmen aptitude, field of specialization, color, father's occupation, current region of residence, father's education, and type of residence at high school graduation.[74] The data were produced by the United States Bureau of the Census and published in the 1967 Current Population Survey.

The authors' college rank variable, also referred to as the freshmen aptitude index, is used as a measure of the quality of a school. They believe that if it were assumed, on the average, that the better students select the better colleges, then this freshmen aptitude index could serve as a measure of school quality. The index is a measure of the "average aptitude, verbal and mathematical, of entering freshmen in a given college."[75]

The sample was divided into three degree levels so that interaction effects could be examined. Level I men had Bachelor's degrees as the highest degree. Level II was

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[73] Ritchie Reed and Herman P. Miller, "Some Determinants of the Variation in Earnings for College Men," The Journal of Human Resources, V (Spring, 1970), 177.

[74] Ibid. [75] Ibid., p. 179.

"composed of those with Master's degrees, or a degree in law, theology, or dentistry." Those holding doctor's degrees, or second degrees in law or theology comprised level III. Because there were very few observations to fall into level III. only the results for levels I and II were reported.

Reed and Miller find that for both level I and level II, age, college rank, and field of specialization are the most important explanatory variables. They discover that color is relatively important for both degree levels in explaining earnings variation, but that age is most important for members of the level I group. College rank and field of specialization are found to be more important for level II than for level I.

The study suggests that, on the average, going to the best schools adds about $4400 per year for members of level I and $6100 for members of level II, indicating that quality of education is more important at higher degree levels. In addition, Reed and Miller find that persons majoring in technical fields for the Bachelor's degree appear to have an income advantage which is lost for higher degrees. When all factors are standardized, with the exception of color, they find that nonwhites receive $2400 per year less than whites, and they observe that the earnings differential due to color is higher in some cases, at the higher degree level.[77] In summary,

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[77] Ibid., pp. 186-187.

13.5 per cent of the income differential between whites and blacks is accounted for by standardizing for the other factors, as is 18.4 per cent of the level II difference.

Dave M. O'Neill

This analysis utilizes Armed Forces Qualification Test (AFQT) data in an attempt to estimate the relative importance of current and past discrimination in explaining 1960 racial differentials in earnings.[78] The specific question which O'Neill attempts to answer is this one: "If current labor market discrimination against Negroes had vanished completely in 1961, by how much would we have expected racial earnings differentials, within age--education cells, to have narrowed in the short run?"[79]

O'Neill uses Finis Welch's study, (reviewed above) as a measuring stick for his own work. O'Neill believes his approach to be advantageous because of its

> potential comprehensiveness in being able to quantify the market productivity effects on a host of factors, including not only the quality of schooling and motivation-to-learn effects of past discrimination, but also factors such as family environment which can operate to influence market productivity given the level of schooling quality."[80]

He views the fact that his approach depends upon the use of one type of individual performance to explain another type as being the primary disadvantage of his study.

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[78] Dave M. O'Neill, "The Effect of Discrimination on Earnings: Evidence from Military Test Score Results," The Journal of Human Resources, V (Fall, 1970), 477.

[79] Ibid. [80] Ibid.

The data represents 750,000 men who were either drafted into the army or attempted to enlist during the period January, 1953 to July, 1958. The AFQT is an achievement-type test composed of one hundred questions equally distributed over the areas of vocabulary or verbal concepts, arithmetic, spatial relations, and mechanical ability.

O'Neill observes that black males generally score lower than whites on the AFQT; he, therefore, reasons that the score differentials are "strongly indicative of important quality-of-schooling and motivation-to-learn differentials," such that the differentials could be interpreted as estimates of the effects of past discrimination. O'Neill believes that to the extent to which the score differentials actually do measure discrimination, the AFQT could serve as a means for estimating the effects of current market discrimination on earnings.[81]

O'Neill's results indicate that "for schooling levels below college graduate, between 50 and 55 per cent of the 1960 earnings differentials were attributable to current labor market discrimination, and the remaining 50 to 45 per cent to the lagged effects of past discrimination, both market and non-market."[82] The author also claims that his analysis reveals that the quality of schooling, rather than current market

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[81] Ibid., p. 481. [82] Ibid., p. 484.

discrimination, is probably the main cause of the observed comparatively low economic returns to college education for blacks.[83]

In summary, O'Neill reports that the elimination of discrimination in 1961 would have significantly raised the earnings of blacks. When discrimination is dichotomized into past and present, however, past discrimination seems to create a large income differential. In other words, of the observed earnings differential, O'Neill suggests that the largest portion of it accrues from discrimination which took place in the past.

Lester C. Thurow

Thurow, the author of the "Alternative Theory" which was discussed in Chapter I, measures discrimination in a way that is distinctly different from the ones reviewed so far, with the possible exception of John Formby. Whereas the other researchers express measured discrimination as an amount per worker, Thurow's measurement is aggregated as income gains to whites and income losses to blacks.

Thurow believes that, if white employment were increased at the expense of the average nonwhite worker, employment discrimination could be calculated by multiplying the total white employment by the average nonwhite income.[84] He makes that calculation and derives a $0.8 billion gain for whites

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[83] Ibid.

[84] Thurow, Poverty and Discrimination, p. 130.

from discrimination in 1960. He notes that, if, instead of increased unemployment, discrimination against nonwhites results in sub-marginal product wages, the net gain for the white community would remain $0.8 billion.[85]

Thurow also maintains that white gains from wage discrimination could be computed if it were assumed that wage differences within sex, educational, and occupational categories were due to discrimination rather than real differences in productivity.[86] The white gains which Thurow makes in this case are based on two sexes, twelve occupations, and six educational categories, which produce 144 analytical cells. Thurow argues that, if it were assumed that white incomes reflect their marginal products, white gains could be computed by summing the difference between white and black earnings in each cell and multiplying that sum by the number of blacks in each cell.[87] He estimates that wage discrimination increased white incomes by $4.6 billion in 1960.

Similar reasoning enables Thurow to estimate white gains from human capital discrimination and occupational discrimination. By assuming that whites are "distributed across the educational spectrum in the same manner as the population as a whole," he calculates the white gain from human capital discrimination to be $7.9 billion in 1960.[88] Thurow finally estimates the

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[85] Ibid., p. 131. [86] Ibid.

[87] Ibid. [88] Ibid., p. 132.

combined white gain from occupational discrimination and monopolistic power discrimination at $4.5 billion.

In summary, Thurow makes two concluding observations: (1) Total black losses and white gains from the various forms of discrimination amount to approximately $15 billion per year, and (2) efficiency losses amount to about $19 billion per year.[89]

Summary

After reviewing the related literature, one important point is quite clear: There is little doubt, at least among researchers who have dealt with discrimination, that discrimination is quantifiable with respect to its economic effects. This assumption is revealed both implicitly and explicitly. Of all the authors reviewed above, not one of them initiated his discussion by raising the question, "Is discrimination a measurable phenomenon?" Furthermore, by way of summaries and conclusions, they all purport to have measured either the extent of discrimination or changes in discrimination for a given time period. They employ a variety of methods and techniques for quantifying discrimination; these questions and differences, however, are always introduced beneath the assumption of measurability.

