



ABSTRACT

BLACK-WHITE INCOME DIFFERENTIALS: BRAZIL, 1960

by

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This is a study on white-nonwhite income differentials in the Rio de Janeiro area using the 1960 Brazilian Census 1.27 percent subsample. The main purpose of this dissertation is to examine the role of race as an ascriptive factor on the allocation of economic rewards to labor, after the effects of racial differences in educational and occupational achievements are properly controlled.

In examining racial differentials in income attainment we test the plausibility of two hypotheses springing from the examination of the Brazilian sociological literature: the first hypothesis states that mulattoes and blacks are clearly differentiated from one another in terms of the achievement process, mulattoes in particular enjoying higher levels of upward mobility opportunities; the second hypothesis states that race has no significant role in the process of mobility, the

present situation of nonwhites being explainable in terms of the relatively disadvantageous position they started from.

The empirical examination of these propositions is based in a recursive-type system of equations, the last step in this system being the examination of racial differentials in income attainment. The first important finding is the support for the idea that blacks and mulattoes, contrary to the usual assumptions found in the literature, seem to have quite similar earning functions. This is particularly verified in relation to the patterns of returns to schooling and experience, but also being true, to a lesser extent, in respect to other variables. A second finding emerging from the analysis of income attainment is the significant difference in the process of income attainment between whites and nonwhites. This leads to the rejection of the two hypotheses inspired in the Brazilian sociological literature as being implausible, and the next step is to examine two labor market processes that can be thought as responsible for the observed racial differences: occupational discrimination, that is, discrimination in the process of income attainment; and wage discrimination, that is, unequal wages for equal jobs.

Our results indicate that both processes are operative as mechanisms for reward allocation in the labor market. The substantial racial differences in

occupational returns to experience represent evidence that tend to support the view that nonwhites are largely restricted to low skill, low paying, "dead-end" jobs, jobs with very modest upward mobility prospects. Likewise, our findings on wage discrimination indicate that for a considerable number of occupations wage discrimination seems to be a mechanism for the allocation of rewards to labor. More importantly, it is also shown that wage discrimination varies in both magnitude and direction from one occupation to another.

Investigating the correlates of this variation in discrimination against nonwhites, it is found that the higher the "general standing" of an occupation the higher its internal level of discrimination against nonwhites. Similarly, the level of "urbanization" of a given occupation seems to be negatively related to its level of discrimination against nonwhites, while the level of nonwhite participation in an occupation seems to have a small positive effect on its internal level of discrimination.

Thus, in summary, our results indicate that the traditional hypotheses found in the Brazilian literature should be rejected as implausible and allow one to seriously question the idea of a Brazilian racial democracy, a myth that has proven to have an extraordinary resilience.

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## CHAPTER I

### INTRODUCTION

Seventy-two years after the formal abolition of slavery, the situation of the black population in the Rio de Janeiro area around 1960 can only be described as one of generalized poverty. The average income of the non-white population was at that date a little more than half that of the white population. In spite of this long persisting poverty problem, the racial differentials in economic conditions have generally been interpreted in the Brazilian sociological literature as simply reflecting an as yet unaccomplished process of social mobility, or in other words, that differences in socioeconomic achievement could account for this income differential. The possibility of labor market discrimination, although sometimes acknowledged, is not considered as an explanation for this income gap.

The present dissertation is a study on white-nonwhite income differentials in the Rio de Janeiro area using the 1960 Brazilian Census 1.27 percent subsample. The main purpose of this dissertation is to examine the role of race as an ascriptive factor in the allocation of

economic rewards to labor, after the effects of racial differences in educational and occupational achievements are properly controlled for. The procedure to be followed will enable us to test the hypothesis of discrimination in the labor market and the examination of some of the major processes by which this discrimination is possibly accomplished.

To test the hypothesis of labor market discrimination we need to formulate an adequate model of the income distribution, relating theoretically relevant personal characteristics to one's income attainment. In Chapter II we review the sociological and economic literature on models of income distribution and theories of racial discrimination. Particular attention is paid to the Human Capital theory of income distribution and to job-competition models of the labor market, especially to the dual labor market hypothesis. The effect of this review of the existing theoretical literature will be to sensitize us to the importance of schooling and experience in the determination of one's income. In particular, both Human Capital theory and the dual labor market hypotheses emphasize the relevance of experience and on-the-job training for the understanding of labor market processes in general and of one's income attainment in particular. This review will allow us, then, to select the theoretically relevant variables and to specify an adequate model of income determination.

From the examination of the Brazilian sociological literature, done in Chapter III, two hypotheses will emerge as guidelines for this study. The first hypothesis states that mulattoes and blacks are clearly differentiated from each other. In particular, it is stated that, other things being constant, mulattoes have higher levels of educational, occupational and income attainment than blacks. The second hypothesis, which is partially contradictory to the first, states that race has no significant role in the process of mobility, the present condition of nonwhites being explainable in terms of the relative disadvantageous position they started from.

With the two hypotheses in mind, we examine in Chapter IV the 1960 census data, selecting all the relevant information available in order to specify an adequate model of income distribution. In this chapter careful attention is paid to racial differences in the variables selected. The next step is then to formulate a model relating these variables to each other and to the dependent variable, income. In Chapter V a general causal structure for analysis is proposed, the first stage of which is the determination of the individual schooling level. Locational-background variables and respondent's age are related to schooling in order to determine how these variables affect one's educational achievement.

The next step will be to relate these variables, schooling included, to marital status. This is done in



Chapter VI. Because marital status is a dichotomous variable, a logistic response model will be used.

This completes the examination of the interrelationships among the predictors used in this research, allowing us to move to the analysis of income attainment. This is the subject of Chapter VII. For the examination of racial differences in income attainment two approaches will be proposed: one is to analyze the racial differences in marginal returns to investments in human capital, i.e., schooling and experience (the latter variable is derived from the information on individual's schooling and age). The second approach is to measure these racial differences by the use of a standardization procedure. In particular, a measure representing the amount of labor market discrimination will be proposed, and both approaches will be used to analyze the situation in the Rio de Janeiro area as reflected in the 1960 census data. In this analysis the plausibility of the hypotheses springing from the Brazilian literature will be examined, the conclusions suggesting the rejection of both hypotheses.

The observation of substantial racial differences in income attainment will lead us to examine the labor market processes that can be thought as responsible for these differences. This will be done in Chapter VIII, in which it will be argued that it is partly through the "intervention" of occupational attainment that these

differentials are realized. Two forms of discrimination will be examined: occupational discrimination, i.e., discrimination in the occupational attainment process; and wage discrimination, that is, different pay for equal work.

To examine the first type of discrimination an occupational achievement model (similar to that used for the analysis of income attainment) will be specified and evaluated. To examine wage discrimination the earnings model used in Chapter VII will be applied, with some simplifications, in an intra-occupational analysis, using those occupations in the detailed census occupational classifications that have a minimum number of incumbents of each racial group to allow reliable estimation.

Finally, in Chapter IX, the main conclusions will be summarized.

## CHAPTER II

### MODELS OF INCOME DISTRIBUTION AND THEORIES OF RACIAL DISCRIMINATION

In this chapter we review the current sociological and economic literature on racial differences in status attainment. The first step in this review is to try to characterize the concept of discrimination and how it is usually measured in the empirical analysis of labor market discrimination.

This will lead us, in turn, to the examination of the main types of income distribution theories, particular attention being paid to human capital and multi-factor theories. The main value of this review is to sensitize us to the theoretical importance of schooling and labor market experience for the determination of individual income.

Having specified how a model of income determination should look like, the next step is to examine the major types of labor market discrimination and the better known theories advanced for its explanation. We first describe what are sometimes called "neoclassical" or "wage-competition" theories of discrimination and then we

examine the main criticisms that can be made to these theories. Some of the objections made against the "wage-competition" models lead us to alternative theoretical formulations, in particular the so-called "job-competition" theories of labor market structure. Probably the best known "job-competition" theory is the "dual labor market hypothesis," which is examined in some detail. Again the result of the review of these theories of labor market is to underline the theoretical importance of experience in the determination of individual income.

#### The Concept of Discrimination and Its Measurement

The concern among scientists with the human consequences of "discrimination" in social life has generated in the last three decades or so an impressive amount of literature on this problem. Although seldom explicitly defined, "discrimination" as a problem is generally acknowledged to exist when differences in fixed biological characteristics, such as sex, race or height, are found to significantly affect the distribution of "life chances" among individuals. By "life chances" are usually meant those socially valued goods or positions that make life longer or better.

Discrimination is thus closely linked to norms in which it is stated that those biological characteristics should not give rise to differences in the distribution

of life chances. Those norms are usually called 'norms of distributive justice,' clearly taking us to the realm of moral judgments. Probably the best statement on the use of the concept of distributive justice has been Homans' (1961). According to him, one can classify the individual's status characteristics into two large categories: on the one hand we have status dimensions that can be classified as "investments; on the other hand we have status dimensions that can be called "rewards." Examples of "investments" (and ones we will be using later) are the individual's level of schooling and his age; examples of "rewards" status dimensions are one's occupation and income. Further, one can define the "cost" of an activity (e.g., obtaining a college education) as the value of the reward obtainable through an alternative activity, forgone in performing the given one and the "profit" the difference between the value of the reward a man gets by performing a particular activity and the value of the reward obtainable by another activity, forgone in omitting the first. With these concepts in hand, Homans defines the rule of distributive justice as

A man in an exchange relation with another will expect that the rewards of each man be proportional to his costs--the greater the rewards, the greater the costs--and that the net rewards, or profits, of each man be proportional to his investments--the greater the investments the greater the profits.... Finally, when each man is being rewarded by some third party, he will expect the

third party, in the distribution of rewards, to maintain this relation between the two of them.... Not only do men display anger or, less prominently guilt when distributive justice fails in one way or the other, but they also learn to do something about it. They learn to avoid activities that get them into unjust exchanges; they learn to emit activities that are rewarded by the attainment of justice, and by the same token, to forego these activities that become a cost to them. In short, justice itself becomes one of the values being exchanged (Homans, 1961, pp. 232-264).

Discrimination can then be viewed as one particular case of the failure of distributive justice, with its expected behavioral consequences. But our purpose here is not to speculate about these behavioral correlates of discrimination, but rather try to answer the question: When can one say that this particular case of violation in the norm of distributive justice exists in a real situation?

As a general answer to this question one could say that for every individual the relevant "reward" dimensions should be in balance with his pertinent "investment" dimensions. However, empirically, because we have different types of "rewards," the choice of the relevant investment dimensions to test the rule of distributive justice will depend on theories specifying how the investment dimensions are related to the particular reward characteristic. In our case, because we are interested in income rewards, we need a theory relating relevant investment dimensions, such as one's schooling

or age, to the distribution of income. In other words, we need a theory of income determination to test for the possible existence of discrimination, in our case racial discrimination.

The usual approach to test empirically the existence of this specific form of violation to the rule of distributive justice is to treat the proposition that there is no discrimination as a null hypothesis, the rejection of which is taken as an indication of the probable existence of discrimination in the labor market. More specifically, one tries to estimate the effect of race on the dependent variable (in our case, earnings) after standardizing for other theoretically relevant factors, such as schooling, experience in the labor force, and other variables. There are at least two slightly different computational ways to tackle this standardization problem.

One approach is to construct a multi-way contingency table for each racial group, relating all the supposedly relevant investments to the dependent variable (earnings). Then one applies one of the usual "demographic" standardization procedures (e.g., Kitagawa, 1955), i.e., by decomposing the gross mean difference between the two populations into a "composition differences" component and a "rates differences" component. The latter is taken to represent the "true" racial difference in earnings, or more specifically, the amount of discrimination to the labor market. Using this approach, Siegel (1965) calculated

what he called "the cost of being a Negro" in American Society, estimated by him as averaging about \$1000 in 1960.

A more frequently encountered approach consists of specifying a regression model relating earnings to the selected independent variables for each population (or by the alternative use of a dummy variable to represent the additive and interactive effects of race). Estimating the coefficient for both populations, the effect of labor market discrimination is obtained by the substitution of the mean values for the independent variables in one population into the earnings function of the other population, and, as in the preceding approach, this difference is decomposed in terms of "composition" and "discrimination" effects (e.g., Blishen, 1973; Masters, 1975). Alternative forms of decomposition allow one to estimate the effect of each of the independent variables on the earnings difference, plus a "discrimination" effect (Duncan, 1969), thus throwing some light on the possible effects of alternative public policies.

Still another approach to the measurement of discrimination in the labor market is to establish a regression type of model (not necessarily linear), as above, and then calculate the estimated derivatives of earnings in respect to certain crucial explanatory variables, such as schooling or experience in the labor market. These are called the "rates of return" to the selected



characteristics, and the racial differences in these rates of returns are taken as measurements of discrimination in the labor market. In this study we will use both "decomposition" and "differences in rates of return" approaches to characterize the labor market in a Brazilian metropolitan area, Rio de Janeiro.

The value of these two last approaches depends, obviously, on the proper specification of the earnings function, and here two aspects appear to be crucial: the selection of the relevant independent variables and the selection of a proper functional form relating these variables to the earnings measure. Following Lydall (1976), we can say that theories on the size distribution of earnings can be conveniently grouped under three headings: stochastic theories, multifactor theories and the human capital theory.

Stochastic theories rely mainly on a multitude of small random effects to explain the earnings distributions. The usual observation that earnings distributions are log-normal is explained by these theories by assuming that the small random effects behave in a multiplicative fashion (and not in an additive fashion, as in the case of the normal distribution), hence, generating a log-normal distribution. Several objections can be made to this kind of theory, the most important of them, probably, is that the explanation offered is superficial and is

unable to identify any of the socioeconomic factors shaping the distribution. It can more properly be viewed as curve fitting than as a theory of income distribution (Lydall, 1976, pp. 18-20), and is not useful for those trying to find a paradigm for the analysis of discrimination in the labor market.

In the following sections, we will briefly outline the main characteristics and results of both human capital theories and multifactor theories of income determination.

#### Human Capital Theories

Human Capital analyses of the income distributions can be characterized as attempts to explain the structure of earnings by emphasizing only one factor, specifically the amount of investment in education and training, the two components of an individual's human capital stock (cf. Lydall, 1976, p. 20). The approach is micro-economic, basically trying to describe the process by which the individual earnings curve is generated. Following the neoclassical tradition, earnings is thought to reflect an individual's marginal productivity, and thus the economic problem of determining an individual's earnings has its key in the analysis of the factors making up his productivity. So, "human capital is defined as an individual's productive skills, talents, and knowledge. It is measured in terms of the value (price multiplied by quantity) of goods and services produced" (Thurow, 1970, p. 1). Then

skills, talents and knowledge are said to constitute one's "human capital stock."

The process by which the human capital stock is accumulated is viewed as the result of optimizing decisions made by the individual and his family about the allocation of investments in his human capital stock over his life cycle (Becker, 1964; Mincer, 1974, 1976). The optimization models proposed can briefly be described as assuming that rational allocation requires most investments to be concentrated at younger ages.

The investments may increase before adolescence, but will continue at diminishing rates throughout much of a person's working life. Investments are not incurred at once in a short and early period, even though this would maximize the remaining payoff period and total returns, because the marginal costs of producing human capital rise within the period. The solution is to stagger investments over time at an eventually diminishing rate, because (i) benefits decline as the payoff period, i.e., the remaining working life shortens, and (ii) the opportunity costs of time, which is an input in the learning process, are likely to rise over the individual's working life (Mincer, 1976, p. 139).

Now, given that earnings are a function of human capital stock, we can infer from the statement above that they should rise at a decreasing rate, eventually ceasing at old age when net investments can become negative. In other words, the working-life earnings profile should be typically concave over the age axis, its rate of growth being a positive function of the net amount of human capital in stock and its concavity depending on its rate

of decline over time (cf. Mincer, 1976). This suggests a parabolic age-earnings relationship.

In order to conduct empirical tests of human capital theories, economists look for human capital production functions, these being direct analogues of the ones used in the analysis of physical production (goods and services). A human capital production function indicates a quantitative relationship between factor input and the production of human capital, i.e., an individual's earning power (Thurow, 1970, p. 45). Empirical uses of human capital theory are legion, the human capital stock usually being approximated by variables measuring "years of schooling" and "experience," age usually being taken as a proxy for the latter.

As to the proper functional form for the earnings function, although there are some clear theoretical arguments justifying a nonlinear relationship, at least with respect to the age variable (as suggested above), one can find in the literature a wide range of functional specifications, ranging from a simple linear function (Hanoch, 1965; Rees and Schultz, 1970), to a logarithmic parabola and Gompertz functions (Mincer, 1974), to a double-log Cobb-Douglas Type of production function (Thurow, 1970).

#### Multi-Factor Theories

The third type of income distribution theory-- multi-factor--can in a sense be viewed as extensions of

the human capital approach. Not denying the important role of experience and schooling, they emphasize that many different factors are likely to play a role in determining the distribution of earnings. Lydall (1976), for instance, identifies as composing a minimum list the following factors: age, sex (in some countries also race, religion, etc.), geographic location, firm, industry, education, occupation, abilities of various kinds, and degree of managerial responsibility. Abilities and education are, however, only proximate factors affecting earnings. Behind them lie other factors which influence an individual's abilities and the quantity and quality of his education. These include his genetic inheritance, his family background, and the cultural group to which he belongs (Lydall, 1976, pp. 25-26).

Examples of multi-factor approaches to the analysis of income distribution are Adams (1958), Hill (1959), Lydall (1968), Morgan et al. (1962), and, more recently, Taubman (1975).

Probably the best examples of multi-factor analyses of income determination are those to be found in the sociological literature: the so-called "status-attainment models." Following the lead of Blau and Duncan's (1967) pioneering work, *The American Occupational Structure*, sociologists have eagerly engaged in the task of constructing models describing the transmission of inequality from

generation to generation. Although initially concerned with the transmission of occupational status, these models were later expanded to include a measure of economic achievement (earnings) and social-psychological variables considered important for the process of achievement (Duncan, Featherman and Duncan, 1972; Sewell and Hauser, 1972, 1975) as well as comparison in the attainment process between racial groups (Jenks et al., 1973; Coleman et al., 1972).

The "Wisconsin" model described by Sewell and Hauser is possibly the most ambitious attempt to depict the process of status attainment. The basic data came from a study of public, parochial, and private high-school students in Wisconsin in 1967, covering about 95 percent of this population. Later this data set was expanded by adding more data obtained on the educational and occupational achievement of a subsample, this subsample forming the basis of the "Wisconsin" model. The data collected include measurement of the individual's performance in high school, perception of the influence of "significant others," post-high school educational plans, occupational aspirations as well as the basic measures of status attainment.<sup>2</sup> In this model, extended to include 1967 earnings, some rather surprising results emerge. It is worth briefly reviewing some of the most important results here: first, as expected, educational and occupational

attainments each play an important role in earnings; second, and the most surprising finding, is that average parental income has the largest effect on earnings of all the variables in the model. Moreover, none of the other socioeconomic background variables directly affects earnings, once the influence of parental income has been taken into account; third, the social-psychological and social background variables in the model have little or no direct effect on 1967 earnings (except son's occupational aspirations); and finally, the model is much less effective in predicting earnings than educational and occupational attainments, where it accounts for only 7 percent of the variance in 1967 earnings (Sewell and Hauser, 1972). These results will be relevant for us later when we discuss the possibility of specification error in our own model of income determination.

As we said before, these status attainment models have been extended to the analysis of racial differentials in socioeconomic achievement. Some results bring important insights in the nature of these differentials. For instance, Blau and Duncan (1967) indicate the existence of a "double handicap" for nonwhites in which not only nonwhites have less efficiency in converting educational attainment into occupational and income advantages but also that advantages in parental achievement are not as well converted into advantages to the new cohort among nonwhites as among whites. In the same vein, Coleman

et al. (1972) document that the effects of education on income are about half as large for blacks as for whites. Moreover, both Siegel (1965) and Portes and Wilson (1976) report that socioeconomic background exercises a weaker influence among blacks and, more importantly, the patterns of effects of the other variables in the models seem to be different for each racial group. In other words, the process of attainment seems to be substantially different in the nonwhite group compared to the white group.

As to the functional form for the earnings function, the socioeconomic attainment models in general present simple linear models relating income to the explanatory variables. This somewhat contrasts with the more diversified formulations appearing among those following the human capital approach.

In summary, the empirical tests of discrimination show unequivocally the existence of large racial differences in the structure of socioeconomic achievement in general and large differences in workers' returns to schooling in particular (Siegel, 1965; Miller, 1966; Duncan, 1969; Wells, 1973) in American society. The concern about the returns to education is naturally explained by the fact that not only does education play a central role in all types of models of income attainment, but also education has traditionally been considered a suitable instrument of public policy. However, the efficacy of education in reducing the present level of



inequality in American society has been questioned and is still subject of controversy (Jencks et al., 1973). At any rate, based on these results showing the unmistakable presence of discrimination, several theories have been advanced to explain it. This will be briefly treated in the next sections.

But before we go on into the overview of some of the main theories of discrimination, it is important to examine the basic ways by which discrimination against nonwhites can be accomplished:

1. Human capital discrimination--nonwhites can have their mobility channels blocked by being prevented from getting the necessary qualifications to enter higher paying occupations;
2. Employment discrimination--nonwhites can suffer more than their proportional share of unemployment;
3. Occupational discrimination--nonwhites can be prevented from entering some better paying occupations, regardless of whether they are qualified or not;
4. Wage discrimination--nonwhites can earn less for performing the same jobs as whites, i.e., unequal pay for equal work.

The first type of discrimination takes place mostly before the individuals enter the labor market, largely still within the schooling system. Since the 1960 Census does not contain information on family background, ability,

etc., this type of discrimination will not be examined in this dissertation. Likewise, because we do not have adequate information on the individual's employment status, the second type of discrimination listed above will not be examined here.<sup>3</sup> The third and fourth types of discrimination take place after one's entrance in the labor market and are the subject of this dissertation. These types of discrimination will be used in the following overview of some of the main theories of labor market discrimination.

#### Neoclassical Theories of Discrimination

The neoclassical or competitive theory of discrimination utilizes an international trade model to infer the effects of restrictive practice interrupting the free trade between two independent nations, the white and the non-white nations. The assumptions of the neoclassical wage theory are made, namely, wages are the basic labor market clearing mechanism, perfect competition exists, factors of production are homogenous and interchangeable and institutional arrangements are fixed (Marshall, 1974, p. 950).

Probably the best-known neoclassical (or wage-competition) theory of discrimination is Becker's (1971) *Economics of Discrimination*. Becker's theory is based on the idea that the demand for labor gets depressed by the employer's "taste for discrimination." According to Becker, "if an individual has a 'taste for discrimination,'

he must act as if he were willing to pay something, either directly or in the form of reduced income to be associated with some persons instead of others" (Becker, 1971, p. 14). More specifically, this theory states that blacks in order to secure a job must accept lower wage rates than whites. When these tastes are operative, fewer blacks will be hired at lower wages, while white employees will benefit from higher wages than would be the case if there were no such "tastes." Another consequence of this theory is that discriminating employers will incur higher monetary costs as a result of the higher wages rates for the white majority. However, the amount of white gain or loss is a function of both the discrimination coefficient (represented by a downward shift in the demand for black labor) and the supply elasticity of black labor.

Becker shows that when the supply elasticity of black labor is zero, the downward shift of the demand for black labor implies a fall in black wages, and hence, an increase in white gains. On the other hand, if elasticity of supply is infinite (i.e., a horizontal supply line), the downward shift in the demand for black labor will result in an adjustment in black supply. The lower quantity of labor supplied by blacks implies a loss for the white community and, although black wages do not fall, black incomes are reduced because of a lower employment level of blacks. Now, if elasticity of supply lies between

zero and infinity, both gains and losses for the white community occur (see Becker, 1971; Thurow, 1975, pp. 156-162).

Because blacks constitute a minority, they have to trade with whites and, necessarily, they must offer a relatively inelastic supply curve, whites in most cases will gain from practicing discrimination (Thurow, 1975, p. 159). This international trade model has been expanded by Krueger to obtain an "optimum" level of discrimination in order to maximize white income gains (Krueger, 1963, pp. 481-486).

It should be noticed that in Becker's theory of discrimination whites try to maximize physical distance toward blacks. In this sense it is more properly a theory of segregation than a theory of discrimination. Alexis (1973) extends Becker's model to include an envy-malice motivation, a maximization of social rather than physical distance.

Ceteris paribus, white capitalists can reasonably be expected to prefer giving income to "their own kind" and might even be willing to sacrifice some profit to improve the relative income position of laboring whites. There are several reasons why this might be seen as sensible to white employers. First, economic resources are of importance not only in traditional economic activity, but are also surrogates for standing in the social order and in power relationships (Alexis, 1973, pp. 301-302).

The analytical results of Alexis' model is that black wages will be even lower than in Becker's model.

Becker's theory (and its variants) have prompted several criticisms. Probably the most serious one is the contention that it cannot account for the very persistence of discrimination. Obviously, if one assumes perfect competition, then "the amount of discrimination in the economic system is not determined by the average discrimination coefficients of whites but by the marginal discrimination coefficient--the man with the smallest discrimination coefficient" (Thurow, 1975, p. 160). Under these assumptions, only one nondiscriminating or low discriminating employer is needed for the system to break down. It would be possible to set up a business operating at lower costs (from the use of black labor) to drive all other competitors out of business in the long run. Or alternatively, to stay in business white employers would have to eliminate their discriminating practices. As Thurow observes, "if something is a market imperfection, there are always profits to be made by eliminating it. If markets are basically competitive, someone sooner or later discovers a way around the imperfection. Thus, there is a reasonably high probability that any long-lasting "market imperfection" plays some kind of functional role in the economy" (Thurow, 1975, p. 161).

Another common criticism of the Becker discrimination theory and its relatives is that it fails the "acid test" of discrimination theories, namely, it fails to present a reasonable explanation for sex discrimination.

Clearly, most men are not trying to maximize physical distance from women. And even if we think in terms of social distance, the theory still does not apply to sex discrimination. Because women are in general married to men, to discriminate against women would lead to wives having lower income and hence to lower family income. Thus, this explanation would only make sense if desires for domestic power among men were greater than their desires for more income, an at least debatable proposition.

Among the criticisms of the neoclassical theories of discrimination, one of the best known is the "radical" theory advanced by Baran and Sweezy (1960): they argue that employers gain as a result of discrimination in monetary as well as psychic terms. The central argument here is that employers act in a monopolistic fashion against a segregated black labor force, and with the use of labor intensive methods of production they are able to make extraordinary profits.

Although the controversy between the "conservative" view, such as Becker's, and the radical critique, such as that by Baran and Sweezy, seems to be centered around the question of whether the employer profits or loses from his discriminatory "tastes" (and here there seems to be some empirical support for the radical version; see Reich, 1971), it should be noticed that both views of discrimination suggest that different wage rates for the same

work (i.e., within occupational groups) are partially the cause of the income differentials. In other words, wage discrimination is seen as the basic labor market mechanism through which discrimination occurs. However, other theories have been advanced emphasizing that the cause of this differential could be found in the restriction of entry of blacks in better paying jobs. An example of one of these theories is Bergman's "crowding hypothesis." She states that "the most important feature of an economy in which discrimination is practiced is the simple fact that some jobs are open to Negroes and some are not. The jobs open to Negroes are not a random selection, even allowing for Negroes' relatively lower education. They tend to be predominantly low in status and to be concentrated very heavily in a few occupations" (Bergman, 1971, p. 295). The consequent increase in the relative supply of blacks for those occupations open to them results in a reduction in the wage rate for those occupations. However, within those occupational groups there should be no differences between black and white wage rates.<sup>4</sup>

The empirical evaluation of these competing theories is incomplete and contradictory. Some empirical analyses have found significant racial differences in returns to schooling within occupational groups (Siegel, 1965; Thurow, 1967; Waldman, 1969). Also, an empirical evaluation of Becker's theory vis-à-vis two versions of the

crowding hypothesis suggests some support for the first (Chiswick, 1973).

On the other hand Stolzenberg, working with detailed occupational categories, found that "black-white differences in returns to education make a small or negligible contribution to pay differences between white and black incumbents of the same occupation, at least in those occupations in which the vast majority of black men are employed" (Stolzenberg, 1976, p. 300). The difference in results obtained by the preceding investigations can then be attributed to their use of more aggregated occupational groupings, with blacks predominantly employed in those occupations with lower mean wages within each of the aggregated groupings.

#### Dual Labor Market Theory and Its Radical Version

The neoclassical models described above are all based on the idea of a free labor market where individuals compete against one another based on the wages they are willing to accept. Because of this feature these models are sometimes called "wage competition" theories. Opposed to this view of the operation of the labor market, economists have recently developed a series of hypotheses about the operation of the labor market in which individuals compete against one another for job opportunities, basing their occupation on the relative costs of their being trained to fulfill the tasks associated with the job they



are competing for. These theories are called "job competition models."

The "job competition" theories are essentially based on the observation that most of the individual's relevant job skills are acquired through on-the-job training and not by some previous training before he enters the labor market. The labor market is not a market in which existing skills are sold but a training market where training slots are allocated to workers. In this sense, all prior cognitive investments (e.g., schooling) are considered as indicators of "trainability" rather than existing skills.

Thus, the job-competition models are developed around two elements: one is a "job queue," in which workers are classified according to personal characteristics reputed as desirable by employers (e.g., "trainability," job-stability, etc.); the other is the distribution of jobs in the economy. Different factors affect this supply and demand for labor, but it should be noticed that: a) wages are paid based on the characteristics of the job in question, i.e., according to their marginal product; and b) workers are distributed across job opportunities according to their relative position in the labor queue, that is, according to their background characteristics. As Thurow aptly remarks

To some extent the job-competition model reverses the normal assumptions about short-run and long-run market clearing mechanisms. In the wage-competition model, wages fluctuate in the short-run to clear markets, and these wage changes then induce shifts in the long-run supply and demand curve. In the job-competition model, supply and demand curves shift in the short-run to clear markets. Markets clear by altering hiring requirements and the amount of on-the-job training they provide. Changes in relative wages occur only after a substantial period of disequilibrium in relative wages, if at all (Thurow, 1975, p. 77).

The best known job-competition model is undoubtedly that known as "dual labor market hypothesis." The root of the dual labor market model is the idea that labor markets are "Balkanized," that is, fragmented into noncompeting groups (Kerr, 1954), one composed of regular, stable workers and other composed of unstable, "casual," "peripheral" workers.

Although we can trace these general observations about labor market duality to Booth's surveys of the London poor in the late nineteenth century (cf. Morse, 1971), the modern version of the dual labor market theory started with studies of ghetto labor markets in American cities (particularly Boston and Chicago) during the mid 1960s and early 1970s. Piore, one of the main proponents of the dual labor market hypothesis, summarizes this model in the following statement:

The basic hypothesis of the dual labor market was that the labor market is divided into two essentially distinct sectors, termed the primary and the secondary sectors. The former offers jobs with relatively high wages, good working

conditions, chances of advancement, equity and due process in the administration of work rules and, above all, employment stability. Jobs in the secondary sector, by contrast, tend to be low paying, with poor working conditions, little chance of advancement; a highly personalized relationship between workers and supervisors which leave wide latitude for favoritism and is conducive to harsh and capricious work discipline; and with considerable instability in jobs and high turnover among the labor force. The hypothesis was designed to explain the problems of disadvantaged, particularly black workers in urban areas, which had previously been diagnosed as one of unemployment (Piore, 1975, p. 126).

Several explanations are advanced for the labor market dualism. With technological development and the growing importance of on-the-job training for the performance of certain functions, it became more and more clear that it was necessary to separate workers into two groups: those possessing the necessary "trainability" characteristics, and more importantly, showing attachment in their jobs, and those that, for one reason or another, showed unstable patterns of participation. The reason for this distinction is that employers make relatively heavy investments to train workers and thus "stability" becomes a highly desirable characteristic of workers. These considerations lead employers to distinguish between jobs for which stability is not important (typically menial jobs, for which there is enough supply) and jobs for which training and hence stability are crucial. This leads employers to devise some sort of screening mechanism, that is, the formation of a labor queue, in which a process

called "statistical discrimination" is a very important constitutive element.

The concept of "statistical discrimination" refers to the situation in which an individual is judged according to the modal (real or imputed) characteristics of the group to which he belongs rather than by his own characteristics. Thus, if women are considered unreliable workers in terms of their job stability then any individual woman will probably suffer from "statistical discrimination" in the sense that she will get a secondary position in the labor queue, regardless of her objective characteristics, including personal job commitment. Now, whether these characteristics are imputed correctly is an empirical matter, but as is stressed by dual labor market theorists, once these negative characteristics start to be imputed to some group, by a rather perverse circular mechanism, this group is likely to assume the imputed characteristics. Thus, if a prejudiced white majority consider the nonwhite group as "unstable" and then assign this group to secondary market jobs, in due time the nonwhite group will probably display this characteristic. Because secondary market jobs are low paying and "dead end," people performing these jobs tend to become discouraged and unstable. Thus there is a vicious reciprocal effect between personal and job stability characteristics, and once a group has its job prospects restricted to the secondary market it is very

difficult for this group to break this perverse circular chain and move to the primary sector. So, as we can see, discrimination is part of the dynamics of the job-competition models and an important factor in labor market segmentation. Thus, the dual labor market hypothesis does not constitute, properly speaking, a theory of discrimination but rather uses statistical discrimination as a built-in feature of labor market operation.

One variant of the dual labor market theory is the radical version of this theory. The basic difference between the versions lies in the emphasis of radical economists on the alienating functions of labor market segmentation. In this view, instead of the emphasis being placed on technological change and the related growing importance of on-the-job training as factors in labor market segmentation, radical economists (although not denying these factors) are likely to emphasize the resultant fragmentation in working class solidarity and, thus, are prone to interpret labor market segmentation as a capitalist-class conspiracy. Great importance is placed on job design as an instrument of working class control and, likewise, racism is viewed as a means through which employers divide the working class. According to Gordon, capitalists

try to develop a stratified labor market in order to accomplish two complementary objectives. They were likely to seek, on the one hand, to minimize the extent to which those jobs with less desirable working conditions could identify

with those in more desirable jobs. . . . And employers were likely to seek on the other hand, to sharply segregate those blue-collar or secondary workers who could potentially identify with white collar workers--and might therefore develop class consciousness--from those blue-collar workers who were not likely to develop class consciousness, in order, obviously, to limit the potential costs of concessions to workers who made determined demands (Gordon, 1972, p. 73; quoted in Marshall, 1974, p. 857).

The obvious appeal of the dual labor market hypothesis is that it provides us with a more general and reasonable version of discrimination than that provided by the neoclassical models. As we argued before, to think of discrimination in terms of "tastes" for maximization of distances simply does not make much sense when we analyze sex discrimination, not even when we think of social rather than physical distances. Dual labor market hypotheses provides us with a more flexible framework to analyze labor market discrimination in general.

Also, the dual labor market hypothesis provides us with a model of labor market operation which squares with some deviant observations made about labor markets, as for example the observation that wages seem to be extremely rigid downward or more importantly, that increases in the general level of education (observed for instance in post-World War II American society) do not correspond to an equalization in the earnings distribution. These observations indicate that wages do not seem to be an important labor market clearing mechanism. On

the other hand, because in the dual labor market model the relationship between individual prior cognitive investment and individual earnings break down (education merely helps the positioning of the individual in the labor queue), we are unable to explain the well known intra-occupational relationship between, say, schooling and earnings. In other words, we cannot dispose of the idea that pre-entrance-to-the-labor-market cognitive investments do represent productive skill, that is, higher marginal productivity.

The dual labor market theory has, though, an interesting implication for the analysis of experience-earnings profiles. According to this hypothesis, one should observe clear differences in the lifetime earnings profiles of blacks and whites. Because blacks are restricted to the secondary sector, low earnings, "dead-end" jobs, i.e., jobs with no possibilities for advancement, their experience-earnings profiles should be much flatter than those for whites, who can benefit from the advantages of primary sector opportunities. In fact, these characteristics have been observed for the U.S., but recent research based on longitudinal data have suggested some qualifications to them (Hoffman, 1977).

Finally, one should remember that the dual labor market can be considered a limit case of a multiply-segmented labor market. In fact, one could argue that

labor markets are segmented along occupational-career lines, and not just dichotomized. This argument will be developed in Chapter VIII.

#### Final Notes

The review of the main theories of income distribution and labor market discrimination had the major effect of sensitizing us to the central importance of schooling and experience in the determination of individual income.

In particular, experience seems to be of special theoretical importance. Both the human capital theory and the dual labor market hypothesis stress its role in the determination of individual income. Representing occupation-specific skills obtained through on-the-job training, experience is viewed as a crucial component of one's human capital, and as such is supposed to affect directly one's marginal productivity (and hence one's income). On the other hand, dual labor market models, while playing down the importance of schooling as a predictor of one's income, concentrate its theoretical focus on the role of experience on labor market discrimination. Specifically, it is hypothesized that minorities are restricted to low paying, "dead end" jobs. In other words, nonwhites should in general show a much flatter income-experience profile than whites, other things being equal.



The latter hypothesis seems to be a particularly relevant mechanism through which discrimination against nonwhites is accomplished, and accordingly we will pay special attention to it when we examine the extent and mechanisms of racial discrimination in the next chapters.

Footnotes

<sup>1</sup>In this sense, discrimination can be formally integrated with other theories of status imbalance (also particular cases of violation of the norms of distributive justice) such as theories proposing behavioral corollaries to social mobility, status incongruence or cognitive dissonance (see Taylor, 1973). In this context, Kenneth Arrow observed, in his version of the neoclassical theory of discrimination, that "beliefs and actions should come into some sort of equilibrium; in particular, if individuals act in a discriminatory manner, they will tend to acquire or develop beliefs which justify such actions" (Arrow, 1974, p. 26).

<sup>2</sup>The exogenous variables are father's education, mother's education, father's occupation, parental income; the intervening variables are: mental ability, high school grades, teacher's encouragement, parental encouragement, friends' plans, college plans and occupational aspiration; the dependent status attainment variables are: educational attainment, occupational attainment and 1967 earnings. See Sewell and Hauser (1972).

<sup>3</sup>The employment indicator in our 1960 Brazilian Census 1.27 percent subsample is the complement to the question on occupation. More specifically, it is asked whether the individual had any job during the whole 12 months period preceding the census. Obviously this is a very inadequate indicator of employment in basically three ways:

- 1) The reference period is too long--the standard reference period, recommended by the International Labor Office and adopted by most developed countries (including the U.S.A.), is only one week (preceding the census or survey date). Thus our reference period is more than fifty fold the recommended standard.
- 2) The threshold for inclusion as "employed" is too low--the usual procedure is to ask "how many hours did you work during the reference period." Thus a minimum amount of work time can be established as a limit to include the respondent in the "employed" group, allowing the distinction between those with some regularity in employment and those with a very casual involvement in the labor market.
- 3) One cannot distinguish between those unemployed from those not seeking work--in all populations

there is always a certain proportion of individuals who are not seeking work. Thus a question is usually introduced in surveys and censuses designed to measure whether the individual is "actively seeking work" or not. In our case we are unable to distinguish between the two groups.

For these reasons, our employment indicator is to an unknown degree excessively downward biased, which could make racial differences in employment meaningless. But there are other reasons, theoretical ones this time, to refrain from analyzing employment discrimination with our data.

Recent theoretical developments in the study of employment behavior have focused especially on the effects of income level and prospects for employment on the participation rate. These studies indicate two rather different reactions to a low income/poor job prospect situation: "the first type of reaction is embodied in the "discouraged worker" hypothesis: potential workers drop out of the labor market when prospects for finding work are poor but would accept suitable work if it were available. On the other hand, it is argued that there may also be groups who supplement family income by taking up paid work which would not be accepted if family income were higher. Thus, the "additional worker" hypothesis postulates that as job prospects/family income situations improve, participation rates would fall" (Turnham, 1971, p. 41). This leads us to the following observations:

- 1) Family resources is a crucial variable here--as in the case of educational attainment, where family income is a central explanatory variable. As we said before, we do not have this information in our 1960 Brazilian Census subsample. Likewise, other important family-related information such as household structure, position of respondent within the family, etc., is missing in our subsample, and to obtain it would be impossibly expensive.
- 2) An acceptable perceived job prospects measure to use in the analysis of racial discrimination is probably impossible to define because racial discrimination is in itself a factor in shaping the job prospects for racial minorities.
- 3) Prospective income is also a central explanatory variable--in other words, occupational and wage discrimination, which are part of one's income prospects, are also important in the explanation of employment discrimination. In other words, because racial minorities are probably discriminated against in the labor market, earning less and

restricted to less desirable jobs (other things being constant), they are more discouraged to participate in the labor force than numbers of the racial majority. Thus, in a sense, employment discrimination is causally posterior to racial income differences, and consequently, we should first analyze these two forms of discrimination, wage and occupational discrimination, before we tackle the problem of employment discrimination.

For these reasons we are not going to examine employment discrimination in the present study.

<sup>4</sup>For a more thorough discussion of the neoclassical theories of discrimination see Marshall (1974, pp. 859-870).

## CHAPTER III

### A BRIEF OVERVIEW OF THE BRAZILIAN LITERATURE ON RACE RELATIONS

The purpose of this chapter is to examine the Brazilian literature on race relations. Particular attention will be paid to the ideological content of the theories about race relations in Brazil and we will try to show that, for different and sometimes opposing ideological reasons, Brazilian social scientists seem to converge to a view in which racial discrimination in Brazil is either negated or considered to be of only negligible importance: "class" differences are advanced as the explanation for racial differences in status attainment.

The examination of the Brazilian literature will lead us to the formulation of two alternative propositions that will serve, in turn, as reference hypotheses to be tested in the empirical sections of this research.

#### Introduction: Historical Background

Brazil, like virtually all other multi-racial societies, is stratified along racial lines. Unlike other multi-racial societies, however, the racial composition

of her population is markedly complex. Soon after the discovery of Brazil by the Portuguese in 1500, the native Indian population was joined by two other very different racial groups: the European whites, mostly from the Iberian peninsula, and the African blacks, mostly from the Atlantic coast, but also significant numbers coming from the area that is now Mozambique. The interaction between these three racial groups throughout the three hundred years of colonial domination by the Portuguese produced a highly heterogeneous population.

The fates of each original racial group have been very different. The native Indian population soon was almost completely exterminated by both European civilization and violence. This group now constitutes less than 1 percent of the total population, pushed to the poorest areas of the subsistence economy.

The black population, on the other hand, has a more complex history. Black slaves began to be imported early in the sixteenth century to work in the developing export agriculture. Initially concentrated in the northeastern region to work in the booming cane sugar industry, the black population was later partially shifted to the center-southeastern areas when gold and diamond mines were discovered in this region in the early eighteenth century. The increase of the slave population in these newly opened areas was due to both the intensification of the slave

trade (after a period of relative stagnation due to a crisis in the sugar industry, during the second half of the seventeenth century) and to the beginning of a systematic forcible internal migration of slave labor.

With the decline of gold mining the slave population was slowly absorbed by the recovering sugar industry in the northeast and later by the rapidly growing coffee industry in the southeast.

Subjected to a particularly harsh slavery system (Degler, 1971), the black slave population could only be maintained by the constant supply from Africa, barely compensating the losses due to very high mortality rates. Moreover, fertility was low. Given the marked preferences for male laborers for the agricultural work, typically strong imbalances in the sex composition of the slave population could be observed. Also, the constant breakdown of family arrangements by sale of family members, migration, death and by widespread promiscuity in sexual mores (Freire, 1933), contributed to low reproductive rates among the enslaved blacks. High mortality and low fertility, leading to negative growth rates, are important components in the observed decline of the black population after the prohibition and control of the Atlantic slave trade during the mid-nineteenth century.

Another factor accounting for the relative decrease of the Negro population was miscigenation with

the white population. Largely a result of the promiscuous and degrading situation to which the female black slave was subjected, making her an easy prey for her white master's sexual appetite (Freire, 1933; Fernandes, 1971) and the strongly imbalanced sexual composition in the white population itself (Degler, 1971), the mulatto group has been growing in both absolute and relative number since the colonial days.

The white population has grown steadily, absolutely and relatively. After the abolition of slavery in 1888 and the beginning of industrialization, the southeastern areas of Brazil received large numbers of European immigrants, coming mainly from Italy and Germany. In these areas, previously for the most part unsettled, the white immigrant was to predominate, as indicated by Table III.1.

Table III.1. Regional Racial Distribution, Brazil 1872-1950.

Region	Census Year					
	1872		1890		1950	
	Whites	Nonwhites	Whites	Nonwhites	Whites	Nonwhites
Southeast	35.4	20.7	41.4	20.0	55.8	17.6
Rest of the Country	64.6	79.3	58.6	80.0	44.2	82.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1950 Brazilian Census



Since the southeastern region is the richest and most developed in Brazil today some of the socioeconomic differences among the racial groups can undoubtedly be accounted for by the differences in the geographic distribution of the races. The examination of the historical trend in terms of the absorption of the freed black and mulatto populations into mainstream society within each region, however, can throw some light on important differences in the socioeconomic fates of these racial groups. In the northern and northeastern region, the "underdeveloped" Brazil, the passage from slave to free labor took place much earlier due to the generalized decline in the cane sugar industry and the rise of the coffee plantations in the south. There had been some migration of slave labor to the coffee producing areas and when the abolition of slavery was decreed, the bulk of the non-white population was already working under a regime of free labor, as sharecroppers or simply as employees in the large plantations.

On the other hand, in the southeastern areas slavery came only later with the coffee boom. During the period of initial growth in the coffee business, the southeastern region held the largest proportion of slaves in the country (though not the largest proportion of non-whites), and when abolition came the black population was still substantially under the system of enslaved labor.

The passage to free labor was more abrupt in these areas than in the rest of the country, this situation being later aggravated by the large influx of European immigrants when industrial production started its fast growth in the same areas. The European immigrants posed serious competition to the freedman, inexorably pushing the latter to a marginal position in society. In fact, the role of immigrant competition in the shaping of the present socioeconomic situation of the nonwhite population is one of the focal points of some of the modern Brazilian sociological literature, as will be discussed in more detail later.

In this contrast between the socioeconomic fate of the races in these two broad Brazilian regions, one case seems to be of special interest: the case of the Rio de Janeiro area. Formally in the southeastern region, the city of Rio de Janeiro and its surrounding area has social characteristics of its own. As the main port of access to the gold mining region in the eighteenth century and the main coffee export center during the nineteenth century, Rio de Janeiro was already very large by the mid-nineteenth century. Its social structure was already fairly complex and the passage to a free system of labor was well under way before the 1880's. It had the largest urban concentration of nonwhites in the southeast region and, moreover, the European immigration was less intense in Rio than in other southeastern areas, like São Paulo. Furthermore,

differently from the rest of the southeastern region, the European immigration occurred mainly before the abolition of slavery. When abolition came the nonwhite population already held a substantial share of the skilled positions in the occupational structure and suffered less competition from immigrant whites (Fernandes, 1971; Hazembalg, 1977). For these reasons, Rio de Janeiro makes an interesting case study of race relations in Brazil, for it shows both a more developed urban and industrial social structure than the Northern areas and a larger and relatively better off nonwhite population at the start of industrialization than the rest of the Southern region.

In spite of this relatively better starting position, after about 80 years of urban and industrial progress and 72 years after the abolition of the slave labor system, the situation of the nonwhite population in Rio still can be described as one of generalized poverty. The data from the 1960 Brazilian Census subsample show clearly the tremendous differences in the living conditions between the white and nonwhite groups, the income distribution by color being as presented in Table III.2.