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[89] Ibid., p. 158.

CHAPTER III

METHODOLOGY

This chapter is divided into two parts--(1) data collection procedures and (2) analytical methodology.

Data Collection Procedures

Data Source

The data source for this study was magnetic computer tapes which were produced and distributed by the United States Bureau of the Census. These computer tapes, which compose the 1/1000 national sample, were made by sampling the 1960 census data.[1] The 1/1000 sample data were divided into four regions--Northeast, South, West, and North Central; the southern region, which includes Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Louisana, Arkansas, Oklahoma, and Texas, was selected for this study.

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[1] U. S. Bureau of the Census, One-In-A-Thousand Sample Description and Technical Documentation, (Washington, 1964).

The Variables

The variables were the following:

Dependent variables

(1) wage and salary income;

(2) total earnings--wage and salary income plus other kinds of income such as bonuses, commissions, tips, and so forth

(3) self-employment income;

(4) other income--includes rents, interests, dividends, inheritances, gifts, and other kinds of transfers and property income;

(5) total income--all money income;

Independent variables

(1) race;

(2) sex;

(3) size of place--population of the place where the individual lives;

(4) age;

(5) highest grade of school completed;[2]

(6) detail occupation;

(7) detail industry;

(8) number of weeks worked in 1959.

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[2]Ideally, education would be one of the variables considered in a study of this nature. Education is not, however, a singular, totally independent item. It is instead a function of both knowledge and skill, neither of which is necessarily acquired through the setting of a formal classroom environment; therefore, serious measurement problems arise when one attempts to quantify education. In this study, the highest grade of school completed serves as an estimator of education.

Detailed Description of Data Collection Procedures

The 1/1000 sample is a subsample of the Census bureau's 5-per cent population sample.[3]

Selection criteria.--In an effort to avoid reduction of the degree to which the 1/1000 sample represented the population of the United States, all data records containing information relevant to the purposes of this study were selected for the analysis. All Negroes and whites who were fourteen years old or older were selected.

Decoding the income variables.--The income coding represented on the computer tapes was identical for all of the income types except total earnings. There were twelve total earnings codes which were used to divide total earnings into classes. The two extreme classes represented $0.00 and $25,000 and over, respectively. When an individual's total earnings code placed him in the $0.00 class, $0.00 was used for his income. When an individual's code made him a member of the $25,000 and over class, his total earnings were assumed to be $25,000. Under total earnings, there was one other difficult class to manage; this was the $1 - $999 or less category. When the code indicated membership in this group for an individual, his total earnings were assumed to be $500.

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[3]U. S. Bureau of the Census, One-In-A-Thousand Sample Description and Technical Documentation, pp. 109-132.

For all other classes under total earnings, the class midpoint was used as an estimate of total earnings.. For example, $3,500 would be the amount assumed for total earnings for an individual whose code placed him in the $3,000 - $3,999 class.

The coding for the remaining four types of income was such that, in most cases, the code itself could be used to compute the income amount. For representation of positive income amounts, the coding scheme made use of the following codes: XX0, 000 - 999, X10 - X24, and X25. $0.00 was assigned to individuals having membership in the XX0 classes. The next group of codes ranged between 001 and 999, and when multiplied by ten, yielded that individual's income. For instance, an individual whose code was 743 had an income of $7430.

For income codes falling in the X10 - X24 range, the numerical portion of the code was multiplied by 1000 to obtain the estimate of income. X15 would be the code used to represent $15,000. X25 was again the upper income class having $25,000 as its lower limit. As before, persons in this class were assumed to have an income of $25,000.

In addition to the ones described above, self-employment income, other income, and total income had two more applicable code groups--V00 - V98 and V99. The "V" prefix served to indicate negative income. The specific income amounts were

computed by multiplying the numerical portion of the code by -100; thus, V05 would represent a loss of $500. V99 was used to indicate a loss of $9,900 or more; and when this code appeared, the income amount was assumed to be $9,900.

Analytical Methodology

The basic research design used for this study is descriptive. The relationships between the socio-economic variables described above and different types of income previously described are examined with the aim of measuring the extent of racially based discrimination.

The Statistical Model

The basic statistical model used for analyzing the data was multiple regression. The income data to which the multiple-regression model was applied composed a joint function of the form:

$$Y = X_1X_2X_3 \ . \ . \ . \ X_n,$$

where Y = the individual's income and

$X_1 - X_n$ are the variables against which Y is regressed.

Because the multiple-regression model is designed to analyze data which fit linear functions, a linear transformation was accomplished to make the multiple-regression model and the data compatible; this transformed function was of the following form:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ . \ . \ . + b_nX_n + e,$$

where a = the constant term,

$X_1 - X_n$ = the income determining variables (independent variables),

$b_1 - b_n$ = the regression coefficients, and

e = the error term.

This linearization was accomplished by using dummy variable coding. The eight independent variables were subdivided into fifty-five variables and were coded by use of the "1" - "0" dummying technique. (See Table II in the Appendix.)

Multicollinearity.--It is recognized that a degree of multicollinearity exists among the data. In describing multicollinearity, J. Johnston says that

> This is the name given to the general problem which arises when some or all of the explanatory variables in a relation are so highly correlated one with another that it becomes very difficult, if not impossible, to disentangle their separate influences and obtain a reasonably precise estimate of their relative effects.[4]

One technique which was specifically employed to negate partially the effects of multicollinearity was the stepwise regression. The stepwise technique is one whereby the final regression equation is arrived at through the successive addition of explanatory variables to an equation which began with only one explanatory variable or through the successive elimination of explanatory variables from an equation which contained all of the possible variables. The former method

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[4]J. Johnston, Econometric Methods (New York, 1963), p. 201.

is that of the step-up regression, and the latter is that of the step-down regression.

The computerized statistical program which handled the data in this study employed the step-up technique. This procedure is significant because it does not allow two perfectly correlated variables to enter into the regression; that is to say, each variable stepped into the multiple regression must add at least a minimum amount to the coefficient of determination for the equation.

Reporting on a subcategorization method of dealing with multicollinearity, Emanual Melichar notes,

> In the simplest form of this method, and abstracting momentarily from estimation problems, each class of each categorical factor is represented by a separate independent variable. Four geographical areas, for example, are represented by four variables.[5]

These two methods encompass all efforts made in this study to compensate for the effects of multicollinearity. They do not completely eliminate those effects; in addition, the effects of multicollinearity are such that the separate influences which the independent variables have on the dependent variable cannot be explicitly determined. There does appear to be, however, general agreement among statisticians and econometricians

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[5]Emanuel Melichar, "Least-Squares Analysis of Economic Survey Data," 1965 Proceedings of the Business and Economic Statistics Session, American Statistical Association, 1965.

that the regression equation does remain valid for predictive purposes when all variables are considered concurrently.[6]

The Critical Tests

This study has two objectives: First, to test the hypothesis that $b_n > 0$, where b_n is the regression coefficient of the color variable. (In the dummy form, "1" coded for the color variable represents a white southerner.) The second objective is to determine which socio-economic variables are most important in determining the relative incomes of black and white southerners.