Clearly, the differences in economic living conditions between the two populations are substantial. Fitting a Pareto curve to the total distribution to estimate the mid-point in the last open interval and fitting a log-normal curve to find the first midpoint, we estimate the

average monthly income for white males to be 12,876.21 cruzeiros and for nonwhite males 7016.10 cruzeiros, with a substantial difference of 5806.11 cruzeiros per month between the estimates for the two groups. Indeed, the average monthly income of the nonwhite population is a little more than half that of the white population. The explanation of this differential is the subject proper of this dissertation, in which tests for alternative explanations for it will be performed, trying to throw some light in the labor market processes that could generate and possibly maintain these differences in economic rewards to labor.

Table III.2. Distribution of Average Monthly Income by Color Gainfully Employed Males, Aged 10-64 Years.

Income	White (%)	Nonwhite (%)
up to 2100	4.24	10.15
2101 - 3300	5.53	10.76
3301 - 4500	5.19	8.65
4501 - 6000	15.49	23.05
6001 - 10000	33.83	34.44
10001 - 20000	24.35	11.35
20001 - 50000	9.59	1.53
50001 +	1.78	0.07
Total	100.00	100.00
Estimated Average	12876.21	7016.10

Source: 1960 Brazilian Census, 1.27 percent subsample.

As we saw in Chapter II, two competing basic explanations are commonly advanced in the sociological and economic literature. One explanation could be that differences in causally prior socioeconomic achievement (i.e., educational attainment) could account for this income differential. In this case, the present situation reflects only an as yet unaccomplished process of social mobility, the long range trend being toward "objective" racial equality in socioeconomic conditions. As will be shown later, this seems to be one of the dominant views in the Brazilian sociological literature.

An alternative explanation is that the nonwhite population is discriminated against in the labor market and hence the present situation reflects these discriminatory actions. In this case, the present differential will remain over time and only through political intervention will it be changed. This position also calls for a closer examination of the mechanisms favoring the perpetuation of the racist processes of selection that could account for the discriminatory situation. Again, the main purpose of this dissertation will be to test these two alternative explanations, and, in case the evidence lends support for the latter hypothesis, an effort will be made to disentangle the basic forms of labor market discrimination that could account for the observed income differences between the white and nonwhite populations.

In the next sections we will review the main currents in the Brazilian literature on race relations and discuss how these approaches are related to the question of explaining the present differentials in socioeconomic conditions between the racial groups. Three "master-ideas" seem to characterize sociological writing on race relations in Brazil, and they correspond, as will be shown next, to different periods in the development of sociological investigation in Brazil. That is, their birth can be more or less clearly dated and attributed to historically specific notions in Brazilian social science, although these ideas can sometimes be found intermingled in the same argument.

#### Racial Democracy and Miscegenation

When Theodore Roosevelt returned to the United States from his hunting journey to Brazil during the early 1910s, he claimed to be impressed by the sharp contrast between the racial situation in his country and the one he could observe in Brazilian society. It is not surprising that, to one accustomed to the fierce black codes of the American South, to the "Jim Crow" approach to race relations, the relatively smooth and peaceful climate in racial relations prevailing in Brazilian society, only some twenty years after the official abolition of slavery (in 1888), was both astonishing and disturbing. Roosevelt's words even reveal some admiration for the Brazilian "egalitarian" solution:

If I were asked to name one point in which there is a complete difference between the Brazilians and ourselves, I should say it was in the attitude to the black man. . . (In Brazil) any Negro or mulatto who shows himself fit is without question given the place to which his abilities entitle him (quoted in Park, 1942, p. XXIX):

In fact, Roosevelt was simply voicing an idea which the Brazilians had long managed to convince themselves to be quite an accurate picture of their society, namely that Brazil constituted an unique case of "racial democracy." And exactly as in Roosevelt's case, this image picturing Brazilian society as a racial paradise was largely a result of implicit comparisons with other multi-racial societies, the United States in particular. Brazilians had for long nurtured a comforting feeling of superiority vis-a-vis Americans in the realm of racial justice.

During the first half of the twentieth century this image of Brazilian racial democracy had wide currency. Throughout the world Brazil was an example of viability of peaceful coexistence between the races, and this rather anomalous case began to be subjected to the curiosity of social scientists. The general opinion among scholars was that Brazilians had managed to erase from their memories the slavery nightmare and recover their moral integrity, a feat unknown to the rest of the world. Park expressed this dominant opinion when he observed that

. . . the differences between Brazil and the United States in respect to race is due to the fact that the people of Brazil have, somehow,

regained that paradisiac innocence, with respect to differences of race which the people of United States have somehow lost (Park, 1942, p. XXXI).

Likewise, a little later, another American scholar particularly concerned with race relations, Franklin Frazier, commented that

In a certain sense, one may not properly speak of race relations in Brazil. For, as Dr. Park has pointed out in an incisive essay . . . 'race relations are not so much relations that exist between individuals of different races as between individuals conscious of these differences.' In Brazil, there is lacking, both on the part of the Portuguese and 'white' Brazilians, and, on the part of the 'black' or colored Brazilians, a consciousness of racial differences. In fact, it is impossible to secure accurate figures on the various racial elements in the Brazilian population (Frazier, 1944, p. 87).

All this was, ironically, a far cry from reality. Probably never before had the relative (and probably, absolute) socioeconomic conditions of the nonwhite population been so bad as during the first quarter of the present century. Underemployed or simply unemployed, blacks and mulattoes occupied the lowest ranks of the social hierarchy. Living a wretched existence in subsistence agriculture or trapped in the anomic life of emerging slums, the living conditions of blacks and mulattoes were made even more miserable by their daily subjection to prejudice and discrimination.

Clashing with reality, this image of tolerance and equalitarianism came under suspicion of having strategically



important political underpinnings. One commentator pictured it as merely a rationalization of the underlying racial tension, as an externalization of the so called Brazilian "cryptomelanism," as expression defining the "fear of confessing to and the desire to hide the importance one really gives to the question of race and color."<sup>1</sup>

The notion that the racial democracy myth is essentially a political formula is now widely shared by social scientists. The denial of the importance of race or racial prejudice results in the elimination of race differences from political discourse, functioning thus as an efficient mechanism in the demobilization of racial conflict. This is clearly seen when one considers a correlated ideological production, the "whitening" or "bleaching" ideal.

The "whitening" ideal was the doctrine prevailing throughout the first half of the twentieth century in Brazil, when white-black miscegenation was proposed as a natural solution to the race problem. By drowning the black blood in massive amounts of European-imported white blood, the population would become whiter (and thus, "better"), solving in this way the "Negro problem." As Ssidmore (1974) skillfully shows, this "whitening ideal" was a conciliatory solution, largely devised by Brazilian intellectuals, to the contradiction posed by the racist doctrines dominating the scientific scenery at the end of the nineteenth century (proposed by such right-wing racist

theoreticians as Gobineau and Lapouge) and the racial reality of Brazilian society. One aspect of the "whitening ideal" that is especially striking is that those promoting it had quite possibly some political motivations in mind. For example, Roosevelt tells us that during his stay in Brazil he had been approached by a Brazilian statesman who on this occasion preached the gospel of "whitening":

of course the presence of the Negro is the real problem, and a very serious problem, both in our country, the United States, and in mine, Brazil. Slavery was an intolerable method of solving the problem, and had to be abolished. But the problem itself remained, in the presence of the Negro . . . Now comes the necessity to devise some method of dealing with it. You of the United States are keeping the blacks as an entirely separate element, and you are not treating them in a way that fosters their self-respect. They will remain a menacing element in your civilization, permanently, and perhaps even after a while a growing element. With us the question tends to disappear, because the blacks themselves tend to disappear, and become absorbed . . . The pure Negro is constantly decreasing in numbers, and after two more crosses of white blood the negro blood tends to disappear, so far as the physical, mental and moral traits of the race are concerned. When he has disappeared, his blood will remain as an appreciable, but in no way dominant, element in perhaps a third of our people, while the remaining two-thirds will be pure whites. Granted that this strain will represent a slight weakening in one third of our population, the result will be that in our country two-thirds of the population will have kept its full strength, with one third slightly weakened, while the Negro problem will have entirely disappeared. In our country all the white population will have been in its original race strength, but the Negro will remain in increasing numbers and with an increased and bitter sense of isolation, so that the problem of his presence will be more menacing than at present. I do not say that ours is a perfect solution, but I regard it as a better

solution than yours. We and you have to face two alternatives, neither of them without drawbacks. I believe that the one we Brazilians have chosen will in the long run, from the natural standpoint, prove less disadvantageous and dangerous than the one you of the United States have chosen (Roosevelt, 1914).

So, there is historical evidence that this "bleaching ideal" can be seen, at least partially, as a result of a conscious and apparently successful attempt by the Brazilian elite to control and demobilize any potential racial conflict.

The racial democracy illusion is also inextricably linked to other equally idealized conceptions of Brazilian society, among them the one pictured the Brazilian as a "homem cordial" (literally, "affable man") and the one describing Brazilian history as peaceful and bloodless.<sup>2</sup> Again, their characterization as political formulas has not escaped modern observers, one of them commenting that

The image of ethnic and racial harmony, as part of a more general ideological concept of the nature of the Brazilian, is thus associated to a legitimization mechanism aimed at the absorption of tensions as well as the anticipation and control of certain areas of social conflict (Hazembalg, 1977).

In summary, not only is the idea of Brazilian society as a racial democracy in sharp contrast with the well documented observations of conspicuous prejudice (as we shall see later) but also it should be kept in mind that his idea served as an important weapon in the political arena, being efficiently used in the prevention and demobilization of

the latent racial conflict.<sup>3</sup> This somewhat paradoxical situation is probably the most important and original aspect of the Brazilian racial situation, distinguishing the Brazilian case from those of other multi-racial societies.

The racial democracy myth is a truly persisting one, making the investigation of the roots of its stability a important topic in the examination of race relations in Brazil. Social scientists have a large share not only in the shaping of this distorted form of racial consciousness but also in its strong survival to our days. In the following paragraphs we will outline some of the contributions of social scientists to the diffusion of the official version of race relations in Brazil and to the consolidation of the racial democracy myth. In particular, we will start by examining how the "whitening" ideal has been reflected in observations made on miscegenation and its relationship with the racial equalitarian values supposedly found in Brazilian society.

The first master-idea characterizing sociological work on Brazilian race relations is that the intense interbreeding of the various racial stocks not only indicates a positive valuation of the nonwhite groups but actually prevents racial identification, and hence, minimizes the chances of discrimination. Otherwise stated, since race tends to be a continuum, discrimination, if it exists, tends

to be incremental. A bi-polar situation is virtually an impossibility, and so is racial consciousness. It is stressed (Degler, 1971) that because every degree of miscegenation is separately identifiable as a color unit, color differentiation in terms of attitudes is so complex that group consciousness can not develop. Probably the most common way of expressing this idea is in the argument that Brazilians have dozens of different words to express slight differences in racial types and because attitudes vary in regard to each one of these types, people cannot develop a common color identification.<sup>4</sup>

In particular, it is supposed that because mulattoes are clearly differentiated from blacks, they have much better prospects for social mobility. Thus, whitening creates a new channel for mobility of nonwhites, acting as a factor in the conformity of black people. This is the so-called "mulatto escape-hatch" that has been proposed as the main difference in racial relations between Brazil and the United States. In Degler's words

. . . in the United States the definition of a Negro became anyone of African ancestry, and this definition is unqualified by criteria of class. On the other hand, in Brazil, as in Latin America in general, this simple, biological definition of the Negro never developed. Instead, a special place was reserved for the mixed blood-the mulatto-a development that opened up much wider possibilities for social mobility. The fact is, . . . , the man who is neither black nor white can be taken as the symbol of the differences between the race relations of the two countries (Degler, 1971, pp. 203-204).

Now, it seems to be true that there is some social differentiation between the several color groups and that mulattoes do seem to be a distinct group, being neither black nor white. However, the fact is that we do not know the relative distances separating the color groups. To observe that there are dozens of different terms to distinguish people in terms of racial characteristics does not imply that all these resulting racial types are differently valued. In other words, we do not know the attitudinal correlates of this differentiation process, and in particular, we do not know whether mulattoes are less discriminated than black and if less discriminated, by how much less. Statements on color differentiation in Brazilian society are typically based on weak and inconclusive data, as well as faulty analysis.

Let us consider, for instance, an example taken from Degler's work. Commenting on color differentiation in Brazilian society, Table III.3, taken from the Costa Pinto (1953) study, was presented as evidence of the attitudinal correlates of such a differentiation. It refers to research done among students, who were asked to choose which member of each of the color pairs (Table III.3) they would invite home to study for an examination. We believe that even a cursory look at the results would indicate that while the preference for whites is large, and although there is also a slight preference for mulattoes over blacks, this

Table III.3. Racial Preferences Among Secondary School Students in Rio de Janeiro, Answers to the Question: Which Member of Each of the Following Pairs Would You Invite Home to Study for an Examination?

Pairs	Number who would select:				Total
	White (%)	Mulatto (%)	Black (%)	Indifferent (%)	
White and Mulatto	216 (68.8)	28 (8.9)	--	70 (22.3)	314 (100%)
Mulatto and Black	--	128 (40.8)	111 (34.8)	75	314 (100%)
Black and White	206 (65.6)		35 (11.1)	73 (23.3)	314 (100%)

Source: Costa Pinto, O. Negro no Rio de Janeiro, (1953), pp. 189-192.

last difference is so small that based on these data the conclusion that blacks and mulattoes are almost equally discriminated seems inescapable. A full 47 percent selected whites, only 16 percent selected a mulatto and 12 percent chose a black, while 24 percent were indifferent. Moreover, when faced with a choice between a mulatto and a black companion, 41 percent selected a mulatto, 35 percent selected a black, while 24 percent were indifferent. Thus only 5 percent more respondents selected mulattoes over blacks, a relatively modest difference given the importance of the theoretical statement implied. These results, however, provoked the following comments

Noticeable is the clear preference for white companions. But if a similar comparison were made in the United States it is unlikely that a quarter of the students would declare themselves indifferent, nor it is likely in the United States that the preference for mulattoes over Negroes would be so evident, if present at all. (Degler, 1971, p. 133).

In summary, we do not think that there is enough evidence supporting the assertion that the extensive verbal differentiation of racial types found in Brazilian society leads to fragmentation of the color line either in attitudes toward nonwhites or the socioeconomic conditions of these nonwhite groups. In particular, we do not know how much less mulattoes are discriminated vis-à-vis blacks in order for a "mulatto escape hatch" to be a meaningful concept. For these reasons, investigations of the



relative position of nonwhite groups and the mobility and socioeconomic achievement chances of mulattoes vis-a-vis blacks are needed. One of the aims of the present study is, then, to examine the extent to which mulattoes are differentiated from blacks in their process of socioeconomic achievement and the amount of discrimination each group suffers in the labor market.

#### A Familiar Thesis: The Inheritance of Poverty

The second main theme we can find in the Brazilian sociological literature is the familiar "inheritance of poverty" explanation, that is, the idea that nonwhites are "poor because they are poor." This inheritance of poverty has some tradition too in the American literature (see Duncan, 1969), and has been subject to extensive empirical testing. But let us examine this idea in its proper context.

Up to the early 1950s, the sociological literature in Brazil is basically concerned with a preindustrial type of race relations, composing what is sometimes called the "traditional pattern" believed to still prevail in the "archaic" Brazil. More specifically, this pattern of race relations should characterize the situation in the poorer, non-industrial areas, presently concentrated in the Northern and Northeastern regions. Originated after the now classic works of Gilberto Freire,<sup>5</sup> this literature

has a basically anthropological orientation, focused primarily on the cultural role of the Negro and his "aculturation" to society. Heavily loaded with a romantic representation of the living conditions of the Negro population, this literature strongly emphasized the believed existence of warm, emotional relationships involving racial contacts. When analyzing the stratification aspects of any local race relations situation, they tend to negate any specificity of race as a factor in the allocation of social positions, although they generally acknowledge the existence of rather strong racial differentials in socio-economic conditions. A typical statement illustrating this kind of approach is the following one referring to the situation in the State of Bahia:

What we find, then, in Bahia is a multiracial class society. There is no caste based upon race; there are only classes. These classes are still largely identified with color, it is true; but they are classes nonetheless not castes. The most characteristic tendency of the Bahian social order is the gradual but persistent reduction of all distinguishing racial and cultural marks and the fusing, biologically and culturally, of the African and the European into one race and one common culture (Pierson, 1967, p. 337).

Now, given that the color lines are supposed to run vertically, orthogonal to class lines, the "Negro problem" is then simply one of aculturation and racial assimilation. In other words, the proposed answer to the problem was to make the Negro disappear both biologically and culturally.<sup>6</sup>

Quite clearly, assimilation as a solution is merely a restatement in anthropological terms of the "whitening ideal" we examined earlier, making clear the probable ideological background of these analyses. Here again we run into the problem of evidence, because these works are generally based on impressionistic accounts of past experiences, with little factual evidence supporting them. So, it is often difficult to distinguish a description of reality from an idealized view of reality, a scientific account of race relations in Brazil from the dominant elite ideology.

On the other hand, because "assimilation" or "whitening" are ideological products they do seem to have an effect on the behavior of the populations, thus having some interesting and important consequences. One interesting aspect of the "whitening" ideal is that its success implies the absorption of the dominant white value system by the nonwhite population. In other words, the Negro must internalize his inferiority, he must accept as a main channel for social mobility the production of a whiter offspring, he must view miscegenation, as Degler puts it, as his "escape hatch." The cost of integration is, then, the loss of racial identity by the Negro, with the cruel implication of his accepting his own inferiority. And here, in fact, the aspect of the destruction of Negro racial identity is well documented, several studies showing that blacks share

with whites the same prejudiced opinions about the "nature" of colored people (cf. Ribeiro, 1956; Pereira, 1967).

As we observed before, these aspects of race relations are supposed to characterize the so-called "traditional" or "paternalistic" pattern of race relations believed to dominate in the nonindustrial areas of Brazil. By extension, it is also supposed to have characterized race relations in these more developed areas of the country before the period of industrialization, this last process being responsible for a change in the nature of race relations in those areas. In nonindustrialized areas, as several commentators have observed, with the abolition of slavery, the nonwhite population did not experience any significant upward social mobility, basically because the racially dominant group managed to control and block their social mobility channels. Obviously, this situation of low social mobility is also thought to be structurally limited by low rates of social change. With Negroes not forming a competitive group, the explanation goes, not constituting a threat to whites' social status, the latter did not develop aggressive negative sentiments toward blacks and mulattoes. Warm (although essentially superficial) relations between the races could come about. The important ingredient in the domination of black people, is believed to be the paternalistic character of the relationships, the direct dependence of Negroes to white benevolence and

protection. This is a very important characteristic of social relations in general in Brazilian society, and as Bastide observes

Paternalism prevented tensions and softened the relations between races. But at the same time, it strengthened the domination of one colored group over another; and it institutionalized the subordination of the Negroes, who could only benefit from the protection of the whites, or from a certain familiarity in the whites' treatment of them on condition that they 'knew their place' and proved their deference, gratitude and respect. It was therefore an instrument of political and economic control, which by avoiding the competitive relations which are possible in an individualistic society like ours, by preventing a struggle, and by rendering useless any wish for collective mobility on the part of the Negroes, assured supremacy and security to the white class. Under these conditions, one can understand why prejudices are at a minimum in a paternalistic society, or at least, why they remain latent rather than finding external expression. The reason is that they are unnecessary. Their functions of controlling and damming up are fulfilled by paternalism (Bastide, 1965, p. 15).

The control by the white group of the nonwhites' social mobility channels, exercised by the imposition of paternalistic relationships, is through the mechanism of continuous co-optation of small numbers of ambitious blacks, to occupy some positions in the medium and, rarely, upper strata of society. Thus it establishes as one of the only legitimate channels for social mobility (together with "whitening") for the nonwhite people the protection and patronage of an important white person. A crucial aspect to be noted in this process of mobility is that it is

essentially individual, and thus excluding the possibility of collective action. Even more importantly, as long as this process is also believed to be imposed on poor whites, it makes compatible the idea of a "racial democracy" and the existence of camouflaged racist process of selection in the allocation of positions in the social hierarchy. Because ultimately everybody depends on the patronage of someone important, racial differences in "life chances" are not attributed to discrimination but to one's relative luck in finding protection and sponsorship. This "paternalistic" character of social relations in general is undoubtedly an active element in the shaping of race relations in Brazil, even in the industrialized areas. In this sense, when carefully interpreted, it is an important contribution to our understanding of the major mechanisms for social control of racial conflict in Brazilian society.

In summary, the predominantly "anthropological" literature on race relations in "archaic" or preindustrial Brazil clearly de-emphasizes the importance of race as a factor in stratification. In fact, most of this writing flatly denies the relevance of discrimination and racial conflict in social relations in Brazil. The ideas in this writing can be reduced to a set of claims that Dr. Pierson summarized under the label of "Salvador hypothesis," of which the most relevant for our purposes are:

. . . Miscegenation has always been, and continued to be, extensive . . . Brancos, mixed-bloods, and pretos were represented in all occupations,

although, as might be expected--given the fact that the Africans and their descendents began 'on the bottom' so to speak, as propertyless slaves of the dominant group--the descendents of Europeans were concentrated in the upper levels, while the relatively unmixed blacks were concentrated in the low-pay, low-status employments. The mixed bloods, however, especially, the lighter mulattoes, evidenced a strong tendency to rise, while a considerable portion, especially of light mulattoes (as also an occasional black) had penetrated into the upper-strata . . . There was probably little or no race prejudice in the sense in which that term is used in Europe, South Africa, or the United States. This does not mean that there was nothing which might properly be called prejudice, but that such prejudice as existed was primarily class rather than caste prejudice, and it was closely identified with color principally because color was closely identified with class . . . (Pierson, 1955, p. 437-440).

Clearly, these sociologists fail to see that discrimination is essentially embodied in relative opportunities for social mobility, and they present us with no evidence that Brazilian "traditional" society is not stratified along racial lines, as opposed to the assumed stratification along class lines. In fact, one can view their de-emphasis of racial discrimination and their concern with acculturation and racial assimilation of the Negro to white society as an implicit (and often explicit) endorsement of the "racial democracy" myth, of the "whitening ideal" and all the correlated ideological paraphernalia which serve the purpose of preserving racist principles of selection for valued social positions and the political demobilization of racial conflict, making the

*Robinson*

situation of the Negro in Brazilian society both desperate and hopeless.

On the other hand, their description of the paternalistic type of race relations, when carefully reinterpreted, should constitute an important element of our understanding of the mechanism of social control still largely prevalent even in present-day industrialized areas of Brazil.

#### Competition or Coercion? The Anomie Hypothesis

Finally, the third theme we can find in the Brazilian sociological literature on race relations is what could be called a "social-disorganization" or "anomie" hypothesis to explain lower achievement levels within the nonwhite population. But, again, let us put it first in its proper historical perspective.

During the early 1950s, inspired by the optimistic picture depicted in the literature we just described, in which it was essentially stated that Brazil was a "neutral point" in the racism scale, the U.N.E.S.C.O. decided to launch a large-scale study of race relations in Brazil. Apparently the underlying motivation for this study was to use the data collected in Brazil as propaganda to diffuse the idea that a racial democracy like Brazil's could be a viable solution for other multi-racial societies.<sup>7</sup> It goes without saying that the results did not come exactly as expected.