To determine the relative importance of the various socio-economic factors on the incomes of blacks and whites, the coefficients of determination (R^2's) were evaluated. In other words, each variable which was added to a regression equation necessarily contributed positively to the R^2 for that equation, and by measuring these increments, approximate contributions for each variable could be determined. The R^2's were used to compute index numbers which were designed to make the comparative measures. The index numbers were computed by use of the following formula:

$$\frac{R_A^2 - R_B^2}{R^2},$$

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[6]Jacob Cohen, "Multiple Regression as a General Data Analytic System," Psychological Bulletin, LXX (December, 1968), 426-433; see also J. Johnston, Econometric Methods, p. 207; and Michael J. Brennan, Jr., Preface to Econometrics (Dallas, 1960), p. 340.

where R_A^2 = the coefficient of determination for the equation after the particular variable being examined was added to the equation,

R_B^2 = the coefficient of determination for the equation before the particular variable being examined was added to the equation, and

R^2 = the coefficient of determination for the equation after all variables were considered.

Finally, the variables were subjected to a ranking system. This means that, in addition to the classification of the variables according to their contribution to the total R^2 for the regression equation, the variables are classified by the numerical rank of the step at which they entered the equation. If, for example, twelve years of schooling were the first variable to be stepped into the regression equation, that variable would be assigned the ranking of "1." This numerical ranking, which is also referred to as rank order, is given along with the index numbers, regression coefficients, standard errors, and coefficients of determination in tables interspersed throughout the next chapter.

In summary, income differences were measured by the use of five regression equations--one for each of the five income types, which included color (race) as a dummy variable. The comparative study of the variables was achieved through the use of ten regression equations--one for each type of income

for both color groups. In the latter case, the color variables were excluded from the equations, and the separate equations for the two color groups were compared to determine the effects of color.

CHAPTER IV

ANALYSIS OF DATA

Two prccedures were used to analyze the data. The first, income differentials attributable to race, required the use of five income equations with each containing a dummy race variable. In the second, comparison of the income relationships for blacks and whites, ten regression equations were used to compare the effects of separate variables on the five types of income when the black and white populations were considered separately.

Income Differentials Attributable to Race

Wage and Salary Income

Table VIII (see Appendix) shows the regression coefficients for wage and salary income. All of the regression coefficients included in that table were significant at the 0.01 level.

The percentage differential in wage and salary income attributable to race was 37 per cent when computed from the following variable combination: (1) white, (2) male, (3) 48 to 49 weeks worked, (4) 50,000 to 99,999 population, (5) college 1 - 3 years, (6) managers, officials, and proprietors, (7) transportation, communication and public utilities, and (8) 35 to 39 years old. Variable combinations other than the one given above yielded income differentials ranging from 32 to 39 per cent.

Total Earnings

Table IX (see (Appendix) shows the regression coefficients for the total earnings equation. All of the variables except craftsmen, foremen, and kindred and agriculture, forestry, and fisheries were significant at the 0.01 level. Those two were significant at the 0.05 level.

A much wider range of income differentials was observed in the total earnings category. When the following variables--(1) white, (2) male, (3) professional, technical, and kindred, (4) 48 to 49 weeks worked, (5) transportation, communication, and public utilities, (6) 35 to 39 years old, (7) college 1 - 3 years, and (8) urban territories outside places--were used to characterize an individual, they produced 7 per cent more earnings for whites than for blacks. If, however, these characteristics--(1) rural farm, (2) 40 to 49 years old, (3) male, (4) 7th through 10th grades, (5) white, (6) professional, technical, and kindred, (7) mining, and (8) 48 to 49 weeks worked--mark the individual being considered, 44 per cent of the predicted total earnings appeared to emanate from the race variable. Changing a few of the variables from that grouping to (1) 10,000 to 24,999 population, (2) 25 to 29 years old, (4) 12th grade, (6) laborer other than farm and mine, and (7) construction produced a racial income differential of 87 per cent.

Self-Employment Income

Table X (see Appendix) contains the regression coefficients for self-employment income, all of which were significant at the 0.01 level.

Income differentials accounted for by the race variable ranged from 7 per cent to 18 per cent. The 7 per cent differential was produced by the following combination of variables: (1)white, (2) male, (3) 40 to 47 weeks worked, (4) 5,000 to 9,999 population, (5) college 1 - 3 years, (6) managers, officials, and proprietors, (7) construction, and (8) 40 to 49 years old. The self-employment income differential which was created by the color variable was increased to 18 per cent when the following variables were combined: (1) white, (2) male, (3) 40 to 47 weeks worked, (4) 5,000 to 9,999 population, (5) college 1 - 3 years, (6) professional, technical, and kindred, (7) wholesale and retail trade, and (8) 35 to 39 years old.

Other Income

Table XI (see Appendix) shows the regression coefficients for other income. Transportation, communication, and public utilities and farm laborers and foremen were the only variables which had regression coefficients that were not significant at the 0.01 level; their coefficients were significant at the 0.05 level.

The combination of variables in the other income equation which produced the greatest observed income differential when

all variables except color were held constant were (1) white, (2) male, (3) zero weeks worked, (4) 50,000 to 99,999 population, (5) college 1 - 3 years, (6) wholesale and retail trade, (7) professional, technical, and kindred, and (8) 40 to 49 years old. In this case, the race variable accounted for 42 per cent of the estimated income.

The first five of the variables in the above list were also present in the combination which showed the smallest income differential. Those five combined with (6) manufacturing, (7) managers, officials, and proprietors, and (8) 50 to 59 years old to yield 7 per cent more other income for whites than for blacks.

Total Income

Table XII (see Appendix) shows the regression coefficients computed for total income. All of the coefficients given in Table XII are significant at the 0.01 level.

A 29 per cent income differential appeared when (1) white, (2) male, (3) 10,000 to 24,999 population, (4) 7th - 10th grades, (5) professional, technical and kindred, (6) transportation, communication, and public utilities, (7) 48 to 49 weeks worked, and (8) 50 to 59 years old were the variables chosen to characterize an individual.

An even larger differential was observed by combining the following variables: (1) white, (2) male, (3) rural nonfarm, (4) 1st - 6th grades, (5) craftsmen, foremen, and kindred,

(6) construction, (7) 48 to 49 weeks worked, and (8) 25 to 29 years old. They produced a differential of 110 per cent.

Comparison of the Income Relationships for Blacks and Whites

Table I shows the best variable combinations by color and kind of income. The variables included in Table I were selected from Tables III through VII in the Appendix. As indicated by the F-level for inclusion for each of those equations, all the variables were significant at the 0.01 level.

The variable combinations given in Table I were determined by choosing the variable in each major category which had the largest positive coefficient or, when all the coefficients were negative, the smallest negative coefficient. The combinations are remarkably similar with only a few marked differences. While the variables are usually the same for both color groups, the rank order of the variables in their respective equations are considerably different in most cases. (See Appendix, Tables III - VII.)

The first weeks-worked category for either color group entered no higher than fourth in the rankings, with the one exception being blacks in the self-employment income equation. All the weeks-worked variables shown in Table I contributed positive amounts to their respective income equations--again with the exception of the weeks-worked variable shown in the self-employment income category for blacks. The coefficients for the number of weeks-worked variables shown in Table I are larger for whites than those for blacks in every case.

TABLE I

THE BEST VARIABLE COMBINATIONS*

Blacks	Whites
Wage and Salary Income	
(1) 50 -52 Weeks Worked	(1) 50 - 52 Weeks Worked
(30)Urban Territories & Outside Places	(25)Urban Territories & Outside Places
(-) 35 - 39 Years Old	(27)35 - 39 Years Old
(10)Male	(6) Male
(-)12th Grade completed	(-)11th Grade completed
(9) Professional, Technical & Kindred	(15)Professional, Technical & Kindred
(15)Transportation, Communication, & Public Utilies	(13)Transportation, Communication, & Public Utilities
Total Earnings	
(2) 50 -52 Weeks Worked	(1) 50 - 52 Weeks Worked
(-) Urban Territories & Outside Places	(25)Urban Territories & Outside Places
(-) 35 - 39 Years Old	(7) 35 - 39 Years Old
(5) Male	(3) Male
(-) 12th Grade completed	(-) College 1-3 years
(10)Professional, Technical & Kindred	(8) Professional, Technical & Kindred
(12)Transportation, Communication, & Public Utilities	(-) Transportation, Communication, & Public Utilities
Self-employment Income	
(31) 40 - 47 Weeks Worked	(3) 50 - 52 Weeks Worked
(18) Urban Territories, etc.	(22)5,000 - 9,999 population
(7) Male	(5) Male
(21) College 1 - 3 years	(20)College 1 - 3 years
(17) 35 - 39 Years Old	(10)40 - 49 Years Old
(2) Mgrs., Officials, Proprietors	(1) Mgrs., Officials, Proprietors
(27) Agriculture, Forestry, & Fisheries	(17)Agriculture, Forestry, & Fisheries

*Numbers inside parentheses are the respective ranks order for the variables. A (-) indicates that the variable was ranked below 32.

TABLE I--Continued

Blacks	Whites
Other Income	
(2) Zero Weeks Worked	(4) Zero Weeks Worked
(11)50,000 - 99,999	(22)50,000 - 99,999
(1) 60 Years Old and over	(1) 60 Years Old and over
(4) Male	(3) Male
(16)Zero Grades of School	(25)College 1 - 3 years
(24)Clerical & Kindred; Sales	(2) Mgrs., Officials, Proprietors
(9) Transportation, Communication, & Public Utilities	(17)Finance, et. al.
Total Income	
(1) 50 - 52 Weeks Worked	(1) 50 - 52 Weeks Worked
(30)Urban Territories, etc.	(24)250,000 - 499,999
(2) Male	(3) Male
(-) College 1 - 3 years	(-) 11th Grade completed
(12)Professional, Technical & Kindred	(19)Professional, Technical & Kindred
(14)Transportation, et. al.	(14)Transportation, et. al.
(26)60 Years Old and over	(21)35 - 39 Years Old

The regression coefficients were relatively small and the ranks order relatively high for the size of place variables. Only in the self-employment income category was there found a partial exception to this observation.

The regression coefficients for the age variables had differing effects, depending upon the kind of income being examined. For blacks, only two age categories were significant enough to be stepped into the wage and salary income equation, and both of these had negative coefficients. The same two variables for whites also had negative coefficients, but they were larger in magnitude than those for blacks. (See Table III.) The effect of age on total earnings was of the same pattern with the coefficients for whites being four times as large as those for blacks in some cases.

The age variable coefficients were of the greatest magnitude for both blacks and whites in the other income equation. The largest regression coefficient in both the black and white other income equations was produced by the 60 years old and over age variable. This same variable also had the largest index number and the rank order of one for both blacks and whites. Its coefficient was slightly more than twice as large for whites as it was for blacks. (See Table VI.)

The sex variable, male, was statistically significant enough to be stepped into all of the multiple regressions for both racial groups. In each case the sex variable was

accompanied by a positive-signed regression coefficient. This coefficient was at least twice as large for whites as it was for blacks for each income type, but in at least one case the difference was a factor of six. (See Table V.) The highest rank order held by the sex variable was ten.

Few of the highest grade of school completed variables were stepped into any of the income equations, and of those which were, most had negative signs. The highest rank order for any of the school coefficients having a positive sign was sixteen, and the index number was relatively small in that case. (See Table VI.)

Table I shows that in all income groups except other income, the occupation variable ranked higher for blacks than did the industry variable. Concurrently, there was a slight tendency for the regression coefficients accompanying occupation variables to be larger than those for industry variables. The occupation variable which consistently had the largest positive regression coefficients for blacks was professional, technical, and kindred.

As seen in Table I, the professional, technical, and kindred category was also the largest positive occupation contributor for whites in three of the five cases. In each of those cases, however, the regression coefficient for the same variable in the equations for blacks was larger than that for whites. (See Appendix, Tables III, IV, and VII.)

The managers, officials, and proprietors variable emerged as the second most important occupation variable for both color groups. It generated more income for whites in self-employment income than did any of the variables, and only age contributed more to other income for whites.

The industry variable containing transportation, communication, and public utilities was stepped into the income equations more frequently, ranked higher, and had larger regression coefficients than did any other industry variable. Table I shows that this particular industry variable had the highest regression coefficient for an industry variable in four of the five income types for blacks and three of the five for whites. In the four cases where the transportation, communication, and public utilities industry variable was stepped into the income equations for both color groups, its regression coefficient was slightly larger for blacks than for whites, but in the wage and salary income equation the regression coefficient for whites was nearly twice that for blacks.

CHAPTER V

SUMMARY AND CONCLUSIONS

When age, size of place, highest grade of school completed, detail occupation, detail industry, number of weeks worked, sex, and race were regressed against all types of income with all the variables except race held constant, a statistically significant differential was produced. The critical conclusion, therefore, is that race makes a difference in the generation of all types of income and that racial discrimination was practiced against blacks in the South in 1959.

This is significant because it shows that income differentials between black and white southerners could not completely be accounted for by differences in generally recognized productivity factors. Recognizing this provides justification for all past, present, and future efforts made to eliminate racial discrimination which results in lower incomes for blacks because, as Becker and Thurow assert, the United States economy is the biggest loser when such discriminatory practices are tolerated.

A second conclusion is that different kinds of income are affected differently by a given set of variables, even for a homogeneous population. This observation, as Lester Thurow suggests, has definite policy implications. Specifically, when

policy-makers are formulating policies to raise income for certain groups of people such as poverty-class blacks, these policy-makers should identify and concentrate their efforts around the variables most related to the specific kind of income which they wish to affect.

A possible third conclusion is that formal classroom schooling had a relatively small impact on all types of income. Such a conclusion, however, would have to be viewed with caution because no specific tests were made in this study to determine the interaction effects among the variables. When all eight variables were considered simultaneously, the relative impact of formal schooling appeared to be relatively small. This small influence can be viewed as support for the increasingly frequent observation that in many cases members of the labor force are "over-educated" in terms of being over prepared for jobs which they are performing. (See Welch, Fogel, and others in Chapter II.) If such is the case, then a re-evaluation of current methods of preparing people to perform jobs is needed.