The U.N.E.S.C.O. study, designed to extend the analysis of race relations to the "modern" areas of Brazil (and hence complementing the literature on the "traditional" areas), was conducted in the two major southern metropolises, São Paulo and Rio, two less industrialized cities (Salvador and Recife) and four rural communities. Later, the group involved in the analysis of São Paulo extended their study to all capital cities in the Southern region (Porto Alegre, Florianopolis and Curitiba), including a historical analysis of the old coffee-producing rural areas of the states of Rio de Janeiro and São Paulo.<sup>8</sup> In all, these studies cover geographically most of what could be called the "developed" or "modern" urban Brazil, and constitute, undoubtedly, the most serious, important and influential sources to be found in the sociological literature on the subject of race relations in that country. Their impact on the rearing of young Brazilian sociologists is immense, having largely shaped the thought of the present generation of specialists. They deserve then to be object of special consideration.

The results of the UNESCO studies can be characterized by a dichotomy. On the one hand, those referring to "underdeveloped" Brazil (i.e., those on Recife, Salvador and the four rural communities) reproduce very much the same picture as before. That is, they tend to support the "Salvador hypothesis" proposed by Pierson, with the same de-emphasis on racial discrimination and emphasis on class

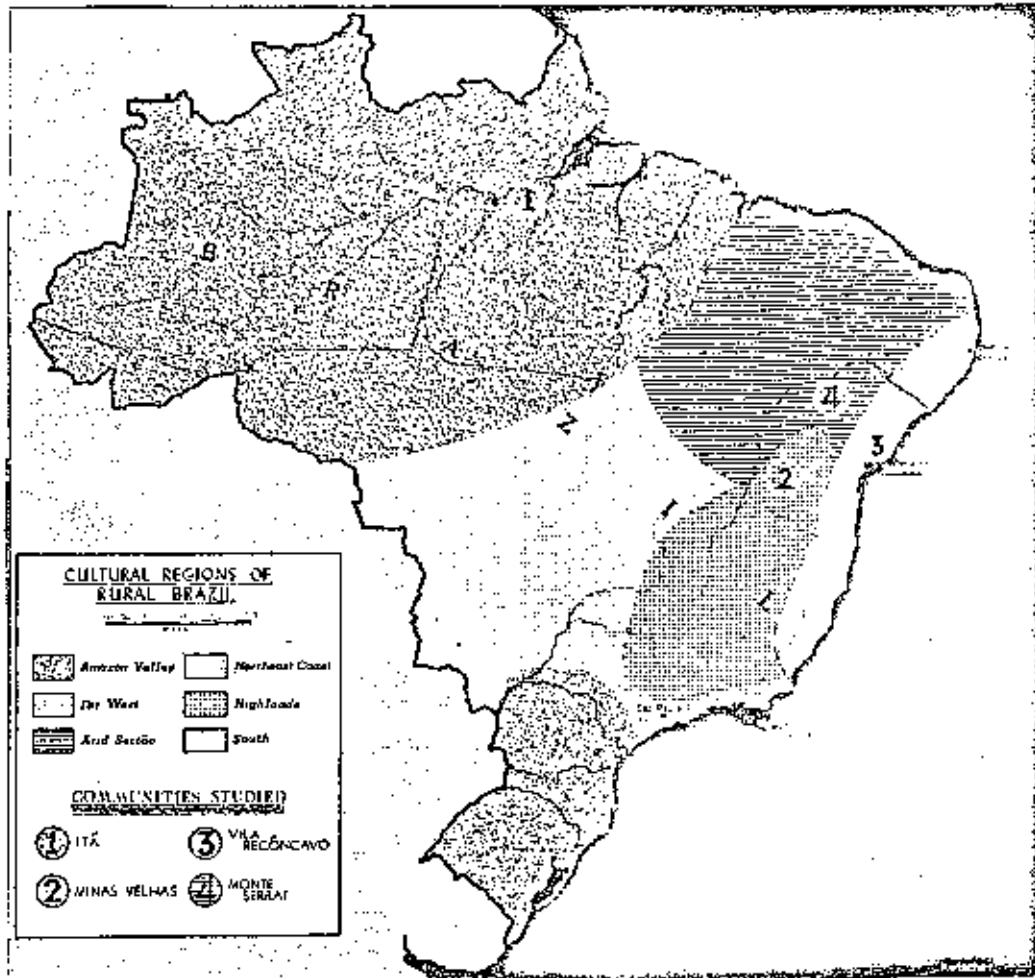


Figure III.1. UNESCO Sponsored Studies, Cities and Rural Communities, Early 1950s.

dimensions rather than racial dimensions. These findings are perhaps best summarized by Harris when he observes that

. . . There are no subjectively meaningful Brazilian social groups based exclusively upon racial criteria . . . In the actual dynamics of everyday life, superordinate-subordinate relationships are determined by the interplay between a variety of achieved and ascribed statuses, of which race is an important but not decisive element. It is evident that in the Northeast of Brazil the fact that an individual manifests a particular set of physical characteristics does not by itself determine a single status role . . . A Brazilian is never merely a 'white man' or a 'colored man,' he is a rich, well educated white man or a poor, uneducated white man; a rich, well educated colored man or a poor, uneducated colored man. The outcome of this qualification of race by education and economics determines one's class identity . . . There are no racial groups against which discrimination occurs. Instead, there are class groups. Color is one of the criteria of class identity; but it is not the only criterion. (Harris, 1964, pp. 59-61).

Although one may wonder whether there has ever existed a social system in which someone is merely a "white man" or a "colored man," one can take the observations quoted above simply as indicating that in Brazil race is a less important factor in the determination of one's identity than elsewhere. In fact, it is said that given enough education and economic status one will not be discriminated against in Brazilian society even if one is not white. In other words, race is not a factor hindering the translation of status in class identity. Now, obviously,

such a perspective misses the essential facts that discrimination is not a binary behavioral outcome that one can either suffer or not, and that it is exactly in the process of achievement, i.e., in the process of acquisition of education, economic status, etc., that discrimination has its most vicious impact. It is by preventing people to have access to higher positions in the social status dimensions that discrimination is accomplished. This is in fact part of the definition of discrimination and to say that a non-white, if given enough social status can be viewed as "upper class" by the other members of his community is surely to miss basic elements in the dynamics of discrimination.

The results for São Paulo, Rio and the other Southern "developed" areas, on the other hand, showed a marked contrast with these findings. They showed unequivocally that prejudice was strong and seemingly growing in these areas. For this reason, these authors (particularly F. Fernandes, R. Bastide, O. Ianni and F. H. Cardoso) are considered by both Brazilian and international specialists as those who gave the first blow in the Brazilian "racial democracy" myth. Let us examine their contribution in more detail.

The general approach is to tackle the problem of race relations following two basic "dimensions," supposed to describe the "structural element in the Brazilian racial

situation": one "dimension," specifically social (i.e., structural), refers to the emergence of industrial-capitalism or the "competitive order" and deals with its impact on the dissolution of the slavery system and the subsequently problematic integration of the Negro into the emerging class structure; the second "dimension" is constituted by the psychological-attitudinal (or super-structural) aspects of the "color problem," as expressed by prejudiced and discriminatory behavior (cf. Fernandes, 1972, p. 73). These two "dimensions" are considered to be intimately related; both are derived from a wider perspective on the necessary impact of industrialization on race relations, as we will argue later.

The analysis of the integration of the Negro to the class structure, following basically a historical approach, covers the period starting from the abolition of slavery and its aftermath (1888) to the "bourgeois" revolution of 1930. The initial insight is to view slavery and industrial capitalism in opposition to each other, as poles in a contradiction between the mode of production and the relations of production, the so-called "mechandise-slave contradiction" (cf. Ianni, 1972, pp. 545). In the emerging industrial-capitalist mode of production, all factors, capital, land, labor and productive techniques, must be combined in an optimum mix in such a way as to respond to market fluctuations. In other words, the production

factors must have maximum mobility and elasticity, and labor in particular, must not be immobilized as if it were part of the fixed capital stock, as is the case under the slavery production system. The transformation of the slave into a free-laborer competing for wages in a flexible labor market is thus a structurally necessary characteristic of the emerging production system, and the need for a solution to the referred contradiction is the explanation offered to the Abolition movement and other correlated historical events. Now, given that the resolution of this structural contradiction led to the extinction of the slavery system, how did the integration of the ex-slave into the emergent class-structure take place?

The answer to this question is at the core of analyses coming from the "São Paulo School." The focal idea is that the colored population, instead of being integrated into the emerging proletariat, was inexorably pushed into the lumpenproletariat. Culturally deprived and still bearing the psychological scars from slavery, the Negro population found itself handicapped for the adaptation to the emerging competitive order. Their limited intellectual background is considered one of the crucial elements in this initial inadaptation:

. . . the modest mental development of the population subject to slavery will cause its partial segregation after abolition, postponing its assimilation and numbing the country's economic development (Furtado, 1959, p. 167).

Furthermore, the Negro population lacked the adequate socialization necessary to adapt to the labor market conditions. It lacked the technical training, the achievement orientation and self-discipline, the essential characteristics to succeed as a salaried worker. It is said that the ex-slaves wanted, above all, to be treated with the dignity due to a free man, unfortunately interpreting this dignity as an unlimited freedom to work when they pleased, developing an extreme sensitivity to any rebuke. This was translated into a marked tendency to idleness, derived from their considering the latter to be a highly valued prerogative of the free man

By lack of previous socialization, he [the Negro] could not correctly evaluate the nature and the limits of the obligations deriving from the contract of employment. This was viewed as perpetuating slavery by other means and as if, when selling his labor, the worker was, simultaneously, selling himself (Fernandes, 1972, pp. 88-89).

In short, the ex-slave was not prepared to assume the social and economic roles of the salaried worker in the competitive order.

A third factor was decisive in shaping the destiny of the Negro population: the mass immigration of European workers to Southern Brazil. Since the mid-nineteenth century, the Brazilian government had been trying to solve the problem of insufficient labor supply by promoting the settlement of European immigrants in the rapidly developing southern areas. Slave import had been outlawed, prohibition

to the traffic was enforced by the British Navy, and simultaneously the rapidly growing coffee agri-business required a sharp increase in labor supply. The abolition of slavery coincided with the beginning of mass migration of European workers (mostly Italians), bringing competition as a lively new dimension to the labor market. And, ironically, it is said, the ex-slave was not prepared to compete. He lacked the necessary qualities to present a serious threat to the immigrant. He was then inexorably pushed to a marginal position in society, while the immigrant rapidly climbed the ladder of social mobility.

As a result of the competition posed by the immigrant worker, the black population became extremely geographically mobile, showing a marked preference to migrate to the big cities, such as São Paulo and Rio de Janeiro. However, their rural background added an extra ingredient to their lack of adaptation to the new environment, and the Negro population began to live the desperately miserable life of moral degradation and social disorganization in the mushrooming urban slums. In their deeply anomic situation they displayed the whole range of deviant behavior, from family disorganization to crime and delinquency (cf., Fernandes, 1964, 1972).

Their lack of social techniques to adapt to the emerging order, a characteristic of their anomic situation, constituted the major hindrance to the integration of



Negroes and mulattoes to the class structure. These social techniques, skillfully used by the immigrant group and consisting fundamentally in behavioral elements such as systematic saving, home ownership, more responsible sexual attitudes by the males and more stable family organization, are believed to have been the essential basis for racial competition.<sup>9</sup>

In summary, the picture we get from these accounts of the emergence of the competitive order and the lumpen-proletarianization of the colored population, is one of a labor market process in which racial discrimination has no specific role. The Negro was placed to a marginal position because he lacked the necessary qualities to become a "modern" worker and, consequently, he could not compete with the better qualified white immigrant. He lacked the elementary social techniques to allow him any benefit from the social mobility opportunities. The fact that he was dark skinned seems to play no significant role in this process:

With regard to the first question (whether the city of São Paulo really rejected the Negro as such), it seems obvious that the implications of the rejection involved are truly neither racial nor anti-racial. The economic, social and cultural isolation of the Negro, with all its unquestionably harmful consequences, was a natural result of his relative incapacity to feel, think and act in the social milieu as a free man. In rejecting him, the society was thus rejecting a human factor that bore within himself a slave or a freedman . . . It should be kept in mind that in sociological terms this

rejection would be specifically racial in character only if the Negro continued to be rejected once he had acquired these characteristics. The data presented suggest the opposite. To the measure in which the Negro acquired the rudiments of these characteristics or showed some capacity to do so, he found the road open and could fit in socially (Fernandes, 1971, pp. 52-53).

The implications of statements like this are clear.<sup>10</sup>

Since race has no specific role in the allocation of positions within the social structure, the present situation of Negroes and mulattoes is explained by the relative disadvantage they started with. Or, in other words, their present poverty merely reflects the result of an as yet unaccomplished process of social mobility and not those of any form of institutionalized discrimination. Seriously handicapped by his own deficiencies, the Negro simply lost the competition against the white immigrant. From the Negro point of view the situation must be then, one of class conflict and not one of racial conflict. To escape from his present conditions, the only meaningful solution is to join the ranks with the brother proletarians in the effort to bring about a redeeming revolution.

The irony in this formulation is that, obviously, it contributes to the maintenance of the subordination of blacks and mulattoes, making difficult the emergence of a collective identification among them and hence inhibiting their political action. In practice, the function of this ideological position is the same as that maintaining the

"racial democracy" myth or the "whitening ideal," that is, the prevention and demobilization of racial conflict as such, the elimination of race as a valid issue in the social and political arena.

However, the simultaneous documentation of widespread prejudiced and discriminatory attitudes within the population poses an irksome question: how to explain them and at the same time conciliate the explanation advanced with the idea of absence of institutionalized discrimination? This constitutes the second "dimension" in the description of the Brazilian racial situation, according to these authors.

Here we have two competing explanations. The first version, a more simplistic one, is merely a consequence of the ideological position stating that the race question should be reduced to the class question. Ethnic consciousness is viewed as false consciousness, a highly dangerous diversion from the much needed concentration of efforts to the redeeming class struggle. Likewise, prejudice and discrimination are viewed as a ruling class ideology, as instruments to fragment working class solidarity." Racial definitions are viewed in the following way:

To those holding the control of society, thus, it will be easier to distribute men according to color, religion, natural origin or any other accidental attribute, before dividing them according to the position in the social structure. Thus, there will be Negroes, Mulattoes, Italians, Poles, Jews, Germans, socially identified as

distinct from one another, even when coexisting in the same social group, working in conditions of equality. This is the fundamental sense of the racial ideology of the dominant white group, in whose mind color is a reified abstraction, defining the totality of the person to whom it is attributed. With the organization of the social conception of the "Negro" and "Mulatto" as pertaining to the salaried group, negroes, Mulattoes and whites are reciprocally redefined, consequently creating the ideological conditions of social behavior specific to class society (Ianni, 1972, p. 234).

Prejudice and discrimination against nonwhites (as well as against whites of various ethnic origins) is then essentially viewed as a component in the social consciousness of domination, tending to disappear with the emergence of "class consciousness." The solution to the "race problem" consists, then in fostering this class consciousness, which in due time will bring about the proletarian revolution.

The second approach is somewhat more sophisticated. Essentially it is based on a theory of social change in which modernism and traditionalism do not constitute two polar types in a continuum, as usually assumed in modernization studies, but two separate "dimensions" continuously coexisting (cf. Fernandes, 1972, p. 73). This approach views the present social patterns as a combination of both new and surviving forms from the past.

The application of this theory to the problem of explaining the widespread prejudice in Brazilian society is quite direct. It is said that after Abolition, as we saw

before, the Negro population, subjected to competition against better qualified immigrants, was pushed to a marginal position in the social structure. In other words, the legal abolition of the caste system did not change the relative situation of the racial groups within the social hierarchy. The net result of this is that the traditional patterns of assymmetric race relations, giving whites a dominant position and a subordinate one to non-whites, remained absolutely unchanged. Thus, the underlying nature of the Brazilian race problem is that the assymmetric mode of race relations, devised to regulate the contact between master and slave, survived in the new social system. In a tautological assertion, we are assured that

The persistence of both elements (racial prejudice and discrimination) after the disintegration of slavery is explained by the fact that the class system did not destroy all the "ancien regime" structures, mainly the race relation structures" (Fernandes, 1972, p. 71).

The perception of this situation of prejudice and discrimination as a phenomenon of cultural lag leads for reasons that will later become explicit, to an optimistic attitude vis-à-vis the future of race relations in Brazil. When the competitive order is finally fully established, those attitudinal remnants of the old order will disappear and the Negro will be integrated to class society. In fact this optimism goes as far as to declare that despite strong and persisting social inequalities between whites and

nonwhites, there are some potentially favorable elements in the emergence of a true racial democracy in Brazil: first, in the rural areas where subsistence agriculture prevails, the generalized and "democratic" poverty is a strong factor in the elimination of socioeconomic differentials by race; second, the recent rapid industrialization and coincident reduction in immigration, has strongly favored social mobility within the nonwhite population. The latter is supposed to enjoy the same opportunities that European immigrants had at the end of the last century, that is, they can occupy socioeconomic positions disdained by the dominant group, but strategically located in the organization of the society and the economy; third, with the emergence of the competitive order, even if it did not destroy the old attitudinal patterns of prejudice, the emerging class society at least undermined their objective foci of discrimination. And this justifies the optimistic faith that

These potentialities are significant and, if they continue their expansion, Brazil can become the first major racial democracy in the world created by the expansion of the modern western civilization (Fernandes, 1972, pp. 29-30).

Disregarding the dubious quality of the evidences provided in support of all these analyses (which are mostly based on anecdotal evidence), one important point to notice is the convergence of the last approach to the one equating

racial consciousness to false consciousness. Both explanations end up assuring us that, either because racial consciousness is false consciousness or because prejudice and discrimination are a result of a persisting cultural lag, the consolidation of industrial capitalism will in due time eliminate this anomalous situation. Both explanations share the belief that industrialization and racism are somehow incompatible by nature. We will examine this proposition in the next paragraphs.

#### Industrialization and Racial Discrimination--

##### Some Comments

As the discussion in the two previous sections has suggested, one can view the race relations situation in Brazil as one of change from a "paternalistic" type of relationship, believed to still characterize the situation in underdeveloped areas, to a "competitive" type, corresponding to the situation emerging in the rapidly industrializing areas. One can think of these types as constituting two polar cases, two ideal-types in the Weberian sense, and in fact Van den Berghe (1967) proposed such a typology as a basis for the study of race relations in any society. It should be noticed that the paternalistic-competitive ideal-types can be viewed as the application to the field of race relations of the

well known distinction in sociology between *Gemeinschaft* and *Gesellschaft*. Van den Berghe describes these two ideal-types as

Race relations in a paternalistic system follow the master-servant model. The dominant group . . . rationalizes its rule in an ideology of benevolent despotism and regards members of the subordinate group as childish, immature, irresponsible, exuberant, imprevident, fun-loving, good humored, and happy-go-lucky; in short, as inferior but lovable as long as they stay in 'their place.' In the subordinate group there is generally an ostensible accomodation to inferior status and sometimes even an internalization of inferiority feeling expressed through self-deprecation . . . The class distinctions that may exist within castes are less important than the caste barrier, which is horizontal in the sense that there is no overlap in class status between castes . . .

The competitive type of race relations represents the polar opposite of the paternalistic type. It is characteristic of industrialized and urbanized societies with a complex division of labor and a manufacturing basis of production . . . There is still a color base, and racial membership remains ascribed, but class differences become more salient relative to caste; that is, there is a greater range of class statuses within castes, whereas the gap in education, income, occupation and living style tends to narrow. Typically, there is even an overlap in class status between castes, so that the caste line is best described as oblique rather than horizontal. Racial membership still plays a role in the division of labor, but achieved criteria of selection take precedence over strictly ascriptive ones. In a complex industrial economy that requires high skill levels the labor force has to be relatively free and mobile, and race is no longer workable as the paramount criterion for job selection; at least a heavy price in productivity has to be paid if ascription of occupation is to be retained (Van den Berghe, 1967, pp. 27-29).

Although this typology can constitute an useful analytical tool,<sup>12</sup> there is always the danger that its application results in treating these two types as



stereotypes rather than ideal types. In particular, the competitive type of race relations seems to be especially vulnerable to flawed usage, this seeming to be the case of those analysis found in the Brazilian literature discussed in the last section. The reason why the competitive type seems to be particularly vulnerable is that underlying it there is a model of industrialization (implying a host of social consequences) which is based on what may be incorrect assumptions about the working of capitalist markets, the labor market is particular: As proponents of segmented labor market models point out, the view of a labor market in which wages are the basic clearing mechanism seems to be inaccurate. Thus "industrialism" is usually assigned a series of necessary derived characteristics which in reality may not be present. Blumer (1965, pp. 220-253) skillfully discusses this type of mistaken analysis, and his arguments need not be repeated at length here. For our purposes, it is enough to point out that from what Blumer calls the "intrinsic tendencies" of industrialization which social scientists usually assume to exist, (attributing to such tendencies the virtue of molding a completely new type of social order), the first three, namely: the primacy of rational perspectives and secular outlook, the inevitability of contractual relations and the need of an impersonal market, make up the rationale for denying any significance

of discrimination in the allocation of positions within the "competitive order."

On the other hand, the three remaining "intrinsic tendencies" of industrialization (that is, the certainty of physical mobility of production factors, the allocation of personnel, capital and resources on the basis of productive relations (hence allowing social mobility) and the built-in dynamic conditions which constantly activate the process) form the basis for an optimistic view about the future of race relations in Brazil. While the emergence of the "competitive order," bringing with it a commitment to rationality, the replacement of status relations by contractual relations and its impersonal markets, would in due time dilute either the racial "false consciousness" or narrow down the cultural lag responsible for prejudiced attitudes, its associated "intrinsic" characteristics of physical and social mobility would probably solve the problem of the large and persisting differentials in socioeconomic conditions between the white and the nonwhite populations.

However, we well know this has not been the historical experience of any multiracial society. In fact, examination of other societies indicates that while industrialization may greatly change the social order, it may leave intact the racial system that is imbedded in that social order. The reasons are quite straightforward.

For instance, even if we admit that industrialization fosters and stresses a rational outlook, the rational perspective may actually converge to the acceptance of and deference to the racial system rather than diverge from it. A notorious example of "rational racism" is the case of certain occupations involving face-to-face relations with the public. The exclusion of nonwhites from certain occupations, based on the premise that their employment could motivate some friction in the contact with the public, is perfectly rational in the sense that it is aimed at the better functioning of that particular economic unit.

Another conspicuous example could be that of the manager who does not hire a black employee in order not to introduce an element of potential conflict within his subordinate crew, thus guaranteeing a smoother operation. Other examples of this "rational racist" type of behavior abound and are well documented in the literature, being pointed out even by those who seem to believe in the intrinsic antagonism between industrialization and racism.<sup>13</sup>

Similarly, arguments about the possibility of coexistence (and even functionality) of rigid stratification systems, like the caste-like system in South-Africa, and rapid industrial development could be made. As Blummer puts it

As applied to the actual racial situations in our recent and present world, the view that industrialization moves ahead naturally to dissolve the racial factor is not borne out by the facts, certainly not in the case of racially

ordered societies . . . Instead, we note a transfer of the lines of racial patterning to the industrial enterprise . . . The picture presented by industrialization in a racially ordered society is that industrial imperatives accomodate themselves to the racial mould and culture to operate effectively within it (Blumer, 1965, pp. 238-239).

Industrialism adapts itself to the racial system by institutionalizing all sorts of racist procedures. Racist criteria of selection and allocation of positions can be built into virtually all major institutions, giving continuity to the domination of one race over another. In fact, as we saw when we examined theories of income distribution, according to job-competition models of the labor market we can view discrimination as a built-in feature in the operation of labor market, as a screening device for the allocation of workers to training slots. In other words, there is no reason to believe that the development of industrial society will banish prejudice and discrimination. On the contrary, if left to its own dynamics, it seems likely that discrimination will persist indefinitely, reinforced by the perverse circular mechanism described by the dual labor market theorists.