Even if the apparent small influence of formal schooling were completely reversed by an examination of the interaction effects, the data would tend to give support to the argument that a comprehensive manpower policy is needed. The varying regression coefficient magnitudes, index numbers, and ranks order suggest that deliberate attention to the desirability

of the different variables needs be given. In discussing the inadequacies created by the lack of a comprehensive manpower policy, Garth Mangum expresses one of the major problems when he writes that "the relative value for various groups of people of basic education, skill training, and public employment" remains an unresolved issue.[1] A well designed and administered comprehensive manpower policy would use resources in dispensing relevant and timely job market information to see that people know which jobs are best for them and in providing them with the necessary tools for performing those jobs.

In summary, it must be concluded that meaningful quantitative techniques can be successfully employed in the study of intangibles such as discrimination and subsequently that blacks in the South have been victims of significant quantities of economic discrimination.

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[1] Garth L. Mangum, The Emergence of Manpower Policy (Dallas, 1969), p. 132.

APPENDIX

TABLE II

VARIABLES REPRESENTED

Size of Place

X_1 - Rural Farm
X_2 - Rural Non-farm
X_3 - Urban Territory Outside Places
X_4 - 2,500 - 4,999
X_5 - 5,000 - 9,999
X_6 - 10,000 - 24,999
X_7 - 25,000 - 49,999
X_8 - 50,000 - 99,999
X_9 - 100,000 - 249,999
X_{10} - 250,000 - 499,999
X_{11} - 500,000 - 999,999
X_{12} - 1,000,000 or more

Age

X_{13} - 14 years - 19 years
X_{14} - 20 years - 24 years
X_{15} - 25 years - 29 years
X_{16} - 30 years - 34 years
X_{17} - 35 years - 39 years
X_{18} - 40 years - 49 years
X_{19} - 50 years - 59 years
X_{20} - 60 years and over

Sex

X_{21} - Male

Highest Grade of School Completed

X_{23} - Zero Grades
X_{24} - 1st - 6th Grades
X_{25} - 7th - 10th Grades
X_{26} - 11th Grade
X_{27} - 12th Grade
X_{28} - College 1 - 3 years
X_{29} - College 4 years
X_{30} - College 5 years or more

Race

X_{31} - White

TABLE II--Continued

Detail Occupation

X_{33} - Professional, Technical, and Kindred
X_{34} - Farmers and Farm Managers
X_{35} - Managers, Officials, and Proprietors
X_{36} - Clerical and Kindred; Sales
X_{37} - Craftsmen, Foremen, and Kindred
X_{38} - Operatives and Kindred
X_{39} - Private Household Workers
X_{40} - Service Workers
X_{41} - Farm Laborers and Foremen
X_{42} - Laborers, except Farm and Mine
X_{43} - Not Reported

Detail Industry

X_{44} - Agriculture, Forestry, and Fisheries
X_{45} - Mining
X_{46} - Construction
X_{47} - Manufacturing
X_{48} - Transportation, Communication and Public Utilities
X_{49} - Wholesale and Retail Trade
X_{50} - Finance, Insurance, Real Estate; Business and Repair Services; Personal Services; Entertainment and Recreation Services; Professional and Related Services; Public Administration; Not Reported

Weeks Worked in 1959

X_{51} - Zero Weeks
X_{52} - Less than 14 Weeks
X_{53} - 14 - 26 Weeks
X_{54} - 27 - 39 Weeks
X_{55} - 40 - 47 Weeks
X_{56} - 48 - 49 Weeks
X_{57} - 50 - 52 Weeks

TABLE III

WAGE AND SALARY INCOME*

Blacks**				Whites***		
Index Number	Regression Coefficient	Rank Order	Variable[a]	Index Number	Regression Coefficient	Rank Order
0.4608	483.74 (42.95)	1	57	0.6442	981.74 (71.26)	1
.1495	-1266.17 (49.51)	2	51	.1195	-1944.59 (78.87)	2
.0831	-545.22 (105.54)	3	44	.0564	-660.06 (197.21)	3
.0923	-649.06 (49.43)	4	39	.0013	-591.57 (175.21)	23
.0387	-775.57 (50.59)	5	52	.0336	-1285.29 (89.37)	4
.0281	-600.15 (53.42)	6	53	.0139	-925.77 (93.93)	7
.0174	-272.26 (43.37)	7	40	.0025	-352.64 (97.69)	21
.0136	-1075.58 (69.95)	8	45	.0005	-197.91 (71.10)	26
.0155	1002.23 (70.44)	9	33	.0045	382.71 (89.63)	15
.0114	321.68 (25.39)	10	21	.0219	683.65 (38.24)	6
.0136	-815.41 (116.36)	11	34	.0076	-1615.87 (227.02)	8

*F-Level for Inclusion 0.01. **R^2 = 0.5873. ***R^2 = 0.5529.

[a]The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE III--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0090	-1118.45 (143.11)	12	35	0.0076	-735.31 (99.49)	9
.0087	-338.76 (45.87)	13	13	.0085	-614.16 (69.77)	10
.0056	452.79 (68.50)	14	36	.0000	24.86 (83.50)	44
.0049	443.40 (65.10)	15	48	.0054	754.46 (76.49)	13
.0043	238.31 (47.15)	16	47	.0063	556.03 (55.85)	14
.0034	-239.61 (46.29)	17	14	.0074	-526.95 (71.13)	12
.0044	-144.31 (44.99)	18	20	.0067	-410.10 (65.77)	11
.0031	219.34 (62.33)	19	56	.0036	415.82 (103.31)	18
.0029	-474.71 (36.47)	20	2	.0040	-254.38 (61.61)	16
.0039	-534.02 (45.83)	21	1	.0047	-377.91 (75.86)	17
.0037	-565.41 (54.21)	22	5	.0002	-163.15 (85.25)	31
.0031	470.68 (47.40)	23	6	.0000	-70.35 (73.76)	41
.0037	-482.89 (52.18)	24	7	.0000	-3.09 (79.52)	38
.0020	-189.45 (44.46)	25	49	.0275	-385.04 (52.98)	5

TABLE III--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0015	-387.03 (54.94)	26	4	0.0000	-102.68 (86.40)	39
.0019	-352.88 (49.79)	27	8	.0000	-87.16 (81.61)	40
.0014	-282.40 (45.16)	28	10	.0004	98.02 (80.18)	28
.0027	-274.22 (45.89)	29	9	.0000	20.34 (79.14)	36
.0014	-251.28 (66.07)	30	3	.0007	165.46 (81.07)	25
.0010	-164.59 (78.08)	31	23	.0004	-217.43 (128.29)	29
0.0010	-50.74	32	24	...	...	..