For these reasons, the institutionalized mechanisms by which the nonwhite population is perpetuated in its positions at the lower ranks of the social hierarchy would be, undoubtedly, the most critical and important aspect for those concerned with race relations. To fail to see this fact or not give it the crucially necessary attention

can be considered a major analytical fault. The primary concern with the attitudinal correlates of racism, at the expense of ignoring the mechanisms of institutionalized discrimination, is from this perspective misplaced. More or less the same can be said of the historical analysis of the "lumpenproletarization" of the Negro. Even if we accept the sometimes debatable account of the historical process, we get a general picture on what the position of the nonwhite population was like at the beginning of the industrialization process. But we barely know anything about why and how it has been perpetuated for almost 80 years in this same position. This seems to be the most important question. The view that the present position of the nonwhite population is merely the result of an as yet unfinished process of upward mobility is unsatisfactory on theoretical grounds. Moreover, it contributes to the maintenance of formulas of political control such as the myth of a Brazilian racial democracy and thus to the maintenance of racial domination in Brazilian society.

In summary, this review of the Brazilian literature on race relations suggests two main alternatives: first, one should expect mulattoes and blacks to be clearly differentiated from each other. One of the main arguments in the Brazilian literature is that because of widespread miscegenation, the racial axis forms a continuous dimension. In particular, it is supposed that mulattoes

have a much higher level of mobility opportunities than blacks do. Thus we have to expect that, in general, mulattoes show a much higher level of educational, occupational and income attainment, other things being equal, than blacks do.

A second alternative hypothesis, and one which is partially contradictory to the first, is that race has no significant role in the process of mobility, the present situation being explainable in terms of the relative positions the racial groups started from. According to this theory, although the levels of attainment between the races are different, there are no racial differences in the returns to educational, occupational and other investments made.

In the next chapters we proceed to a close empirical examination of these two propositions. We will try to show then that we should reject both hypotheses.

Footnotes

<sup>1</sup>For a discussion of the "cryptomelanic" behavior and its implications, see Costa Pinto (1953), p. 329.

<sup>2</sup>See Hollanda, S. B. (1936), and for a critical discussion of the several stereotypes in interpretations of the Brazilian past see Rodrigues, J. H. (1967).

<sup>3</sup>During the 1940s and early 1950s there was a beginning of mobilization of nonwhite people, several voluntary organizations "for the progress of colored people" appearing during this period. These efforts were soon counteracted, being accused of having "racist" implications, of being "imports of foreign (American) ideologies" and faded completely away by the late 1950s. For an account of this mobilization-demobilization process, see Costa Pinto (1953).

<sup>4</sup>For example M. Harris (1964) reports the results of a research carried out under his supervision in a fishing village in the State of Bahia. He reports that "a sample of 100 neighbors and relatives were shown photographs of three full sisters and asked to identify the race of each. In only six responses were the three sisters identified by the same racial terms . . . It was found, in addition, that a given Brazilian might be called by as many as thirteen different terms by other members of his community . . . In order systematically to explore the range of terms which might be applied to a given individual a set of nine portrait drawings, variable in hair shade, hair texture, nasal and lip width, and skin tone were also shown to another sample of 100 people. Forty different racial types were now elicited. . . . (Harris, 1964, pp. 57-58).

<sup>5</sup>See specially Freire, G. (1933 and 1936). The best known works focusing on race relations in rural, preindustrial Brazil are those by Pierson, D. (1967) and Lynn Smith, T. (1946).

<sup>6</sup>As Pierson explicitly says: The race problem, in so far as there is a race problem, tends rather to be a consequence of the resistance which an ethnic group offers, or is thought to offer, to absorption (Pierson, 1967, p. 344).

<sup>7</sup>For two somewhat contradictory versions of UNESCO motivations for this research see Costa Pinto (1953) and Fernandes (1972).

<sup>8</sup>The study in the city resulted in the book by Costa Pinto (1953); for Bahia and Recife, the results are reported in Azevedo (1953) and Ribeiro (n.d.); for the Southern region, the studies composing the core of what could be called the "São Paulo School" are the following: Bastide and Fernandes (1959), Fernandes (1964, 1971, 1972), Cardoso and Ianni (1960), Cardoso (1962), Ianni (1967, 1972) and Costa (1966). The results on rural communities are reported in Wagley (ed., 1952) and Harris (1956).

<sup>9</sup>In what reads very much like an early Brazilian version of the famous Moynihan report and probably very much influenced by the works of F. Frazier, Fernandes describes the situation of pauperism and social anomie in the city of São Paulo during the period 1900-1930. A great emphasis is put on the role of social disorganization, and family instability in particular, for the explanation of the persistence of the nonwhite population in a socially marginal position. See especially Fernandes (1971), pp. 72 and following, and Fernandes (1972), pp. 109-128.

<sup>10</sup>The same view can be found in other authors. For example, commenting on the case of the city of Curitiba, Ianni states that "in a society structured in classes, as the one we find in Curitiba in the present moment, the conditions for social mobility are determined by structural and functional requirements peculiar to a changing capitalist society" (Ianni, 1972, p. 77). Again, for a completely different social and economic situation, the city of Salvador (Bahia), Azevedo concludes: "In Bahia the colored people have a status which is determined by their qualities and individual abilities, and they can compete with the whites. In principle, it is not important who is able to climb socially either by his wealth, by his intellectual merits, by his professional titles, by his moral qualities or by a combination of these elements, given the value system of a capitalist society. However, in their use toward the upper classes the colored people find some resistance, partially due to the influences of the prejudices we talked about, but also because a vast majority they belong to the classes that are economically in the lower rungs of the social ladder." Notice here the convergence with some of Pierson's "Salvador hypothesis."



<sup>11</sup>"By racially discriminating, the members of the various social groups, hierarchized or not, do not become conscious of the true foundations of the tensions opposing them. By reifying color, or ideologically constituted attributed, these tensions do not reach the social consciousness of the members of society, even though members of the classes" (Ianni, 1962, p. 268).

<sup>12</sup>For a full development of the paternalistic and competitive ideal types see Van der Berghe (1967), pp. 25-37.

<sup>13</sup>See in particular, Fernandes (1964, 1971) and Costa Pinto (1953).

## CHAPTER IV

### THE DATA

The 1960 Brazilian Census is the basic source of information for the present study. It constitutes a data source of unmatched quality for the period of reference. It is unique, and it is important for two additional reasons.

First, the 1960 Brazilian Census has never been fully processed and published. Due to several unfortunate circumstances, the published material covers only about a third of the Brazilian states, and predominantly those located in the Northern areas. Thus, the information for the more developed areas is largely missing. However, a 1.27 percent subsample has been published under the title "Preliminary Results" in a special separate volume.<sup>1</sup> From this subsample the cases corresponding to the "Rio de Janeiro area" have been selected, and are the data used in the present analysis. Although this 1.27 percent subsample has been available for general public use, with copies in international research organizations such as CELADE (Santiago, Chile) and the Latin American Data Bank at the University of Florida, it has been largely

unexplored. In fact, to the best of my knowledge, it has been used only once, in a study on the Brazilian size distribution of income.<sup>2</sup> Thus, the fact that it constitutes basically "new" information makes analysis of the data potentially important.

Second, and more importantly, the 1960 Census was the last Brazilian Census to collect data on race or color. The question on this subject was dropped from the 1970 Census. Now, given that the 1950 Census is available only in its published form (and unfortunately not adequately presented for the purposes of this investigation), this 1960 subsample becomes the only major available data set on the Brazilian population to include information on race. So, this feature makes it doubly unique and interesting for the present analysis.

The data to be used in this study pertain to males no longer in school, aged 10-64, belonging to the black, mulatto and white color groups (for reasons that will be explained later), and living in the states of Guanabara and Rio de Janeiro.<sup>3</sup> This last condition specifies what is usually meant by "Rio de Janeiro area." The total sample size is  $N = 21861$ .

Bearing in mind the literature discussed in the preceding chapters and the limitations in the available data, a list of potentially important explanatory variables has been selected for analysis. In the next

sections I will describe the selected variables in the form they are available in the census subsample used and the recodes made for the present study.

#### Race (Color)

This is the basic control variable. The original race classification in the census data is the following: white, black, Oriental, Mulatto, Indian, "Don't Know."

Since the Indian and Oriental populations, especially in the Rio de Janeiro area, constitute about 0.1 percent of total population, I chose to work exclusively with the white, mulatto and black categories. In a later stage of this investigation a simple white-nonwhite dichotomy will be used, mainly due to the fact that within the black population very few cases are observed at the upper levels of the main dependent and explanatory variables. For instance, only four blacks in the sample have a college education. The dichotomization in white-nonwhite should allow more straightforward statistical manipulation of the data. In this case white respondents are coded as 1 in this variable, nonwhite respondents coded as 0. In the cases where a black-mulatto-white classification was used, an additional binary variable was added, coded 1 when the respondent was classified in the mulatto category, 0 otherwise.

The distribution of the race variable in the sample is presented in Table IV.1, which shows that the white

population is more than twice as large as the nonwhite population.

Table IV.1. Distribution by Color, Rio de Janeiro, Brazil (1960).

Color	n	%
White	14688	67.19
Mulatto	4484	20.52
Black	2686	12.29
N	21861	100.00

Source: 1960 Brazilian Census 1.27 percent subsample.

#### Income

This is our main dependent variable. In 1960 for the first time a question on respondent's income was included in a Brazilian Census of Population. Income was measured as "average monthly income," including not only earnings but also the various forms of capital income. For those with fixed income (i.e., salaried workers) the data collected correspond to the previous month's income. For those receiving variable income (e.g., professionals) the figures collected correspond to the last 12 months average. Table IV.2 presents the distribution of average monthly income by race following the classes available from the original census data.

Table IV.2. Percent Distribution of Income by Color,  
Rio de Janeiro, Brazil (1960).

Average Monthly Income (In Cruzeros)	Color					
	White (%)		Mulatto (%)		Black (%)	
Up to 2100	551	(4.16)	364	(9.31)	254	(10.93)
2101 - 3300	731	(5.52)	367	(9.38)	303	(13.04)
3301 - 4500	754	(5.70)	324	(8.36)	244	(10.63)
4501 - 6000	2055	(15.52)	839	(21.45)	588	(25.30)
6001 - 10000	4423	(33.41)	1425	(36.43)	699	(30.08)
10001 - 20000	3238	(24.46)	506	(12.94)	209	(8.99)
20001 - 50000	1289	(9.74)	81	(2.07)	24	(1.03)
50001 +	194	(1.49)	3	(0.06)	0	(0.00)
Subtotal n	13238	100.00	3912	100.00	2324	100.00
NA, DK	1450		575		362	
(% of total)	9.87%		12.82%		13.48%	
Total N	14688		4487		2686	

Source: 1960 Brazilian Census 1.27 percent subsample.

As we can see in Table IV.2, among those listed as having an occupation (and hence a source of income) there are some for which the income information is missing. Consequently, in a further stage of the analysis when income is treated as a dependent variable, the total sample size will decrease. More precisely, our total sample will be the sum of the subtotal row in Table IV.2 (N = 19474).

Another important feature to notice in Table IV.2 is that in the original data the first and last income classes constitute open intervals. To allow a better treatment of this variable the midpoints of these two open intervals were estimated, the last one by fitting a Pareto curve to the preceding two intervals, and the first midpoint being estimated by fitting a log-normal curve to the entire income distribution.<sup>4</sup> These procedures yielded the following midpoint estimates: Cr\$ 705 for the first interval midpoint and Cr\$ 128400 for the last one.

Table IV.3 presents the results of an univariate analysis of variance of income by race. The calculated averages for each racial group indicate the existence of very substantial differences of income along racial lines (these are the same results that were presented in Chapter III). One can observe that the average income for the white population is more than twice that of the black population. Another interesting fact emerging from

Table IV.3. Income by Color, Summary Statistics, Rio de Janeiro, Brazil (1960).

Color	N	Mean	S.D. (estim.)
Black	2686	5440.98	4879.05
Mulatto	4487	6492.91	6600.69
White	14688	11601.59	16362.84
Total	21861	9796.09	14089.45

Source	Sum of Squares	d.f.	F Ratio	$\eta^2$
Between	.1478 ( $10^{12}$ )	2		
Within	.4192 ( $10^{13}$ )	21858	385.313	0.034
Total	.4339 ( $10^{13}$ )	21860		

Source: 1960 Brazilian Census 1.27 percent subtotal.



Table IV.3 is the relatively small difference in average income between the black and mulatto populations.

The analysis of variance summary at the bottom of Table IV.3 indicates that the observed racial differences in income are very significant (with  $\alpha < .01$ ).

#### Residence

This is an important explanatory variable because it allows one to control for spatial differences in employment and average income. In particular, urban/rural differences in cost-of-living are likely to affect the average incomes in these areas, and thus could account for some of the variance in income. Since race is associated with area of residence, location could account for part of the racial differences in income.

The definition of "area of residence" in the 1960 Brazilian Census followed an urban/suburban (village)/rural trichotomy as defined by law and delimited by the municipal governments: Urban areas are "cities," i.e., municipal (county), seats; "villages" are defined as "district" seats; rural areas are all areas outside the limits of cities and villages.

Table IV.4 presents the cross-classification of place of residence by color group. This table shows that although urbanites tend to predominate among all racial groups, there is a substantial difference in the distribution of residence by color. For instance, the proportion

of blacks living in rural areas is almost twice that of whites. Whites by far constitute the most urbanized group, followed by the mulatto group. Blacks are the least urbanized racial group, with about 60 percent of the black population living in urban areas. As indicated above, this association between area of residence and race could account for some of the racial differences in employment and income.

Table IV.4. Residence by Color, Rio de Janeiro, Brazil (1960).

Residence	Color		
	White (%)	Mulatto (%)	Black (%)
Urban	11334 (77.2)	2953 (65.8)	1594 (59.3)
Village	622 (4.5)	312 (7.0)	141 (5.2)
Rural	2692 (18.3)	1222 (27.2)	951 (35.4)
Total	14688 (100.0)	4487 (100.0)	2686 (100.0)

Source: 1960 Brazilian Census 1.27 percent subsample.

#### Area of Origin

The place the respondent lived before coming to his area of residence as of 1960 is classified as rural, urban, No Answer (born in same place).<sup>5</sup>

Given that blacks and mulattoes are more likely than whites to live in rural areas, it is reasonable to expect that rural origins should predominate among these

groups. Table IV.5 presents the classification of respondents' area of origin by their color. Two important points should be made about Table IV.5.

First, the proportion born in the same place in our sample can be seen as a general mobility index for each racial group. In this sense the black population seems to be the least mobile of the racial groups, with 51.4 percent of its members having been born in the same place they lived in 1960. Somewhat surprisingly, the most mobile group is the mulatto one, with only 43 percent of its members living in the same place where they were born.

Table IV.5. Area of Origin by Color, Rio de Janeiro, Brazil (1960).

Origin	Color		
	White (%)	Mulatto (%)	Black (%)
Rural	1021 (7.0)	490 (10.9)	336 (12.5)
Urban	6836 (46.5)	2066 (46.0)	970 (36.1)
NA (Born in same place)	6831 (46.5)	1931 (43.0)	1380 (51.4)
Total	14688 (100.0)	4487 (100.0)	2686 (100.0)

Source: 1960 Brazilian Census 1.27 percent subsample.

Second, as expected, whites have a higher proportion coming from urban areas than blacks and mulattoes. If we concentrate on the migrant group (i.e., ignoring those classified as No Answer (NA) on Table IV.5), we observe

that the proportion of blacks coming from urban areas is about 74 percent, while the corresponding figures for mulattoes and whites are 81 percent and 87 percent respectively. Thus these results seem to go in the expected direction, with higher proportions of urbanites among whites than among mulattoes and blacks. Again, these differences in background could possibly account for some of the racial differences in employment and income.

#### State of Origin

The 1960 Brazilian Census schedule includes a question on the state or country of residence before moving to the current place of residence. The original census categories are extremely detailed, including one code for each Brazilian state and federal territory (29 codes) and codes for 95 possible regions of origin. However, since we are basically interested in origin as an indicator of the skill or productivity of the respondent, it seems enough to group these areas according to level of socio-economic development. Thus, in the present study we are going to follow the classification proposed by G. Soares, who distinguishes two main Brazilian regions: the southeast (developed), and the rest of the country (underdeveloped) (Soares, 1973, p. 154). Foreign migrants were grouped into a single category.<sup>6</sup>

Table IV.6 presents the distribution of state or country of origin by color in the 1.27 percent sample. It

is important to note that a higher proportion of black migrants seem to come from developed areas than is the case for the mulatto population. Since Rio de Janeiro is included in the southeastern area and thus migrants coming from developed areas have less far to travel than those coming from underdeveloped areas, we expect a greater selectivity to be at work on the white and mulatto migrants than among black migrants. This is due to the well-known tendency of selectivity to be positively associated with physical and social distances. In other words, long distance migrants tend to be younger, better educated and more urbanized than short distance migrants. This could have a compensating effect in terms of the impact of area of origin on the dependent variables. This will be the subject of the analysis in later chapters of this study. For the present, it suffices to point out that the expected effect of area of origin on the dependent variables is somewhat ambiguous.

#### Time in Place of Residence

Another variable referring to migration status in the 1960 Brazilian Census is the question on how long the respondent has been living in his current place of residence. The original census categories were the following, in years: less than 1, 1, 2, 3, 4, 5, 6-10, 11 and more, NA (born in same place). For the purposes of this study

the variable has been recoded into the following categories:  
1 or less, 2-3, 4-5, 6-10, 11 or more, NA.

Table IV.6. State or Country of Origin by Color, Rio de Janeiro, Brazil (1960).

Origin	Color					
	White (%)		Mulatto (%)		Black (%)	
'Developed Brazil'	3602	(45.84)	1305	(51.06)	723	(55.36)
'Underdeveloped Brazil'	2822	(35.92)	1245	(48.71)	581	(44.49)
Foreign Country	1433	(18.24)	6	(0.24)	2	(0.15)
Total	7857	(100.0)	2556	(100.0)	1306	(100.0)

Source: 1960 Brazilian Census subsample.

Note: Only migrants are included.

As one can see in Table IV.7, mulattoes tend to be more recent migrants than both whites and blacks. Compatible with what has been said before, blacks tend to be less mobile and, when they are migrants, to be older migrants than mulattoes: 70 percent of black migrants had been living for 6 or more years in the place they lived in 1960, while the corresponding figures for the white and mulatto populations are 70.2 percent and 62.8 percent. So, while the difference between whites and blacks is small in this respect, the difference between these two groups and the mulatto group is substantial. Again, this

reinforces the idea that the effect of migration on the dependent variables is ambiguous, the higher selectivity in the mulatto population being probably compensated to some extent by the better background and longer experience of the white and black population.

Table IV.7. Time in Place by Color, Rio de Janeiro, Brazil (1960).

Time in Place (in years)	Color		
	White (%)	Mulatto (%)	Black (%)
0 - 1	893 (11.37)	398 (15.57)	165 (12.64)
2 - 3	788 (10.04)	308 (12.05)	116 (8.89)
4 - 5	661 (8.42)	246 (9.62)	103 (7.89)
6 - 10	1683 (21.42)	560 (21.91)	257 (19.68)
11+	3832 (48.77)	1044 (40.85)	663 (50.92)
Subtotal	7857 (100.0)	2556 (100.0)	1306 (100.0)
NA (Born in same place)	6831 (46.5)	1931 (43.0)	1380 (51.4)
Total	14688 (100.0)	4487 (100.0)	2686 (100.0)

Source: 1960 Brazilian Census 1.27 percent subsample.

#### Marital Status

This variable is usually used as an indicator of individual's commitment to work. In this interpretation it is supposed to affect his productivity, and hence his

employability and his income. This is the rationale used in the present study.

In the 1960 Brazilian Census four basic categories of marital status are distinguished: 1) Married--includes those married in a civil ceremony only, those married in religious ceremony only, those married in both types of ceremonies and those in consensual unions. 2) Single--those never married, as defined above. 3) Separated--those that have been married before and whose marriage has been broken by separation or divorce. 4) Widower--those that have been married before and whose marriage has been broken by the wife's death.

Following this classification, Table IV.8 presents the distribution of marital status by race. For blacks and mulattoes, 53 percent are married, 43 percent are single and 4 percent are separated or widowers. Only in the two last categories can one notice some difference between these two populations, since the black population seems to have a lower proportion of separated individuals than both the white and the mulatto populations (although blacks show a higher proportion of widowers, a possible indication of higher mortality rates; but this ignores the age distribution of each population). This is somewhat surprising, given the wide currency of the notion that the black family is particularly unstable.



Table IV.8. Marital Status by Color, Rio de Janeiro, Brazil (1960):

Marital Status	Color					
	White (%)		Mulatto (%)		Black (%)	
Married	8846	(60.23)	2395	(53.37)	1432	(53.31)
Single	5342	(36.37)	1910	(42.57)	1145	(42.63)
Separated	315	(2.16)	110	(2.45)	44	(1.64)
Widower (4)	185	(1.26)	72	(1.61)	65	(2.42)
Total	14688	(100.0)	4487	(100.0)	2686	(100.0)

Source: 1960 Brazilian Census 1.27 percent subsample.

There is a distinct (7 percent) difference between the white sample and the black and mulatto ones. Whites have a higher proportion of married members, and consequently a lower proportion of single individuals, than the rest of the population. Again, differences in the age distribution of each population could account for these differences, and a more detailed analysis would lead us to the examination of marital status differentials within each age group. However, for our purposes here it suffices to point out that the observed differences in marital status among the racial groups could make a contribution to the explanation of racial differences in income.

### Schooling

Together with Experience, Schooling is the basis for the so-called Human Capital theories of income distribution. It is usually supposed to be in this context a direct indicator of the individual's skills and productivity. Thus it is considered to be a central factor in the determination of his income.

In the 1960 Brazilian Census, Schooling was measured by two variables, one measuring the highest schooling cycle the individual attended (i.e., Elementary School, Junior High School, Senior High School and College), and the other measuring the highest grade attained within the cycle (for the purposes of this dissertation the information in these two variables was transformed into one variable measuring "years of schooling," a scale running from 0 (no schooling) to 17 (completed college)).<sup>7</sup>

Table IV.9 presents summary statistics for the relationship between schooling and color in the 1.27 percent subsample. Not only are the differences between the schooling averages for the black and mulatto populations relatively close to each other but also they are much smaller than that for the white population. The estimated average of years of schooling for the white population is more than twice that for the black population and almost twice as much the corresponding figure for the mulatto population. It should be noticed that exactly the same

Table IV.9. Schooling by Color, Summary Statistics, Rio de Janeiro, Brazil (1960).

Color	N	Mean	S.D. (Estim.)
Black	2686	2.037	2.197
Mulatto	4487	2.797	2.606
White	14688	4.850	3.942
Total	21861	4.083	3.698

<u>Source</u>	<u>Sum of Squares</u>	<u>d.f.</u>	<u>F Ratio</u>	<u><math>\eta^2</math></u>
Between	.273 ( $10^5$ )	2		
Within	.272 ( $10^6$ )	21858	1098.59	0.091
Total	.289 ( $10^6$ )	21860		

Source: 1960 Brazilian Census 1.27 percent subsample.

pattern was observed before, when we dealt with the income distribution by race.