TABLE IV

TOTAL EARNINGS*

Blacks**				Whites***		
Index Number	Regression Coefficient	Rank Order	Variable[a]	Index Number	Regression Coefficient	Rank Order
0.5171	-1679.09 (61.48)	1	51	0.1149	-2843.98 (105.13)	2
.1493	242.08 (55.68)	2	57	.6999	872.62 (97.01)	1
.0612	-641.36 (57.92)	3	39	.0005	-553.81 (201.48)	27
.0832	-369.82 (116.81)	4	44	.0238	-1751.30 (1674.50)	4
.0248	342.22 (26.49)	5	21	.0409	1088.56 (43.99)	3
.0201	-854.17 (62.95)	6	52	.0185	-1800.33 (115.92)	5
.0229	-831.69 (65.19)	7	53	.0135	-1606.60 (120.45)	6
.0152	-276.29 (51.91)	8	40	.0016	-482.09 (112.37)	21
.0094	-1229.23 (95.45)	9	45	.0048	-2099.46 (1646.33)	13
.0269	1252.53 (78.30)	10	33	.0094	734.20 (103.10)	8
.0069	-303.77 (38.43)	11	13	.0079	-681.86 (69.00)	9

*F-Level for Inclusion 0.01. **R^2 = 0.5976. ***R^2 = 0.6092.

[a]The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE IV--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0059	579.60 (79.25)	12	48	0.0000	-992.70 (1649.03)	43
.0055	474.88 (75.71)	13	36	.0000	-92.31 (96.06)	35
.0049	-270.12 (41.19)	14	14	.0074	-735.69 (73.47)	10
.0044	-104.76 (40.02)	15	20	.0039	-436.34 (62.64)	11
.0038	-147.77 (67.85)	16	49	.0039	-1929.76 (1646.34)	14
.0035	369.96 (63.51)	17	37	.0000	18.67 (102.44)	46
.0030	-401.08 (63.91)	18	54	.0034	-1020.48 (118.17)	15
.0027	-465.91 (123.73)	19	34	.0013	-1255.47 (261.52)	28
.0025	-457.68 (37.84)	20	2	.0028	-397.94 (70.85)	18
.0032	-510.25 (47.55)	21	1	.0026	-477.13 (87.23)	19
.0033	-563.35 (56.24)	22	5	.0000	-239.11 (98.03)	36
.0027	-449.51 (49.17)	23	6	.0000	-242.41 (84.81)	33
.0027	-454.38 (54.15)	24	7	.0000	-169.28 (91.44)	39
.0025	273.72 (64.28)	25	47	.0003	-1203.00 (1646.45)	30

TABLE IV--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0015	-380.82 (56.97)	26	4	0.0000	-196.20 (99.35)	37
.0018	-351.36 (51.66)	27	8	.0000	-184.00 (93.85)	38
.0013	-271.63 (46.86)	28	10	.0000	-113.02 (92.20)	41
.0027	-269.16 (47.61)	29	9	.0000	-113.47 (91.00)	40
.0012	-224.53 (64.75)	30	55	.0010	-491.18 (118.85)	23
.0010	-202.28 (65.95)	31	23	.0005	-395.89 (149.48)	26
0.0013	-83.72 (48.46)	32	24	0.0000	-11.87 (55.11)	45

TABLE V

SELF-EMPLOYMENT INCOME*

Blacks**				Whites***		
Index Number	Regression Coefficient	Rank Order	Variable[a]	Index Number	Regression Coefficient	Rank Order
0.4371	261.54 (49.64)	1	34	0.3135	223.42 (134.85)	2
.2173	719.21 (57.08)	2	35	.3442	761.17 (54.32)	1
.0805	124.44 (30.73)	3	37	.0000	-10.33 (49.45)	42
.0570	-125.45 (21.96)	4	51	.0070	-77.94 (43.20)	15
.0285	154.24 (32.86)	5	33	.0013	94.44 (49.94)	25
.0361	-160.35 (34.81)	6	45	...	...	..
.0176	24.92 (9.45)	7	21	.0224	146.05 (23.00)	5
.0134	-89.24 (22.49)	8	52	...	...	..
.0159	-95.60 (23.30)	9	53	.0000	25.78 (53.18)	36
.0109	-48.39 (15.95)	10	14	.0032	121.80 (48.90)	19
.0101	-58.28 (24.62)	11	47	.0211	-146.13 (48.46)	6

*F-Level for Inclusion 0.01. **R^2 = 0.1192. ***R^2 = 0.1563.

[a]The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE V--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0067	-50.85 (25.67)	12	49	0.0032	121.80 (48.90)	26
.0067	-69.37 (22.84)	13	54	.0000	84.12 (52.49)	23
.0067	-46.50 (19.89)	14	57	.1222	257.19 (40.89)	3
.0059	-27.50 (26.77)	15	39	...	...	..
.0059	16.53 (13.94)	16	18	.0083	95.96 (31.77)	10
.0067	21.16 (16.30)	17	17	.0070	78.74 (37.17)	12
.0042	44.90 (23.16)	18	3	.0006	-61.97 (48.80)	31
.0034	27.55 (14.78)	19	1	.0019	37.47 (45.68)	21
.0034	26.22 (17.58)	20	7	.0000	-41.02 (47.90)	35
.0034	24.47 (28.38)	21	43	.0013	51.35 (56.64)	27
.0025	40.32 (23.59)	22	28	.0032	99.70 (37.29)	20
.0025	-23.56 (13.66)	23	13	.0013	-46.82 (33.96)	24
.0017	20.18 (13.26)	24	27	.0000	-26.88 (28.84)	34
.0008	-22.06 (16.82)	25	15	.0000	-10.80 (39.57)	40

TABLE V--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0008	-26.04 (24.25)	26	50	0.0045	-5.71 (42.78)	14
.0034	-137.68 (46.33)	27	41	.0038	-897.13 (140.66)	16
.0067	99.32 (42.69)	28	44	.0192	811.66 (123.09)	17
.0017	-27.25 (26.40)	29	38	.0000	-20.30 (48.93)	39
.0008	-16.33 (16.43)	30	16	.0000	29.36 (37.70)	33
.0008	12.71 (16.31)	31	26	.0006	59.13 (39.46)	28
0.0008	-18.03 (23.14)	32	55	0.0211	239.20 (53.80)	7

TABLE VI

OTHER INCOME*

Blacks**				Whites***		
Index Number	Regression Coefficient	Rank Order	Variable[a]	Index Number	Regression Coefficient	Rank Order
0.7239	293.39 (14.91)	1	20	0.7440	637.17 (30.75)	1
.0871	227.25 (16.30)	2	51	.0356	270.69 (23.84)	4
.0367	-120.10 (15.33)	3	13	.0036	-50.50 (32.56)	12
.0391	79.99 (11.38)	4	21	.0349	206.91 (17.73)	3
.0154	105.48 (17.26)	5	52	.0078	159.13 (31.26)	10
.0148	-88.19 (20.43)	6	1	.0107	-102.76 (35.47)	8
.0160	101.69 (18.81)	7	53	.0036	102.06 (33.93)	13
.0107	-70.44 (16.90)	8	14	.0021	-26.41 (33.22)	19
.0095	86.33 (28.20)	9	48	.0000	-11.57 (35.66)	38
.0089	-17.12 (31.15)	10	45	.0249	-116.56 (36.48)	6
.0059	31.20 (22.20)	11	8	.0014	52.94 (38.15)	22

*F-Level for Inclusion 0.01. **R^2 = 0.1688 ***R^2 = 0.1406.