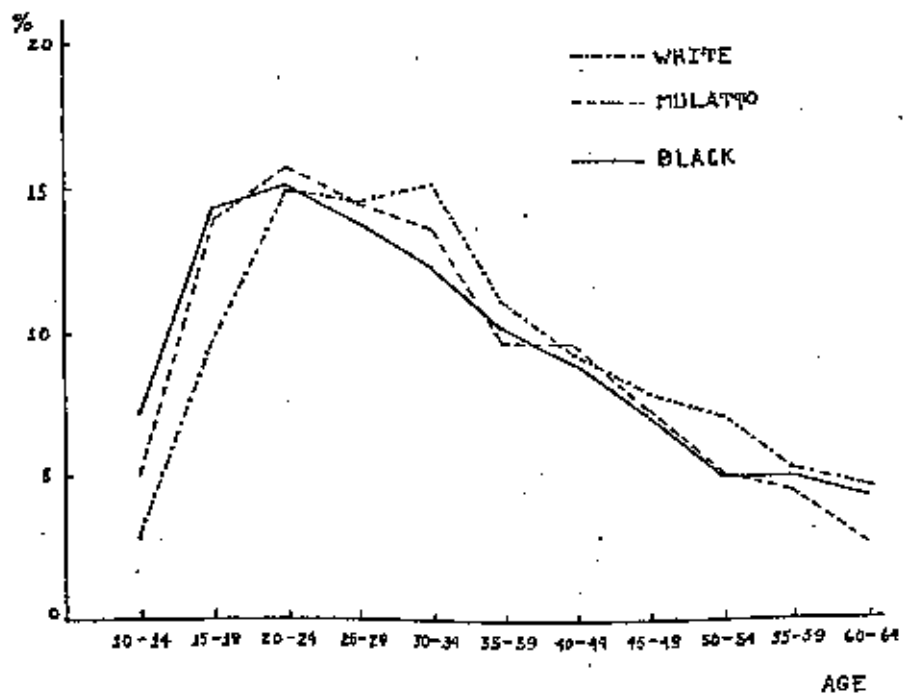
The analysis of variance summary at the bottom of Table IV.9 indicates that the observed differences in average years of schooling are very significant ( $\alpha < .001$ ). The data seem to support the assumption that schooling is a good indicator of one's performance in the labor market, possibly constituting the best single predictor of both one's probability of finding employment and one's income.

#### Age

This variable is traditionally used as a proxy for the individual's experience in the labor market. The 1960 Brazilian Census reports the respondent's age in years and our sample is restricted to those aged 10 to 64.

Figure IV.1 presents the estimated age profile of each color population from the 1.27 percent sample. The black and mulatto populations have similar age distributions, the black population showing a slightly larger proportion of older members, and the mulatto group appearing to have a larger proportion of young adults (20-35 years of age). With these small compensating differences both populations should have very similar averages, with the black population having a slightly higher mean age.

The age distribution of the white population is distinctly different. It is older. This is not surprising, given that we have subsampled individuals who had completed



Source: 1960 Brazilian Census 1.27 percent sub-sample.

Figure IV.1. Percent Distribution of Age by Color, Rio de Janeiro (1960).

their schooling by 1960. Since the white population has greater educational attainment, there will be relatively fewer whites in those age groups with still large numbers in school. In other words, the age distributions for the whole population of each color group should be about the same. However, it should be remembered that the age profiles examined here are for those currently in the labor market.

Table IV.10 presents summary statistics of the distribution of age by color group. As indicated above, blacks and mulattoes have similar mean ages (a difference of 0.43 years), with blacks having a slightly higher mean age; the white population seems to have a distinctly different pattern, with a significantly higher mean age (a difference of 2.32 years vis-à-vis the black population). The analysis of variance summary at the bottom of Table IV.11 shows that these differences are statistically significant at  $\alpha < .001$ .

A note on the use of age as a proxy for experience: as indicated before, the respondent's age is usually taken as an indicator of his experience in the labor market. More typically, in cases like ours, some transformation of this variable is made, usually involving subtraction of the number of years the respondent spent in school and some constant indicative of the normal age at entering school from respondent's age, that is, some transformation

Table IV.10. Age by Color, Summary Statistics, Rio de Janeiro, Brazil (1960).

Color	N	Mean	S.D. (Estim.)
Black	2686	32.101	13.627
Mulatto	4487	31.671	12.667
White	14688	34.420	13.002
Total	21861	33.571	13.070

<u>Source</u>	<u>Sum of Squares</u>	<u>d.f.</u>	<u>F Ratio</u>	<u><math>\eta^2</math></u>
Between	.326 ( $10^5$ )	2		
Within	.370 ( $10^7$ )	21858	96.16	0.009
Total	.373 ( $10^7$ )	21860		

Source: 1960 Brazilian Census 1.27 percent subtotal.

like:  $\text{Experience} = \text{Age} - (\text{age at entering school} + \text{years of schooling})$ . We shall do this in our analysis. Since both schooling and experience are always simultaneously used in our analysis, however, the operations delineated above are meant only to obtain a more naturally interpretable measuring unit for the experience variable.

Because age at entering school plus years of schooling do not perfectly represent the age of leaving school (sometimes people spend more than one year in a given grade), some attempts have been made to refine the measurement of age at leaving school. Probably the best known procedure is that proposed by Hanoch (1967) for the U.S.:

To estimate the average postcompletion ages, the age distribution of persons enrolled in school was computed for each level completed. The integral age closest to the mean, plus one year, was selected as the age of entrance to the labor market. These ages are as follows:

Years of School Completed:	0-4	5-7	8	9-11	12	13-15
	16	17+				
Age at first Yr. out of school:	10	14	16	18	20	23 26 28

(Hanoch, 1967, p. 317)

So, the data obtained by Hanoch suggests that there are some non-linearities in the relationship between years of school completed and age at first year out of school in the U.S. In this case, Hanoch's operational definition of experience may be more accurate for Brazil than the one discussed above.



Applying Hanoch's procedure, we find that years of school completed and age at first year out of school are almost perfectly linearly related. Regressing the second variable on Schooling we arrive at the following estimates

$$X_1 = 9.57 + 0.924X_2 \quad r^2 = .986$$

where  $X_1$  is the mean age at first year out of school and  $X_2$  is years of school completed. These results clearly indicate that for Brazil in 1960 it does not matter whether we use this more refined definition of experience or the simpler arithmetical operation involving schooling. In particular, it does not matter whether we use age or any linear combination of age and schooling as a definition of experience if both variables are used simultaneously.

#### Occupation

The 1960 Brazilian Census used a detailed occupational classification to record the occupations the respondents reported as most frequent in the 12 month period prior to the Census date.

Table IV.11 presents the distribution of occupation by color. The occupational classification used in this table is an aggregation by industry and level of skill and is ranked roughly according to the general standing of the occupations within each group. Thus, the first

Table IV.11. Occupation by Color, Rio de Janeiro, Brazil (1960).

Occupational Sector	Color					
	White (%)		Mulatto (%)		Black (%)	
Direction, Administration, Office Worker	2588	(19.47)	255	(6.38)	77	(3.30)
Professionals, Technicians	733	(5.51)	59	(1.48)	13	(0.56)
Commercial Activities	1201	(9.03)	218	(5.45)	89	(3.81)
Transportation and Communication	1144	(8.60)	341	(8.53)	199	(8.53)
Services	1276	(9.60)	388	(9.70)	172	(7.37)
Manufacture	1982	(14.91)	738	(18.45)	335	(14.35)
Construction	868	(6.53)	531	(13.28)	342	(14.65)
Agriculture, etc.	1969	(14.81)	874	(21.85)	672	(28.80)
Mining and Mineral Production	22	(0.17)	23	(0.58)	14	(0.60)
Occupations n.e.c.	1513	(11.38)	573	(14.33)	421	(18.04)
Subtotal	13296	(100.0)	4000	(100.0)	2334	(100.0)
Don't Know (% of total)	1392	(9.48)	487	(10.85)	352	(13.11)
Total	14688		4487		2686	

Source: 1960 Brazilian Census 1.27 percent subtotal.

occupational groups listed (direction, administration and office workers) includes proprietors, managers, other administrative positions and office workers. The last occupational group (occupations not elsewhere classified) refer to occupations not defined by the previous groups and typically is composed by what is usually called "casual labor," examples of occupations in this group being "garbage collectors" and "manual workers n.e.c."

As can be seen in Table IV.11, whites are more likely than mulattoes and blacks to be in higher status occupational groups. In particular, while the proportion of whites in administrative and technical occupations (the first two occupational groups) constitute an estimated 25 percent of the white population, the corresponding figures for the mulatto and black populations are 7.9 percent, respectively. On the other hand, the estimated proportion of whites in the Primary Sector (Agriculture and Mining and Mineral Production categories) is only about 15 percent, the corresponding figures for the mulatto and black populations being 22.4 percent and 29 percent, respectively.

Thus, there are substantial differences in occupational attainment between the racial groups. Whether these differences can be attributed to racial differentials in skills and productivity is one of the central concerns of the present investigation.

This completes the description of the variables to be used in the present investigation, and initial explanation of their relation to race. The following chapters control the associations among the predictors and estimate racial differentials in income.

Footnotes

<sup>1</sup>For a description of the sampling procedure followed for the selection of the subsample see the introduction of the referred "preliminary results" volume; IBGE-Service Nacional de Recenseamento (1965).

<sup>2</sup>This was the study by C. G. Langoni (1973). For a similar study, using a different data set for 1960, see Fishlow, A. (1972). None of these studies use race as a predictor or even consider it as possibly relevant for analysis.

<sup>3</sup>Cases with missing data in any dependent or explanatory variable have also been eliminated.

<sup>4</sup>These are probably the two best known underlying theories for the generation of positively skewed income distributions. The Pareto curve, sometimes called the Pareto-Levy law has the following formulation,

$$N(y) = \beta y^{-\alpha}$$

where  $N(y)$  is the number of incomes greater than  $y$ , and  $\alpha$  and  $\beta$  are constants ( $\alpha > 0$ ). Stating more formally the Pareto-Levy law, there is a "strong" Pareto law which is represented as

$$N(y) = \begin{cases} (y/y_0)^{-\alpha} & \text{when } y > y_0 \\ 1 & \text{when } y < y_0 \end{cases}$$

The restriction of the Pareto-Levy law to incomes exceeding lower limit  $y_0$  is well known now but does not correspond to the original formulation made by Pareto. Moreover, the strong Pareto law is not usually supposed to be strictly applicable, and thus a weak form of the Pareto law is proposed in which  $N(y)$  tends to  $(y/y_0)^{-\alpha}$  as  $y$  tends to infinity, i.e.,

$$\frac{N(y)}{(y/y_0)^{-\alpha}} \longrightarrow 1 \quad \text{as } y \longrightarrow \infty$$

It is well-known that for large incomes the weak Pareto law is applicable, yielding very good estimates. In particular, Levi showed that should be restricted to the open interval  $(1, 2)$  in order to assure that  $E(y) < \infty$ . For

a detailed discussion of the properties of the Pareto-Levy law see especially Benoit Mandelbrot (1960) and J. S. Cramer (1971).

The logarithmic form of the Pareto curve is

$$\log N(y) = \log \beta - \alpha \log y .$$

Applying this equation to incomes over Cr\$ 1500 (i.e., the third and second last rows in Table IV.3; this is the same procedure used by Fishlow, A. (op. cit., 1972) one arrives at the following estimates for the parameters

$$\log N(y) = 6.89(x10^9) - 1.462 \log y .$$

Thus the estimate for the midpoint in the last open interval based on its frequency is  $y \approx 128400$ .

Pareto's law is capable only of describing frequencies declining to the right of the distribution, and we need another procedure to estimate the first open interval midpoint. For this the most common procedure is, probably, to apply a log-normal distribution. Formally, the distribution function of a variable  $y$  that is normally distributed with parameters  $\mu$ ,  $\sigma^2$  is denoted

$$F(y) = \text{Prob}(y \leq Y) = N(\log y; \mu, \sigma^2) = N\left\{\frac{\log y - \mu}{\sigma}, 0, 1\right\}$$

where the last expression represents the standard normal distribution function

$$N(x; 0, 1) = \int_{-\infty}^x \frac{1}{\sqrt{2\pi}} e^{-1/2 t^2} dt$$

Under the assumption that the logarithm of income is normally distributed, one can use the observed cumulative percent distribution as an estimate of  $F(y)$  and thus estimate  $\log y$  for any given point. In particular we will be interested in estimating  $y$  for the first income class. (For an extensive discussion of the log-normal distribution and its use in the analysis of the distribution of income in the U.S. see Charles E. Metcalf (1972).) Applying this procedure to the data in Table IV.3 yields an estimate for the first interval midpoint of  $y \approx 705$ .

<sup>5</sup>The urban category includes both urban and village areas of origin, as defined before. The census schedule registers only whether the respondent lived before moving to the present area of residence in a rural area or not.

<sup>6</sup>The Southeastern region includes the following states: Rio de Janeiro, Guanabara, São Paulo, Paraná, Santa Catarina e Rio Grande do Sul. For a discussion of the classificatory criteria, see Soares, G. A. D., op. cit., Chapter VIII.

<sup>7</sup>In Brazil the length of each cycle, by 1960, was the following: Elementary School, 5 years; Junior High School, 4 years; Senior High School, 3 years; College, from 4 to 6 years, depending on the field.

<sup>8</sup>This follows the official census classification of major occupational groupings. See Fundação IBGE, Censo Demografico,Codigo Complementar (1960).

## CHAPTER V

### EDUCATIONAL ATTAINMENT

Before moving to the analysis of racial differentials in income, an important step is to examine the patterns of interrelationships among the explanatory variables. More specifically, in this chapter we will be concerned with the determination of the respondent's schooling level, since this variable is considered a central dimension in the achievement process. This chapter is thus devoted to the analysis of the interrelationships between the locational-mobility background variables, respondent's age, race and schooling.

We are using a model of the life cycle with three basic stages: family and locational background, schooling and occupational attainment. Incidentally, this model is similar to those used in the studies of socioeconomic achievement (see, e.g., Blau and Duncan, 1967; Duncan, Featherman and Duncan, 1972). The main difference between our model and those found in the studies of socioeconomic achievement is the absence in our model of measures of parental socioeconomic background. Due to the inexistence of these variables in our data, our main



concern here will be simply to describe how the given exogenous variables are related to schooling rather than to construct a complete model of educational attainment.

In summary, the analysis of the patterns of inter-relationships among the predictors will follow a general causal structure corresponding to the diagram depicted in Figure V.1.

#### Locational-Background Variables and Schooling

For the data analysis that follows, the locational-background variables were recoded having in mind more useful substantive definitions. Thus, while Residence was kept in its original definition (i.e., urban, village and rural categories), Area of Origin was recoded to become "Urban Background." More specifically, those coded as NA on this last question, that is, those born in the same place they were living at the time of the Census, were recoded to have the same value on this variable as on the Place of Residence variable (i.e., an urban/rural dichotomy, those living in villages being coded as urban). The variables State or Country of Origin and Time in Place were coded as presented in Tables IV.7 and IV.8. The purpose of these recodes is to translate location and migration into their more theoretically meaningful dimensions: area of residence, type (urban or rural) of background, time in current place or residence and specific area of origin. These variables should reflect

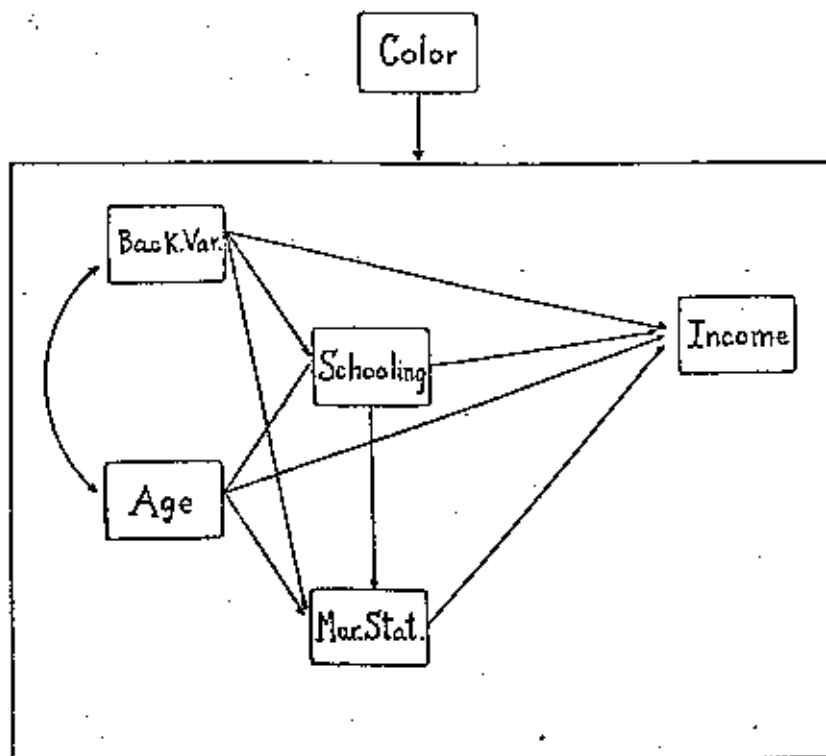


Figure V.1. General Causal Structure for Analysis.

the individual's adaptation to the labor market where he is offering his work, thus translating the impact of location and migration on his chances in that market. These effects will be discussed in more detail later when we tackle the analysis of income differentials. For the analyses that follow these variables were transformed into dummy variables according to the usual coding scheme for variables of this kind.

We discuss next the effects of the variables just considered on schooling. This last variable not only plays a central role in Human Capital theories of income distribution but also has consistently found to be a key factor in the attainment process (see e.g., Blau and Duncan, 1967; Sewell and Hauser, 1972; Haller and Portes, 1973). This has led to a concern among sociologists for racial differences in educational attainment, with a recent trend towards incorporating the complete set of interpersonal and social psychological intervening variables that were already available for general models of the attainment process (as, e.g., in Sewell and Hauser, 1975). A particularly recent attempt has been made by Portes and Wilson (1976), in which the intervening variables linking parental background and mental ability to educational attainment included academic performance, significant others' influence, self-esteem and educational aspirations. Their conclusions, although still tentative, seem to indicate that for the U.S., when one properly

controls for parental background, mental ability and other intervening variables, the net effect of being black is actually positive on each of the variables included in the models describing the educational attainment process. In other works, these are strong indications that advantages of whites in educational attainment depend directly on their initial advantages in the exogenous variables, i.e., parental background and mental ability. This reinforces the conclusion of past studies (e.g., Jencks et al., 1973) that "blacks underattainment in education is not due to any discernible discrimination effect, but to initial and historically conditioned disadvantages in the exogenous determinants of the process" (Portes and Wilson, 1976, p. 423).

These observations are important to have in mind in our case because, again, we are not describing the complete process of educational attainment but simply exposing the interrelationships among our predictors. Thus, the variable race will contain all the residual effects that are attributable to parental background, mental ability and other intervening variables normally included in the educational attainment models and, as such, cannot be interpreted as indication of any discriminatory effect present in the educational process. In this sense, different coefficients for the color groups will simply indicate differences in educational attainment net of the effects of the other variables included in the model.

With these reservations in mind, our task is then to examine the patterns of relationships between our locational-background variables and schooling. Table V.1 presents the values for mean educational attainment by color and background characteristics.

In the first panel of Table V.1 Schooling is related to Area of Residence. Clearly, there is a significant difference in average schooling between the three areas, the corresponding figures for village and urban residents being approximately 3.3 years and 5 years respectively. In other words, the estimated schooling averages for village areas is more than twice the value for rural areas and the corresponding ratio for urban areas is almost 3.5.

Adding Color and the interactions between Color and Area of Residence we get a substantial fraction of explained variance, these factors alone accounting for about 23 percent of the variance in years of schooling. Although the larger effects seem still to be those associated with the variable Area of Residence, we can see that race has both significant main and interactive effects. Thus, while whites have an estimated average of 1.76 years of schooling in rural areas, those living in urban areas have a corresponding figure of 5.64 years of schooling, more than a three-fold difference. On the other hand, while blacks in rural areas have an estimated average of 0.85 years of schooling, blacks living in

Table V.1. Mean Educational Attainment by Color and Background Characteristics  
Rio de Janeiro, Brazil (1960).

Background Variables	Color			$\eta^2$
	White	Mulatto	Black	
Residence				
Rural	1.7552	1.1498	0.851	0.227
Village	3.8549	2.468	2.256	
Urban	5.6423	3.5141	2.7252	
Background				
Rural	2.407	1.517	1.142	0.194
Urban	5.567	3.385	2.680	
Area of Origin				
Underdeveloped	5.209	2.966	2.429	0.094
Developed	4.768	2.729	1.928	
Foreign	4.744	4.500	2.500	
Time in Place				
Time: 0, 1	4.521	2.573	2.170	0.033
Time: 2, 3	4.467	2.656	2.676	
Time: 4, 5	4.525	2.756	1.913	
Time: 6-10	4.712	2.791	2.237	
Time: 11+	4.948	2.847	1.994	

Source: 1960 Brazilian Census 1.27 percent subsample.

urban areas have an estimated average of 2.73 years of schooling, again more than a three-fold difference. In fact, rural/urban differentials seem to be quite stable across the color groups, urban areas showing averages about three times those in the rural areas. So, the same is true for differentials inside each area. However, there is one interaction which fails to show a significant coefficient, that for mulattoes living in village areas. Thus, the difference between blacks and mulattoes in village areas is quite small (2.26 for blacks vs. 2.47 for mulattoes), while both are clearly differentiated from whites (with an estimated average of 3.85 years of schooling). To a lower extent, this pattern seems also to be true for both rural and urban areas, the differences between the mulatto and black populations being relatively small when compared with the white population.

The same general pattern appears to be true for the urban background variable. The results for this variable are presented in the second panel of Table V.1.

First, the effect of having an urban background is to have an estimated 2.91 more years of schooling than those who were born in rural areas ( $\alpha < .001$ ). Thus, while those with rural background have an estimated average of 1.95 years of schooling, the corresponding figure for urbanites is 4.86.

Second, the addition of Color and its interactions results in a significant increase in the proportion of

explained variance. Within all color groups, however, the ratio urban/rural background in average schooling is approximately the same, urbanites having a more than twice (about 2.3 times as much) the amount of schooling shown by those with rural origin.

As to the differences between the races, the pattern observed before seems to emerge again. Although the differences between the mulatto and black populations seem to be significant (all the coefficients involving the mulatto seem to be significant at  $\alpha < .05$ ), these differences are quite small when compared to the estimated values for the white population. So, while in rural areas blacks have an estimated average of 1.14 years of schooling, the corresponding value for mulattoes and whites are 1.52 and 2.41 respectively. In urban areas the estimated value for blacks, mulattoes and whites are 2.68, 3.38 and 5.57 respectively. Clearly, while the black/mulatto differences are relatively small, we can see a very substantial gap between the two groups and the white one.

Panel three presents mean educational attainment by Area of Origin and color. One important point to notice is that this variable does not help much to the explanation of differences in Schooling, a fact more clearly shown by a relatively small fraction of the explained variance (about 5.7 percent).



Now, since we already know from Chapter IV that there are significant racial differences in both spatial distribution of the population and in the composition of migration stream (e.g., that blacks are less mobile and tend to be short distance migrants, while foreigners and those coming from underdeveloped areas are in larger proportions white), it is not surprising to see that race adds significantly to the explanation of schooling. Moreover, when one introduces this variable plus its interactions with area of origins, the observed main effects for this last variable change substantially. In particular, the effect of foreign origin for all practical purposes vanishes, apparently being absorbed in the white color main effect. (This should be expected since virtually all foreign migrants are white.) Another interesting fact to be noticed is the actual increase of the negative coefficient for developed area origin after one controls for color composition of the migration streams.

None of the interaction terms appear to be significant, an indication that we have only two additive effects: those of color and those of developed versus underdeveloped origin (or better, natives and short distance migrants versus long distance migrants). Again, the main effect for Mulatto color, although significant (at  $\alpha < .005$ ), is quite small when compared with the coefficient for whites, reinforcing the idea of the essentiality of a white/nonwhite dichotomy.

With "Time Living in Current Location" the situation is very similar. Panel 4 shows that this variable is weakly (although significantly) related to schooling. However, the effects have the "correct" sign and behavior, that is, they are positive and increase with time in current location.

When color and its interaction terms are introduced very important changes occur. First, the fraction of the explained variance increases significantly. Second, all the effects of time in place are changed and become erratic for black groups, none of them being significant at any conventional level.

Here, once again the same recurrent pattern emerges: whites are clearly differentiated from both blacks and mulattoes, these two last groups showing a quite clear similarity.

In summary, two of the locational-background variables appear to be substantially associated with schooling, area of residence and urban/rural background. These variables could be considered as broadly indicating locational advantages in the socialization process. The variables more closely related to migratory status, i.e., "Area of Origin" and "Time Living in the Current Location" are more weakly related to schooling, their pattern of relationship to this last variable being drastically changed with the introduction of color and the respective interaction terms in the equation.

Our next step, then, is to move further in the general analytical structure depicted in Figure V.1, introducing Age as predictor in our analysis.

### Age and Schooling

The relationship between Age and Schooling is more complex than those previously examined because Age, being a time dependent variable, subsumes several different component factors, each possibly having a separate effect on the schooling process. These are the well known age, period and cohort factors that are built-in to a variable such as Respondent's Age. In particular, two main processes seem to be at work in the shaping of the relationship between age and schooling. First, both variables represent time consuming processes, and thus, during the whole time period in which the schooling process occurs we necessarily observe a positive relationship between age and schooling. Up to the end of the normal schooling process, that is, when the individuals reach their mid-twenties, the older the individual the more educated he probably will be. However, because not all individuals proceed year by year in this process, a certain proportion dropping out of school at each moment during the process, the relationship between these two variables is not a linear one, the increments in average of schooling declining as age goes up, until a certain plateau is reached, indicating the end of the schooling process.

If no other effect were operative in the relationship, one should expect that average schooling would stabilize in an asymptotic plateau after the age at completion of the schooling process is reached. However, another factor seems to be at work: the fact that average schooling in general has been increasing over time, a consequence of society's overall social and economic development. As a result, after reaching the age at completion of schooling, we notice a slight trend toward a decline in schooling as age goes up.<sup>1</sup>

The general curve described is then of parabolic type, as indicated by Figure V.2. This figure shows the observed relationship between average schooling and age, for each color group.

A functional form that seems suitable for describing the relationship between age and schooling is the parabola

$$\text{schooling} = b_0 + b_1\text{Age} + b_2\text{Age}^2 \quad (1)$$

where the  $b$ 's are as constants and  $b_1 > 0$  and  $b_2 < 0$ .

However, as can be inferred from a visual inspection of Figure V.2, there seem to be substantial racial differences in the schooling functions. In particular, it seems that whites are sharply differentiated from non-whites in terms of both regression constant and coefficients, while blacks and mulattoes seem to have very much similar coefficients, although they possibly differ

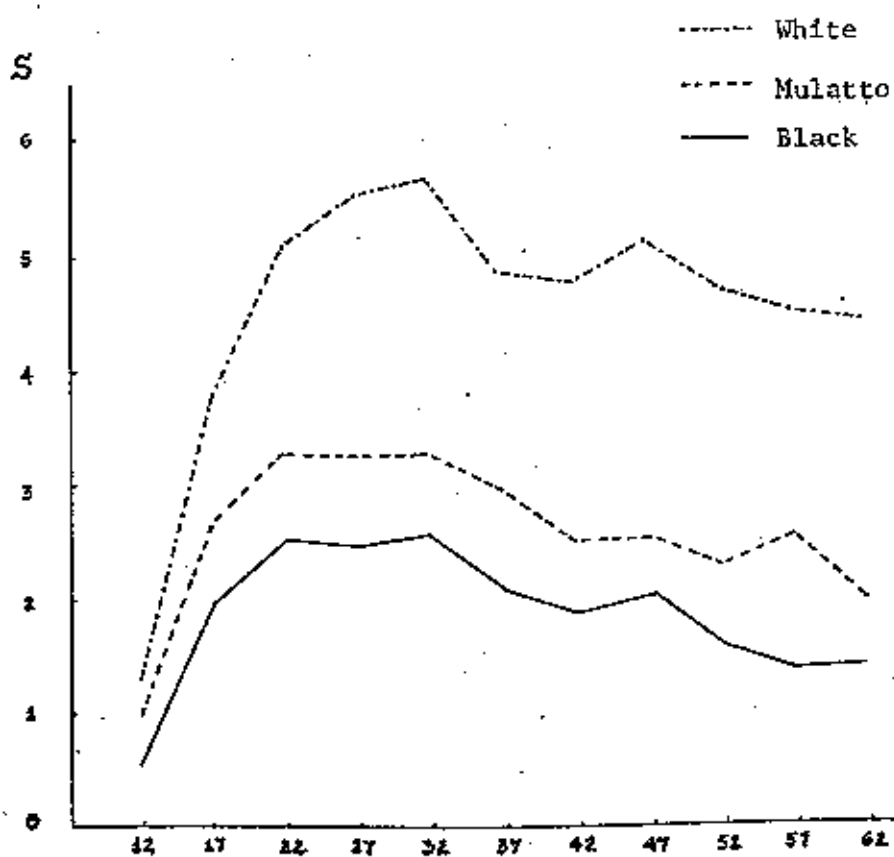


Figure V.2. Age Distribution of Schooling by Color.

as to the regression constant. In other words, color seems to also have interactive effects with age in the determination of schooling.

Now, having examined individually the relationships between every exogenous variable and schooling we can now turn to the analysis of their joint determination of the schooling variable.

#### The Joint Determination of Schooling

In the previous sections we identified important interactions between the locational and background variables and race. Having uncovered significant interactive effects, the usual procedure is then to move directly to the estimation of the complete model within each population (racial) subgroup, thus allowing the predictors to freely interact with the control variable. But before we do this, it will be useful to examine the joint relationship between the predictors and schooling for the population as a whole, establishing the general pattern of joint determination of schooling.

The last column in Table V.2 presents the results for a multiple regression analysis of schooling with all the predictors simultaneously included. The fitted model has the form

$$\begin{aligned} \text{Schooling} = & b_0 + \sum_{i=1}^2 b_i R_i + b_3 B + \sum_{j=1}^4 b_{3+j} T_j + \sum_{k=1}^2 b_{7+k} O_k \\ & + b_{10} \text{Age} + b_{11} \text{Age}^2 \end{aligned} \quad (2)$$

Table V.2. Regression of Years of Schooling in Background Variables and Age by Color.

Effects	Color			All Groups
	White	Mulatto	Black	
Constant	1.581	1.700	0.454	1.483
Residence				
Rural	-2.303	-1.266	-0.839	-1.920
Village	-0.528	-0.067	0.498	-0.345
Urban	0.577	0.531	0.459	0.614
Background				
Rural	-1.043	-0.639	-0.454	-0.988
Urban	0.308	0.293	0.326	0.362
Time				
0, 1	-0.395	-0.444	-0.010	-0.429
2, 3	-0.694	-0.426	-0.204	-0.623
4, 5	-0.626	-0.258	-0.329	-0.539
6-10	-0.524	-0.351	-0.236	-0.530
11+	0.206	0.175	0.058	0.297
Origin				
Under-				
developed	0.090	-0.106	.046	-0.123
developed	0.039	.039	-.066	0.063
Foreign	-0.600	1.218	-0.66	0.063
Age	0.174	0.093	0.088	0.156
Age <sup>2</sup>	-0.002	-.002	-0.001	-0.002
R <sup>2</sup>		0.255		0.188

where the  $b$ 's are constants,  $R$ 's represent the "Place of Residence" dummy variables,  $B$  represents the "Urban Background" variable,  $T$ 's represent the "Time in Current Place of Residence" variables and the  $O$ 's are the dummy variables for "State of Country of Origin."

The model as a whole has a very significant fit ( $\alpha < .01$ ), with a fraction of explained variance around 19 percent. Moreover, all the variables appear to be working in the expected direction.

The coefficients for the "Place of Residence" variables are very significant, their positive sign indicating that both urban and village residents, *ceteris paribus*, have substantially higher educational attainment than rural residents. In particular, urban residents have significantly more schooling than both village and rural residents.

In fact, to be born in an urban environment gives one a clear advantage in terms of educational attainment, with an average of about 1.4 more years of schooling than those born in non-urban areas. Again, this difference is very significant ( $\alpha < .01$ ).

The relationship between time in current resident and schooling, controlling for the effect of the other variables, seem to go in the expected direction i.e., with migrants with less schooling than natives, this difference



decreasing with the increase of time in current residence. However, it should be noticed that the coefficients for time less than 10 years are not significant (at any conventional level), indicating that there is a rather sharp differentiation between long time migrants and natives on the one hand and recent migrants on the other, the first group having a significantly higher schooling average than the second group.

To come from a developed or foreign area also means to have higher schooling levels, other things being constant. Both coefficients for origin in developed areas ( $\alpha < .01$ ) and in foreign countries ( $.01 < \alpha < .05$ ) are positive and significant, although both are relatively small. Finally, both, coefficients for the Age terms are very significant.

To allow full interaction between the predictors and Race the same procedure used before, i.e., to introduce in the equation dummy variables representing the main and interactive effects of Race, was employed. The results of this analysis are presented in columns 1 to 3 of Table V.2.

The first thing to observe in that the introduction of the main and interactive effects of race brings about a substantial increase in explanatory power, the fraction of explained variance increasing from 18.8 to 25.5 percent.

Another important aspect relative to Table V.2 is that while both main effect and several interactive effects for color white are significant at  $\alpha < .01$ , neither the main effect nor the interactions for mulattoes are significant (at  $\alpha < .01$ ). In fact, one can observe that in general when one variable appears to be significantly related to schooling so is its interaction with white color. Again, this is a clear indication that while blacks and mulattoes have very similar profiles in terms of the patterns of interrelationships among the variables operative in the attainment process, whites are rather sharply differentiated from non-whites in this respect.

Several variables failed to present significant coefficients relating them to schooling. In particular, neither "Time in Current Place of Residence" nor "State or Country of Origin" appear to affect significantly schooling within any racial group (at  $\alpha < .01$ ). In fact, only "Place of Residence," "Urban Background" and Age seem to significantly affect schooling, the corresponding interactions with white color, as has already been said, also presenting significant coefficients.

These white-nonwhite differences in parameters appear not only in terms of size of the parameters but also in the direction implied in the relationship between schooling and its predictors. More specifically, these differences in direction implied by the coefficients within the racial groups are particularly noteworthy in respect

to the variable "Place of Residence." Thus, while within the white group urban residents show higher educational attainment than village residents, those in turn showing higher attainment than rural residents, for blacks and mulattoes, however, when the effect of other variables are controlled for, urban residents still appear to have higher educational attainment than rural residents but village residents seem to have the highest educational attainment. Similar discrepancies can be observed in respect to other variables and to "Time in Current Place of Residence" in particular.

#### Final Remarks

The main purpose of this chapter has been to explore the level and patterns of interrelationships among the locational, background and age variables and how these variables affect the individual's educational attainment. Since we are basically concerned with racial differences in returns to education, it is important to explore the relationships between Schooling, Age and the other antecedent variables in order not only to assess the reliability of the estimates of the returns to education but also to have some grasp on the nature of the indirect effects of the "exogenous" variables on those returns.

We found three antecedent variables substantially affecting schooling: place of residence, urban background and age. All were positively and significantly related

to schooling, and thus part of their possible effect on earnings will be indirect, through the mediation of years of schooling. Both "Time in Current Place of Residence" and "State or Country of Origin" were found to have a small and insignificant effect on educational attainment.

Color was found to significantly affect one's schooling level, even after the effect of the exogenous variables were controlled for. In other words, differences between the races in the background characteristics used in this analysis, although helping to explain some of the differences by race in educational attainment, do not rule out the possibility that nonwhites are genuinely handicapped in the schooling process. However, as we pointed out, before, the absence of measurements for parental socioeconomic characteristics in our model indicates that strong reservations should be kept in mind in relation to this conclusion.

Throughout this chapter it has been emphasized that blacks and mulattoes had very similar profiles in terms of the coefficients of tested models. This points to the fact that, at least in regard to the schooling process, blacks and mulattoes are very much alike, while the same cannot be said about whites. Clearly, whites tend to be sharply differentiated from nonwhites, while the non-white group is relatively homogenous. In other words, this amounts to saying that, in terms of the schooling

process, the "color line" seems to be located between whites and nonwhites, and not between mulattoes and blacks, as it is sometimes believed to be.

Footnotes

<sup>1</sup>We are ignoring here differential mortality. If, following conventional demographic wisdom, mortality and education are inversely related, then one would expect in the absence of this cohort effect an actual increase in average schooling with age, since those surviving would tend to be those better educated. Thus, the increase of schooling over time is likely to be greater than that suggested by the observed rate of decline of schooling after the school completion ages.

## CHAPTER VI

### MARITAL STATUS

Before we move to the analysis of racial differentials in income, we should examine the set of interrelationships involving marital status.

This last variable is usually considered a good indicator of the individual's commitment to work, thus having an effect on both his job stability and productivity. The rationale behind these hypotheses is that married people, because they have a dependent family, are more seriously committed to work and thus are more reliable and productive. The fact that the individual is married or not is taken to be a very good predictor of his performance in the labor market, in this way affecting not only his chances for finding employment but also his monetary returns from work.<sup>1</sup> It is important, then, to include this variable in our model of economic attainment, allowing us to control eventual racial differences in nuptiality patterns. In section one of this chapter we will examine age patterns of nuptiality present in our data, paying particular attention to racial differences in these patterns. Section two will be devoted to the

relationship between locational-background variables, Schooling and Marital Status and an attempt will be made to formulate a general model including all the variables examined, and thus allowing the observation of the effects of each one of these variables holding constant the effects of others. In section three some statistical problems related to the estimation of this model will be discussed and an alternative procedure will be suggested. Finally, this procedure is applied and the results are evaluated.

#### Age Patterns of Nuptiality

There is a growing consensus among social scientists, in general, and among demographers in particular, that more attention should be paid to nuptiality patterns. This variable seems to play a central role not only on labor market performance but also in other areas of human behavior, another clearly important example being fertility.

Unfortunately, for Latin America in general and Brazil in particular, not much is known about nuptiality patterns in the area and its structural-cultural determinants.<sup>2</sup> Our previous research on Brazilian nuptiality patterns, however, has yielded some observations on the age patterns of marriage in that country that we hope will illuminate some aspects of the present analysis.

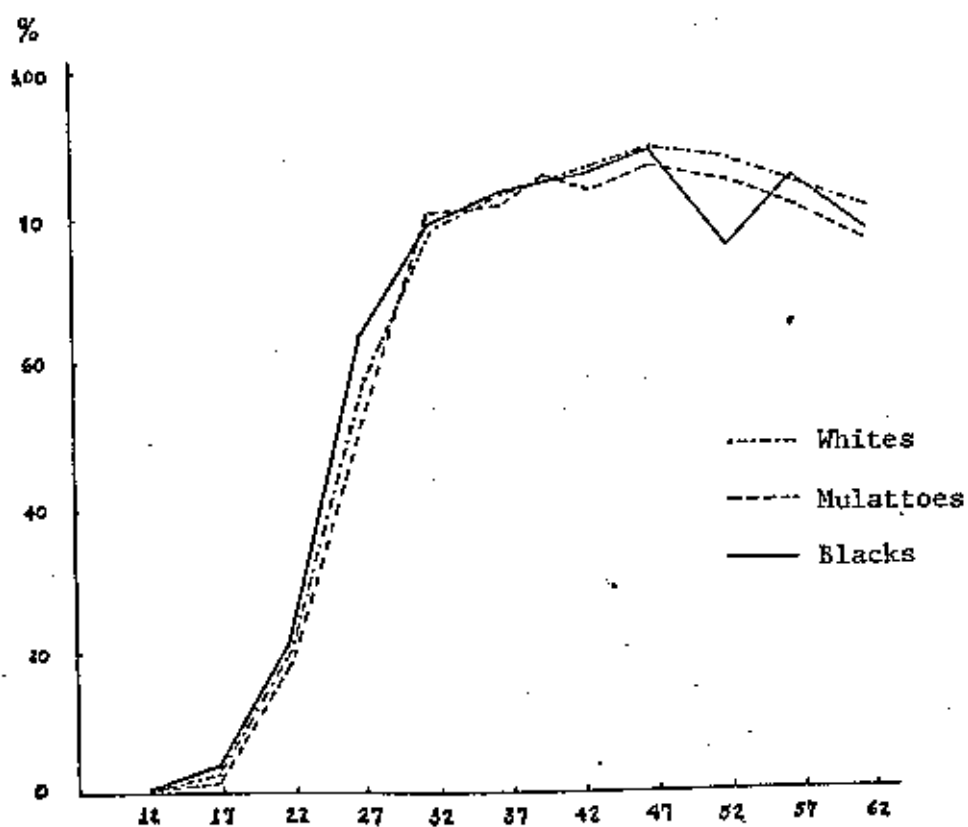
Brazilian nuptiality can be characterized as following the "European" pattern, sharply in contrast with



that of the rest of the world, the "traditional" pattern of early and universal marriage (see Hajnal, 1965; Dixon, 1971). This is specially true for large urbanized areas as is the case for the Rio de Janeiro region. Calculations of the (singulate) mean age at marriage<sup>3</sup> for males in the city of Rio indicated values around 27.5 years for 1960 and 27.7 years for 1970.<sup>4</sup>

Another important point suggested by previous research is that these nuptiality patterns seem to have been quite stable over the last 40 years or so and that inter-state variations (in 1970) in the mean age at marriage appear to be solely a function of factors indicating the "feasibility" of marriage, such as per capita income, percent urban, unemployment rate and so on (Silva, 1977, pp. 15-18). These observations will be used later on when we tackle the analysis of the interrelationships between the other predictors and marital status. For now it suffices to point out that nuptiality patterns in Brazil seem to be quite stable over time, making the interpretation of age-marriage data more straightforward.<sup>5</sup>

The calculations of the (singulate) mean age at marriage for the three racial groups in our sample yielded the following estimates: 26.5 years for whites, 26.2 for the mulatto population and 24.29 for blacks. The age-marital status profile for each sub-population is presented in Figure VI.1.



Source: 1960 Brazilian Census 1.27 percent subsample.

Figure VI.1. Proportions Ever Married by Age and Color, Males, Rio de Janeiro (1960).

Clearly, although all racial groups show similar age-marriage profiles, the black population appears to have a distinctly younger mean age at marriage.<sup>6</sup> Another important point to see on Figure VI.1 is that the age-marriage patterns indicate a nonlinear relationship between the two variables. In fact, the nonlinearity of the age patterns of marriage is a well established fact<sup>7</sup> and in our case a parabolic curve should provide a good fit. The functional form could be

$$\Pr(Y = 1) = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Age}^2 \quad (1)$$

where the dependent variable is a dichotomy with values 0 for single and 1 for ever-married individuals. The  $\beta$ 's are constants such that equation states that the probability of being ever married is a non-linear (parabolic) function of Age. The second-degree specification is a recognition of the fact that, paradoxically, the measured proportions ever married tend to decline after a certain age threshold. This is also a well studied phenomenon, and sometimes is called "the return to the single status." The current explanation for this demographic oddity is that there is a tendency for respondents who had been involved in consensual unions which had for some reason terminated to describe themselves as never-married.<sup>8</sup>

And this leads us to another important observation to be made about Figure VI.1: the fact that in our data

there is probably a substantial proportion of males never-marrying (i.e., the proportion single after 50 years of age), never less than 12 percent. Although such a figure could be credible for Western European countries (Dixon, 1971, p. 221), its credibility for a country like Brazil, in a cultural area with reportedly large incidence of consensual unions (Mortara, 1961), is undoubtedly problematical. However, unless there are large differences in marriage patterns between those engaged in consensual unions and those in regular marriages, the shape of the age-marriage curves should not be significantly changed nor should racial differences in marriage patterns be substantially altered.

#### Other Explanatory Variables

In this section we will explore the relationships between our other explanatory variables and nuptiality patterns, in the sense of how they possibly affect the respondent's probabilities of being married.<sup>9</sup>

But first a general comment. Because marriage is an almost universal phenomenon, we should not expect that variables other than Age would affect substantially one's chances of getting married. The fact is that sooner or later almost everybody gets involved in some sort of stable union. Commenting on Brazilian nuptiality patterns,

we observed that "the timing of marriage seems to be most closely associated with the economic conditions facilitating marriage; the amount of marriage is most closely associated with the availability of mates; and the desirability of marriage as measured by our indicators appears not to be related to either timing or quantity. Thus unfeasibility of marriage only postpones marriage, which takes place at the earliest feasible date, constrained only by the availability of mates" (Silva, 1977, p. 16). In other words, in terms of expectations for analysis this amounts to saying that we should expect some of the explanatory variables not to show significant relationships with marriage when their effects are controlled for the effects of the other variables. In particular, the associations between some of these variables and Age observed in the previous chapter should contribute substantially for this expected loss of significance.

Table VI.1 shows the proportions ever-married within each racial group classified according to each explanatory variable to be used in this section. No result of significance tests for differences between these proportions will be presented because, given the very large amount of cases used in the computation of the proportions shown, virtually all differences are significant, regardless of how small they are. Thus, instead of talking about

Table VI.1. Proportions Ever Married by Several Variables and Color, Rio de Janeiro, Brazil (1960).

Variable	Color		
	White	Mullato	Black
Place			
Rural	.550	.484	.506
Village	.648	.532	.603
Urban	.612	.554	.543
Background			
Rural	.558	.495	.511
Urban	.615	.552	.549
Time			
0,1	.460	.435	.430
2,3	.543	.516	.578
4,5	.545	.512	.544
6-10	.598	.602	.603
11+	.623	.538	.530
Origin			
Underdeveloped	.609	.589	.599
Developed	.601	.512	.515
Schooling			
0	.545	.522	.511
1	.543	.536	.488
2	.563	.530	.570
3	.611	.568	.562
4	.618	.571	.560
5	.644	.523	.563
6	.538	.381	.625
7	.575	.456	.300
8	.575	.387	.467
9	.468	.536	.345
11	.597	.441	.455
14	.765	.545	1.000
17	.763	.706	.500
Total	.602	.534	.533

"significant" or "non-significant" differences, we will be talking only about "large" or "small" differences.

Urban and village populations tend to have higher proportions married than rural population. This difference is particularly marked within the white population, although the same pattern can be observed for all racial groups. Another noteworthy feature of the relationship between place of residence and marriage is the very substantial difference in the proportions ever married between village and urban populations within the black group. Blacks living in village areas show a markedly higher proportion of married individuals than those living in urban areas. However, one should have in mind that, as we observed in the previous chapter, the black village population, for some reason, has a very high mean age, and thus this difference in age profiles could ultimately explain this difference in marriage rates.

In fact, if we use what we already know about locational and background differences in age profiles to predict the direction of differences in marriage rates we would be quite well off. We know, for instance, that respondents with urban background tend to be older, regardless of color, than those with rural background. Thus, we should predict that urbanites would present higher proportions married than people with rural origin, and this should be the case for the three racial groups. Not

surprisingly, a cursory look at the second panel of Table VI.1 confirms the prediction.

Likewise, the expected patterns for "time in Place" and "State or Country of Origin" are generally confirmed. Proportions ever married tend to increase with time in current place of residence as well as they tend to be higher among long distance migrants, that is, those coming from underdeveloped areas of Brazil. Thus, in summary, we should expect that the control for differences in age distribution can probably result in nonsignificant effects of these locational background variables on one's probability of ever being married.

The situation in regard to Schooling is more complex. One could say that schooling has two contradictory effects on marriage rates, the direction of the resulting total effect depending on which individual effect is stronger. On the one hand, schooling postpones marriage and opens to individuals alternative life-styles (this argument is particularly applicable to women, for whom education sometimes poses the difficult choice between a family and a career), thus resulting in a depressive effect on marriage rates. On the other hand, higher education means better economic prospects and thus represents an added stimulus to build a family. The result of these contradictory tendencies depends on which one prevails, if the result is not plainly ambiguous. Examination of the lower panel of



Table VI.1 indicates that the effect of Schooling on the proportion ever marrying is largely undetermined, if anything we can notice a slight tendency of highly educated people to have higher proportions married, particularly within the white group. However, again, we should have in mind that more educated people tend to be older and thus even this mildly positive association can possibly be spurious.