[a]The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE VI--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0041	-25.29 (16.52)	12	25	...	...	..
.0041	-68.19 (24.16)	13	5	.0007	22.93 (39.85)	29
.0030	47.93 (18.06)	14	54	.0043	103.91 (32.38)	11
.0030	-43.46 (26.35)	15	46	...	...	..
.0024	32.09 (25.80)	16	23	.0021	-109.62 (59.18)	17
.0024	-31.96 (16.25)	17	2	.0100	-37.07 (28.80)	9
.0024	-38.67 (20.46)	18	9	.0007	42.51 (36.99)	24
.0018	-30.33 (21.13)	19	6	.0000	-2.71 (34.47)	41
.0012	-9.10 (56.03)	20	33	.0021	39.90 (34.22)	16
.0012	-26.95 (17.05)	21	17	.0007	41.66 (32.74)	27
.0012	-21.83 (23.26)	22	7	.0014	44.24 (37.18)	23
.0012	-22.49 (23.52)	23	26	...	...	..
.0006	59.76 (56.19)	24	36	.0021	42.88 (29.13)	15
.0006	-18.21 (19.58)	25	47	.0014	44.13 (26.10)	21

TABLE VI--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0006	40.50 (48.64)	26	38	0.0007	-29.50 (33.61)	30
.0006	18.67 (23.50)	27	56	.0007	-37.99 (39.07)	31
.0006	-17.95 (17.76)	28	15	...	...	..
.0006	22.55 (30.67)	29	28	.0007	40.10 (27.01)	25
.0006	-16.30 (78.70)	30	35	.0526	230.80 (38.55)	2
.0006	-11.92 (17.24)	31	16	.0000	17.58 (33.07)	34
0.0006	21.60 (50.79)	32	40	...	...	..

TABLE VII

TOTAL INCOME*

Blacks**				Whites***		
Index Number	Regression Coefficient	Rank Order	Variable[a]	Index Number	Regression Coefficient	Rank Order
0.4382	451.98 (45.94)	1	57	0.6630	578.02 (88.18)	1
.1309	425.57 (27.32)	2	21	.0560	939.18 (39.80)	3
.0839	-1146.75 (52.91)	3	51	.1177	-2267.38 (95.48)	2
.0756	-388.40 (112.70)	4	44	.0277	-360.58 (215.65)	5
.0465	-476.08 (42.70)	5	13	.0367	-733.92 (62.72)	4
.0492	-659.74 (60.57)	6	39	.0022	-648.42 (173.08)	16
.0250	-739.92 (54.06)	7	52	.0208	-1678.44 (105.38)	6
.0213	-574.71 (57.10)	8	53	.0130	-1356.93 (109.51)	8
.0139	-268.36 (54.55)	9	40	.0029	-292.84 (76.39)	13
.0110	-352.30 (43.67)	10	14	.0146	-605.54 (66.78)	7
.0090	-1227.44 (74.77)	11	45	.0020	-521.45 (105.14)	20

*F-Level for Inclusion 0.01. **R^2 = 0.5529. ***R^2 = 0.5481.

[a]The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE VII--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0260	1133.36 (81.22)	12	33	0.0016	492.82 (67.37)	19
.0074	504.63 (78.70)	13	36	...	...	..
.0074	509.09 (69.84)	14	48	.0026	408.17 (103.58)	14
.0052	-211.15 (47.51)	15	49	.0099	-468.64 (89.34)	9
.0040	-584.31 (48.97)	16	1	.0055	-452.40 (79.30)	11
.0065	-498.96 (38.97)	17	2	.0042	-303.16 (64.47)	10
.0051	-623.63 (57.92)	18	5	.0003	-146.93 (89.14)	36
.0042	-496.64 (50.65)	19	6	.0002	-122.79 (77.11)	37
.0036	259.12 (66.64)	20	56	...	...	..
.0034	-466.99 (55.77)	21	7	.0002	-51.69 (83.15)	40
.0029	-558.05 (127.67)	22	34	.0004	-898.27 (227.26)	30
.0025	314.31 (65.95)	23	37	.0005	153.79 (64.88)	23
.0022	190.69 (50.40)	24	47	.0016	228.41 (87.54)	17
.0016	-376.13 (58.70)	25	4	.0002	-136.03 (90.34)	38

TABLE VII--Continued

Blacks				Whites		
Index Number	Regression Coefficient	Rank Order	Variable	Index Number	Regression Coefficient	Rank Order
0.0016	156.31 (41.20)	26	20	0.0005	163.38 (57.94)	28
.0013	-300.76 (49.04)	27	9	.0002	-34.15 (82.74)	41
.0018	-306.02 (53.20)	28	8	.0002	-84.24 (85.32)	39
.0027	-261.53 (48.26)	29	10	.0005	88.47 (83.83)	24
.0011	-206.87 (70.60)	30	3	.0003	8.79 (84.77)	35
.0009	-430.86 (155.22)	31	35	.0004	139.15 (76.09)	29
0.0007	-142.70 (55.67)	32	54	0.0026	-685.75 (107.44)	15

TABLE VIII

WAGE AND SALARY INCOME EQUATION
WITH RACE VARIABLE INCLUDED

Variable*	Regression Coefficient	Standard Error	F	P
31	291.17	20.85	195.03	0.0
51	-2809.50	22.90	15056.25	.0
52	-2087.75	32.37	4158.67	.0
53	-1801.86	35.13	2630.84	.0
44	-550.69	93.16	34.92	.0
54	-1189.10	33.72	1243.57	.0
21	580.14	18.01	1037.74	.0
49	-309.43	25.77	144.23	.0
55	-778.84	34.07	522.70	.0
34	-1698.80	102.89	272.58	.0
39	-921.24	46.33	395.33	.0
13	-175.96	27.17	41.94	.0
48	768.85	38.10	407.20	.0
35	-832.12	38.22	474.11	.0
40	-624.86	33.24	353.32	.0
42	-787.19	41.55	358.86	.0
47	521.96	26.25	395.44	.0
38	-447.59	28.72	242.84	.0
14	-83.72	31.41	7.11	.0071
56	-527.96	42.13	157.04	.0
16	509.46	30.95	270.96	.0
17	460.11	30.60	226.08	.0
2	-268.59	18.75	205.26	.0
1	-397.90	28.61	193.41	.0
18	353.61	26.21	181.97	.0
15	354.50	32.09	122.03	.0
19	249.10	27.08	84.65	.0
36	-217.86	26.19	69.22	.0
5	-265.41	34.33	59.78	.0
41	-446.96	102.62	18.97	.0
6	-148.41	27.75	28.60	.0
27	112.69	20.06	31.55	.0
28	140.32	28.83	23.69	.0
26	106.67	29.83	12.79	.0003
4	-137.66	35.31	15.20	.0001
8	-102.31	31.64	10.46	.0012
23	-156.77	52.06	9.07	0.0025
Constant	2563.61			
Multiple R^2 = 0.5446				

*The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE IX

TOTAL EARNINGS EQUATION WITH RACE VARIABLE INCLUDED

Variable*	Regression Coefficient	Standard Error	F	P
31	462.94	24.31	362.48	0.0
51	-3443.85	30.24	12966.33	.0
52	-2366.50	37.55	3971.95	.0
53	-2224.62	40.67	2991.64	.0
21	936.95	21.72	1860.70	.0
54	-1634.87	39.08	1750.26	.0
44	-250.29	108.54	5.32	.0194
55	-1088.15	39.50	758.90	.0
33	680.43	50.71	180.04	.0
13	-237.33	31.79	55.72	.0
35	618.28	57.90	114.04	.0
14	-271.93	36.37	55.91	.0
45	-447.13	41.78	114.53	.0
37	75.80	50.91	2.22	.1266
56	-720.28	48.72	218.53	.0
48	688.84	45.62	227.99	.0
47	486.74	32.82	220.02	.0
36	-132.44	47.15	7.89	.0047
17	608.09	35.40	295.13	.0
2	-309.48	22.72	185.41	.0
1	-381.53	33.83	127.23	.0
18	501.61	30.31	273.56	.0
16	514.17	35.84	205.83	.0
49	-195.43	31.18	39.29	.0
42	-1004.91	61.66	265.64	.0
19	345.77	31.32	121.92	.0
15	261.18	37.21	49.26	.0
39	-749.84	63.44	139.70	.0
40	-627.64	51.97	145.86	.0
38	-530.40	50.18	111.72	.0
34	-1120.21	125.02	80.29	.0
28	220.43	34.99	39.70	.0
3	153.83	39.97	14.81	.0001
41	-698.94	124.27	31.63	.0
27	77.46	25.76	9.04	.0025
5	-243.01	40.19	36.56	.0
6	-173.76	32.71	28.22	.0
4	-173.63	41.32	17.65	.0
7	-149.36	37.25	16.07	.0001

*The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE IX--Continued

Variable	Regression Coefficient	Standard Error	F	P
23	-241.33	61.04	15.63	0.0001
46	168.11	47.57	12.49	.0004
25	-66.78	21.15	9.97	0.0015
Constant	2801.71			
Multiple R^2 = 0.5909				

TABLE X

SELF-EMPLOYMENT INCOME EQUATION
WITH RACE VARIABLE INCLUDED

Variable*	Regression Coefficient	Standard Error	F	P
31	95.29	11.46	69.11	0.0
35	818.89	21.04	1514.39	.0
34	916.13	27.58	1103.71	.0
51	-284.61	14.67	376.40	.0
21	130.75	10.22	163.65	.0
47	-158.25	14.20	124.26	.0
52	-228.68	18.45	153.60	.0
53	-194.69	20.23	92.66	.0
48	-129.64	22.16	34.23	.0
54	-159.60	19.48	67.13	.0
46	204.21	22.64	81.39	.0
33	161.85	17.71	83.56	.0
18	74.76	12.71	34.59	.0
45	-99.89	20.45	23.87	.0
14	-74.91	15.96	22.02	.0
13	-50.74	14.30	12.58	.0003
49	67.01	14.43	21.56	.0
1	74.80	15.52	23.24	.0
24	-33.32	10.72	9.66	.0016
55	-70.29	19.69	12.75	.0003
42	-78.79	23.33	11.41	.0007
19	50.36	13.55	13.81	.0002
28	53.12	16.40	10.49	.0010
17	40.17	15.59	6.64	.0091
5	48.02	19.42	6.07	.0119
2	20.94	9.86	4.51	0.0289
Constant	100.23			
Multiple R^2 = 0.1483				

*The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE XI

OTHER INCOME EQUATION WITH RACE VARIABLE INCLUDED

Variable*	Regression Coefficient	Standard Error	F	P
31	59.70	9.23	41.82	0.0
51	270.82	11.45	559.52	.0
21	197.30	8.12	589.94	.0
13	-640.87	12.40	2672.63	.0
14	-611.65	14.35	1816.96	.0
16	-570.19	14.18	1616.98	.0
18	-501.85	12.01	1745.29	.0
15	-577.52	14.73	1537.99	.0
17	-543.68	14.01	1505.03	.0
19	-433.73	12.43	1217.88	.0
45	-170.29	16.01	113.14	.0
35	199.84	17.01	138.05	.0
52	156.22	14.50	116.11	.0
1	-99.78	11.74	72.21	.0
2	-49.61	7.85	39.90	.0
53	119.38	15.81	57.02	.0
28	66.24	13.18	25.24	.0
54	83.77	15.18	30.46	.0
42	-57.69	18.45	9.78	.0016
33	51.42	14.05	13.38	.0002
8	54.15	14.12	14.71	.0001
23	-77.80	23.91	10.59	.0011
36	40.81	11.48	12.65	.0004
49	-58.48	11.69	25.02	.0
47	-37.75	11.15	11.47	.0007
27	19.66	9.04	4.73	.0276
48	-47.95	17.43	7.57	.0055
46	-45.45	17.74	6.56	.0098
41	-45.92	21.00	4.78	0.0274
Constant	454.30			
Multiple R^2 = 0.1387				

*The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

TABLE XII

TOTAL INCOME EQUATION WITH RACE VARIABLE INCLUDED

Variable*	Regression Coefficient	Standard Error	F	P
31	391.60	22.04	315.74	0.0
51	-2652.52	26.61	9934.99	.0
52	-2046.14	33.79	3666.21	.0
53	-1767.88	36.84	2302.96	.0
21	839.11	19.59	1834.40	.0
44	-395.02	98.58	16.06	.0001
54	-1164.63	35.47	1078.04	.0
13	-810.39	25.07	1044.88	.0
55	-747.69	35.88	434.17	.0
14	-674.18	27.89	584.33	.0
49	-275.24	27.33	101.40	.0
39	-840.27	53.77	244.17	.0
42	-775.73	49.16	249.02	.0
40	-519.95	39.98	169.12	.0
48	622.09	41.23	227.61	.0
56	-476.12	44.28	115.59	.0
2	-257.04	18.60	190.89	.0
1	-379.99	29.36	167.52	.0
38	-332.93	36.57	82.89	.0
47	355.16	29.55	144.41	.0
34	-857.50	110.11	60.65	.0
41	-590.06	110.07	28.74	.0
36	-117.18	33.14	12.50	.0004
45	-352.12	37.53	88.05	.0
33	319.76	38.85	67.74	.0
24	-217.20	22.09	96.69	.0
23	-387.92	56.22	47.62	.0
25	-131.06	19.15	46.83	.0
15	-171.97	28.78	35.72	.0
19	-115.32	23.07	24.98	.0
5	-175.18	35.46	24.40	.0
6	-136.04	28.41	22.93	.0
37	116.91	37.10	9.93	.0015
46	129.82	42.91	9.15	0.0024
Constant	3048.14			
Multiple R^2 = 0.5376				

*The variables can be decoded by matching the numbers appearing in this column with the subscripts used in Table II.

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