#### Fitting on Logistic Response Model

In this section we proceed with the maximum likelihood estimation of a Logistic Response model<sup>10</sup> for our sample data (see Feinberg, 1977). More specifically the model to be estimated can be noted as

$$\log\left(\frac{\theta_i}{1-\theta_i}\right) = \bar{\theta} + \sum_{j=1}^3 \beta_{1j} R_j + \sum_{j=1}^2 \beta_{2j} B_j + \sum_{j=1}^5 \beta_{3j} T_j + \sum_{j=1}^2 \beta_{4j} O_j + \beta_5 \text{Schooling} + \beta_6 \text{Age} + \beta_7 \text{Age}^2 \quad (2)$$

and subject to the constraints

$$\sum_{j=1}^3 \beta_{1j} p_j^R = \sum_{j=1}^2 \beta_{2j} p_j^B = \sum_{j=1}^5 \beta_{3j} p_j^T = \sum_{j=1}^2 \beta_{4j} p_j^O = 0$$

where  $\bar{\theta}$  is the overall sample proportion (for Age = Schooling = 0), R, B, T and O are dummy variables representing the effects of "Place of Residence," "Urban Background," "Time in Current Place of Residence" and "State

or Country of Origin," respectively. The  $\beta$ 's are regression coefficients and the  $p_j$ 's are the sample proportions of cases in each category of each independent variable ( $\sum_{j=1}^m p_j^x = 1$ ). Notice that in model 2 above, as indicated by the constraints, the effects of the categorical variables are measured in terms of deviations from the grand mean, as in Multiple Classification Analysis, rather than in the more usual "dummy variable" multiple regression framework.<sup>11</sup>

Table VI.2 presents the results of the fit of the logistic response model in equation 2 to our sample data. Table VI.2 presents the results for each color group; within each color group the first column presents the maximum likelihood parameter estimates for the effects of unit increments in the independent variables in the percentage difference in the odds of being married. The second column within each group presents the ratio of the coefficients to their standard errors. Assuming simple random sampling these ratios have asymptotic standard normal distributions under the null hypothesis that their respective coefficients are zero. Below the first column within each color group is a measure noted as " $R^2$ ." This is a goodness of fit analogous to the coefficient of determination in normal-theory regression analysis, defined as the ratio of predictive error to total predictive error. The third column for each color group presents a chi-squared

Table VI.2. Logistic Regression Coefficients of Locational-Background Variables, Age, Schooling on Marital Status by Color, Rio de Janeiro, Brazil (1960).

	Whites			Mulattoes			Blacks		
	$\hat{\beta}$	$\hat{\beta}/s.e.(\hat{\beta})$	$\chi^2(d.f.)$	$\hat{\beta}$	$\hat{\beta}/s.e.(\hat{\beta})$	$\chi^2(d.f.)$	$\hat{\beta}$	$\hat{\beta}/s.e.(\hat{\beta})$	$\chi^2(d.f.)$
Constant	-11.41	-51.00		-12.11	-28.84		-11.57	-22.68	
Place of Residence			28.28 (2)			5.05 (2)			5.73 (2)
Rural	.3027	4.38		-.1986	-2.23		.2348	2.38	
Village	-.3809	-3.60		-.0229	-0.14		.0575	0.25	
Urban	-.0941	-5.17		.0846	2.11		-.1451	-2.34	
Background			0.47 (1)			4.92 (1)			0.00 (1)
Rural	-.0414	-0.69		.1794	2.22		-.0006	-0.01	
Urban	-.0121	-0.69		-.0823	-2.22		-.0004	0.01	
Time in Place			0.97 (4)			9.83 (4)			6.36 (4)
T: 0-1	.0623	0.69		.1132	0.85		.1280	0.61	
T: 2-3	.1232	1.36		.1007	0.68		-.3684	-1.54	
T: 4-5	-.0758	-0.78		.1059	0.64		.1140	0.44	
T: 6-10	-.1257	-2.08		.1450	1.32		-.2884	-1.73	
T: 11+	-.0102	-0.72		-.0616	-1.94		-.0732	-2.34	
State of Origin			0.22 (1)			0.19 (1)			0.27 (1)
Underdeveloped	-.0218	-0.46		-.0305	-0.43		-.0541	-0.52	
Developed	-.0052	-0.46		.0118	0.43		.0149	0.52	
Schooling									
Age	.0142	2.31		-.0202	-1.21		.0247	0.95	
Age <sup>2</sup>	-.5918	-49.09		.6447	27.74		.6085	21.75	
Age <sup>3</sup>	-.0063	-42.68		-.0071	-24.24		-.0067	-19.09	
"R" <sup>2</sup>	.277		6921.4 (11)	.316		2455.05 (11)	.321		1490.65 (11)

statistic testing the significance of the contribution of each variable to the increase in the ratio of predictive error to total predictive error, and this again is analogous to the F-ratio test for the increase in the fraction of explained variance brought about by the introduction of a new variable in the equation which has been described in the previous chapters.<sup>12</sup>

The regressions account for about 30 percent of  $\pi_y$ , varying from a high of 32.1 percent for the black group to a low of 27.7 percent for the white group. All represent a very significant improvement from the null hypothesis that the probability of being married is constant, as indicated by the very substantial  $X^2$  (11) statistics accompanying the reported estimates of "R<sup>2</sup>."

Age is strongly significant for all racial groups ( $\alpha < .01$ ), the age-marriage profile for mulattoes being slightly steeper than for the other groups. This is an indication of a relatively younger nuptiality pattern, though the racial differences in this respect are small.

The most noteworthy feature to be observed in Table VI.2 is the clear presence of race interactions with some of the variables. In general, the variables fail to show any significant effect on the odds for being married; the chi-squared values for most variables are not significant at any conventional levels. This is true for all variables within the black racial group, indicating that for this group only Age seems to affect the odds for being married.

For the mulatto group, though, one can observe that urban/rural background seems to affect one's chances of being married, although the coefficients are barely significant ( $.05 > \alpha > .01$ ). For this group, to have urban background seems to negatively affect one's odds for being married, individuals with rural background showing substantially larger proportions of married individuals.

The interactions of race with the independent variables appear clearly when one compares white groups to the other racial groups. In this respect, whites are strongly differentiated from nonwhites. For the former group, not only Schooling seems to have a positive effect on the odds for being married but, more importantly, one can observe a very significant impact of "Place of Residence" on the dependent variable. The  $X^2$  (2) statistic is seen from Table VI.2 to be 28.28 for whites, which is significant at any conventional level. The estimated values for the regression coefficients for this variable indicates a very large rural/urban differential in the proportions married, other things being equal, rural (and village) areas showing a very substantially higher odds ratio for being married.

#### Summary and Conclusions

In summary, the additive model for the effect of locational-background variables, Schooling and Age on log odds in favor of being married, full interaction with

race being allowed, fits well our sample data. This model decreases by about 30 percent the prediction error involved and age appears to be the most important predictor for all racial groups.

Significant interactions between race and some of the independent variables were found. In particular, whites seem to be rather sharply differentiated from nonwhites, in the former group being significant the effects of Schooling and Place of Residence. For the nonwhite group no other variable besides Age appear to significantly affect the log odds for being married, with the possible exception of the barely significant effect of urban background within the mulatto group. In other words, the present analysis seems to reinforce the observation made in the previous chapters that, in terms of the patterns of interrelationships between our independent variables, the "color-line" separates whites from nonwhites, mulattoes and blacks presenting similar patterns.

The effect of both schooling and urban residence on marriage patterns can be interpreted as an indication of the 'feasibility' of marriage, as we discussed earlier. In other words, because schooling is positively related to one's parental socioeconomic position and to one's prospects for employment and success in the labor market, it is usually supposed that higher levels of schooling, other

things being constant, are conducive to higher chances of getting married. Likewise, urban life is thought to difficult family formation (e.g., through housing and working opportunities constraints), and as such is supposed to negatively affect one's chances of getting married. Both effects were observed for the white group, but seem not to exist for the nonwhite groups, for which neither schooling nor urban residence appear to significantly affect one's odds for being married.

Footnotes

<sup>1</sup>The theoretical connections between marital status and income will be spelled out in more detail in the next chapter.

<sup>2</sup>Probably the first attempt to examine cross-cultural variations in the determinants of nuptiality is the work by Dixon (1971). However, Latin American countries are excluded from her analysis due to the particularly difficult problems presented by the widespread existence of consensual unions in the area. My attempt to remedy this situation in regard to Brazil (Silva, 1977), due to methodological considerations, concentrated on female nuptiality.

This is true also for other analyses of marriage patterns in Latin America, these being in general based on surveys of major metropolitan areas. In this context, see Yaukey and Thorsen (1972) and Yaukey, Thorsen and Onaka (1972).

<sup>3</sup>The singulate mean age at marriage is an estimated value for the mean age at marriage based on cross-sectional (census) data proposed by J. Hajnal in his famous 1953 paper (Hajnal, 1953). The statistic is calculated using the proportion single in successive age groups, assuming that the change in the proportion single between two consecutive age groups is a measure of the proportion of a birth cohort who married at that age. For a description of the calculation procedure for the singulate mean age at marriage see Shryock and Siegel (1971), pp. 295-296.

<sup>4</sup>The corresponding values for women are 23.8 years for 1-60 and 24.6 years for 1970. These values are based on the 1960 and 1970 Censuses returns for the (then) State of Guanabara. It should be noticed, though, that these values are somewhat inflated due to the effect of unaccounted consensual unions, i.e., people declaring themselves as single but in fact involved in some sort of free union. Another point to bear in mind is that these values refer to the city of Rio de Janeiro and not to the whole area presently under analysis (the state of Rio de Janeiro).

<sup>5</sup>This time-stability of nuptiality patterns by age can be seen as a good indicator of the absence of strong "cohort effect," and thus can be interpreted as indicating something like the typical experience of all birth cohorts.



<sup>6</sup>The estimated value for the black (singulate) mean age at marriage, i.e., 24-29 years certainly a downward biased estimate caused by the clearly aberrant proportion married 50-54 years of age in the sample. This affects the estimation of the proportion never-married at 50 used in the calculation of the singulate mean age at marriage. Using the proportion married at 55-59 years of age instead of the value for the 50-59 years group, we arrive at an estimate for the SMAM of 25.70 years, probably a much more accurate estimate of the black mean age at marriage.

<sup>7</sup>Trying to establish "model" age patterns of marriage, Coale observed that "the most puzzling feature of the common pattern of first-marriage frequencies is its very prevalence. We have seen evidence of the same basic curve of first marriages in cohorts that marry early and cohorts that marry late, in cohorts in which marriage is virtually universal, and in cohorts in which one quarter remain single. . . . However, the uniform age structure of nuptiality occurs in societies in which most marriages are arranged by families with little regard for the preference of bride and groom, and in societies in which marriages typically result from the selection of mutually preferred partners . . . . A little trial-and-error calculation showed that the standard risk of marriage (derived from Swedish data, 1965-1969) is very closely fitted indeed by the double exponential curve,  $r_s(x) = 0.174 e^{-4.411x} e^{-0.309x}$ ." (Coale, 1971, pp. 203-204).

<sup>8</sup>See especially Mortara (1961) and Arretx (1971) for a discussion of the methodological problems posed by this "return to the single status" for the study of nuptiality patterns.

<sup>9</sup>The usual concern in demographic research is on how certain variables affect the age at marriage, i.e., it is usually centered on interaction between these variables and age in the explanation of marriage. Here we will explore only one of such interactions, namely that between race and age, because of time and particularly, funding limitations imposed by the rather expensive analytical procedures employed (as will be discussed later).

<sup>10</sup>For a discussion of the adequacy of such a formulation and the problems involved in the usual OLS estimation see Hanushek and Jackson, 1977, pp. 183-187. It

should be noticed, however, that quite frequently inspite of serious problems of estimation the researcher chooses to use OLS, estimating models like equation 1. The reasons are various, in particular the much lower computational costs. One example of research in which the simpler OLS procedure applied directly to binary data was preferred is Bowen and Finegan's "The Economics of Labor Forde Participation" (Bowen and Finegan, 1969), probably the best known study of labor supply in the U.S.

<sup>11</sup>The conversion of one framework to the other is rather straightforward. See for instance, Andrew et al., (1973), pp. 45-53.

<sup>12</sup>An overall measure of the accuracy of prediction in a logistic model (cf. Dumouchel, 1976) is the geometric means of the predicted values based on sample of size n is

$$\hat{\pi} = (\pi \hat{\theta}_i)^{1/n}$$

The prediction error is then

$$\hat{\pi}_e = 1 - \hat{\pi} = 1 - (\pi \hat{\theta}_i)^{1/n}$$

Now computing  $\hat{\pi}$  under the null hypothesis that all  $\beta$ 's are zero, i.e., that  $\hat{\theta}_i = \bar{\theta}$  for every case  $Y_i = 1$  and  $\hat{\theta}_i = 1 - \bar{\theta}$  for every case  $Y_i = 0$

$$\pi_y = \theta^{\bar{\theta}} (1 - \theta)^{1-\bar{\theta}}$$

and then

$$"R^2" = \frac{\hat{\pi}_y - \hat{\pi}_e}{\hat{\pi}_y}$$

is analogous to the multiple  $R^2$  is normal-theory regression. The likelihood ratio test for the significance of the logistic regression consists of a comparison of the quantity

$$2n \log (1 - \hat{\pi}_e) / (1 - \hat{\pi}_y) = X_{REGR}^2$$

to a chi-squared distribution with  $m-1$  degrees of freedom, where  $m$  is the number of parameters estimated.

Now, this statistic meaning the "percent of predictive error explained" leads to the possibility of comparing two hierarchical models, differing by the inclusion of certain parameters in one of them: suppose that model 2 has  $\beta = (\beta_1, \beta_2)$  with  $m_1$  and  $m_2$  degrees of freedom ( $m = m_1 + m_2$ ) and that in model 1  $\beta_2 = 0$ . The estimated covariance matrix of  $\hat{\beta} H^{-1}(\hat{\beta})$  can be partitioned to give

$$H^{-1} = \begin{pmatrix} c_{11} & c_{12} \\ c_{21} & c_{22} \end{pmatrix}$$

Comparing  $\hat{\beta}_2 c_{22}^{-1} \hat{\beta}_2$  to a chi-squared distribution with  $m_2$  degrees of freedom is an asymptotically efficient test of  $\beta_2 = 0$  (cf. DuMouchel, 1976, pp. 6-10). This is the statistic reported in the third column within each color group.

## CHAPTER VII

### RACIAL DIFFERENCES IN INCOME ATTAINMENT

In this chapter we analyze racial differences in income and for this we need to specify an adequate earnings function. In the next section we will develop the rationale behind the selection of each explanatory variable and then we will move toward the estimation of the racial differences in income.

#### Locational-Background Variables

The basic reason for the inclusion of a locational variable in an earnings function is the need to control for spatial differences in cost-of-living and in general levels of income. Urban areas are usually associated with higher cost-of-living and higher levels of income than rural areas; the same, but to a lesser extent, is also true of village areas. As we saw before (Chapter III), there are significant differences in the spatial distribution of the races, whites being more "urbanized" than mulattoes and blacks, mulattoes having higher proportions of village residents and blacks predominating in rural areas. Thus, the omission of a control for these spatial

differences in the distribution of the races could introduce a bias in our estimation of racial differences in income. More specifically, we could be attributing to discrimination a portion of the differences in income that could be explained by the fact that color groups tend to live in areas with different general levels of income. For instance, the fact that blacks have higher proportions living in rural areas, with its associated relative low income, and that whites tend to live in the higher income urban areas could at least partly account, other things being equal, for the difference of income between these two color groups. Thus, the inclusion of locational variables, in particular, one measuring the rural-urban dimension, is a very important element in the specification of an adequate earnings function.

Another consequence of the observed differences in the spatial distribution of the races is the effect of migration on incomes. Economists have traditionally regarded migration as investment, in the sense that it involves some costs (both monetary and psychic) of moving and usually some benefits, in particular higher incomes, better housing, more educational opportunities, and so on (see e.g., Sjaastad, 1962). One of the well known empirical regularities in the migration phenomenon is that people tend to move from "poorer" to "richer" areas, bringing with them some of the characteristics of these areas.

Although, as we pointed out before, migration tends to be selective, e.g., migrants tend to be "better" in selected characteristics such as education, age, etc., vis-à-vis those in the origin area, they still tend to have a more deficient background than those in the destination area, at least in the short run, while they are still adapting to their new situation. In particular, people with rural background or coming from an underdeveloped area, because they were socialized in culturally poorer areas, they should find their adaptation to urban environments more difficult than someone coming from another urban area. Also, because a process of adaptation to new environment is always involved during migration, time is probably an important dimension in this latter process. The consequence of these observations is that differences in background and the time the individual has lived in the current place of residence should be important factors in the explanation of differences in income. In particular, one should expect these variables to play a significant role in accounting for racial differences in income attainment,<sup>1</sup> since as we have seen in Chapter III, there are substantial racial differences in this respect. We observed that whites have substantially higher proportions of migrants coming from urban areas than both the mulatto and black groups, mulattoes having also a higher proportion of urbanites than blacks; we saw also that mulattoes

tend to be more recent migrants than both whites and blacks. Furthermore, we noticed that, because selectivity is probably also present, the effect of migration on our dependent variables is somewhat ambiguous. However, because in the case of differences in income we are also controlling (later in the analysis) for differences in the key selectivity traits, i.e., age and education, we should not expect this compensating effect of selectivity to be at work in our data. In other words, when we introduce other variables in our analysis, we will be controlling for the main differences in migration selectivity and thus its compensatory effects should be negligible.

In Table VIII.1 we have the results of separate regressions of Income on each locational-background variables, within each color group. For each group, the regression coefficients are reported as well as the coefficient of determination.

The first panel reports the results for the regressions of areas of residence on income. Clearly, for all these groups, this is a very significant predictor. Alone, this variable accounts for more than 4 percent of the variance of income in the white group, 7.6 percent of the variance in the mulatto group and a full 13 percent in the black group. Another important point is that, although the coefficients seem to have the "right" direction (i.e., urban incomes higher than village incomes and

Table VII.1. Regressions of Income of Locational-Background Variables by Color (Dependent Variable: Average Monthly Income, 1960).

Variable	Color		
	White	Mulatto	Black
<u>Area of Residence</u>			
Constant	12876.21	7448.31	6288.50
Rural	-7483.60	-2998.47	-2358.10
Urban	1780.41	1185.76	1289.18
Village	-3581.44	-337.21	763.72
R <sup>2</sup>	0.044	0.076	0.133
<u>Background</u>			
Constant	12876.21	7448.31	6288.50
Rural	-6031.79	-2552.12	-1872.60
Urban	1603.39	1088.56	1318.01
R <sup>2</sup>	0.034	0.065	0.111
<u>Time in Place</u>			
Constant	12876.21	7448.31	6288.50
Time: 0, 1	-3455.31	-1325.23	-1364.10
Time: 2, 3	-1470.00	-323.40	827.06
Time: 4, 5	-1457.69	532.74	736.82
Time: 6-10	331.35	981.37	1025.55
Time: 11+	446.35	-294.63	-108.71
R <sup>2</sup>	0.004	0.007	0.013
<u>Origin</u>			
Constant	12876.21	7448.31	6288.50
Underdeveloped	1044.64	968.69	1031.60
Developed	-741.43	-409.99	-307.77
Foreign	3024.98	2426.69	1711.49
R <sup>2</sup>	0.005	0.009	0.014

Source: 1960 Brazilian Census 1.27 percent subsample.



these, in turn higher than rural incomes), there seem to exist substantial interactions of area of residence and color. In particular, it should be noticed that very large differences in income among the areas of residence within the white group. White urban residents appear to have almost three times as much income as white rural residents, while the corresponding figures for both mulattoes and blacks are about 1.9 times. However, differences in other variables, such as education and age could at least partially account for these differences.

Urban background also appears to be very significantly related to income within all racial groups. Its explanatory power varies from 3.4 percent of the variance in the white group to 11.1 percent in the black group. The coefficients also appear to have the expected sign, indicating higher incomes for those with an urban upbringing than for those born in rural areas. Again, this difference is very substantial (more than twice) within the white group, while both the difference (less than twice) and the magnitude are similar for mulattoes and blacks.

As to "time in current place of residence" (third panel) the situation seems to be more complex. In the first place, it does not seem to be substantially related to income in any of the racial groups. The highest determination coefficient obtained was 1.3 percent of the

variance for the black group; for the white group it is only 0.4 percent of the variance. On the other hand, while in the white group this variable presents a coherent pattern, that is, the coefficients increase in magnitude as the time implicit in the variables increases, no such a pattern emerges in the nonwhite groups. In these groups, long time migrants and natives (time: 11+) appear to actually have lower incomes than more recent migrants, some of the differences being quite substantial.

State or country of origin seems also to be weakly related to income, accounting for at most 1.4 percent of the variance (within the black group). Another noteworthy aspect of the relationship between area of origin and income is the fact that those coming from developing areas, surprisingly, do seem to have significantly lower incomes than those coming from underdeveloped and foreign areas. As we suggested before, this probably reflects the higher selectivity among migrants and is associated with the fact that Rio de Janeiro is located in the developed area of Brazil, and those coming from underdeveloped and foreign regions are probably longer distance migrants, a group that usually shows higher selectivity. If this explanation is true, then when one controls for key selectivity characteristics, age and education in particular, these coefficients should be at least drastically reduced, eventually becoming nonsignificant.

One important aspect of the relationship between area of origin and income is that, because of the very small number of nonwhite foreign migrants, the coefficients for Foreign Origin within both mulatto and black groups is not significant at any conventional level. However, this same coefficient appears to be very significant within the white group, indicating a substantially higher income for those coming from foreign countries than for Brazilian born individuals. However, it should be recalled that foreigners are on average much older than natives (cf. Chapter III) and thus this income difference can possibly disappear when we introduce the control for age or even time in current place of residence.

Table VII.2. Regression of Income on Marital Status by Color (Dependent Variable: Average Monthly Income, 1960).

Variable	Color		
	White	Mulatto	Black
<u>Marital Status</u>			
Constant	12876.21	7448.31	6288.50
Single	-4038.50	1425.61	-1355.10
Married	2129.20	948.65	891.23
$R^2$	0.031	0.032	0.054

Source: 1960 Brazilian Census 1.27 percent subsample.

Marital Status

Marital Status is a traditional measure for "work commitment." As such, it is supposed to affect one's productivity and thus is considered as major factor in the determination of income. Labor market economists have for long observed its importance as a predictor of labor market participation and there are abundant empirical evidence supporting these propositions.

The theoretical links between marital status and income are not, though, clearly apparent. Empirical evidence suggests that married status is closely linked to job stability, that is, to one's a priori probabilities of remaining in a given job during a certain time period (Bowen and Finegan, 1969). However, how marital status affects income is less clear, basically because it is impossible to tell if its effects are due to job stability itself or to real differences in productivity. In the first case, it could merely reflect discriminatory actions on the part of employers, willing to pay a bonus to those workers they assume will benefit them with a more reliable labor supply.<sup>2</sup> At any rate, reflecting employer's discriminatory actions or real differences in productivity, to be married is normally associated to higher income attainments.

Empirically, our data indicates that these hypotheses are largely supported. As the results in Table VII.2

suggest, being married corresponds to a substantial increment to one's income, particularly if one is white. For the white group, the income of married individuals is in average almost 70 percent larger than the corresponding figure for singles. Within the mulatto and black groups, the corresponding proportions are about 40 percent and 45 percent, respectively. For all groups, these represent very significant differences ( $\alpha < .001$ ).

#### Schooling and Experience

We have seen in Chapter II that Schooling plays a central role in all the theories advanced for the explanation of racial differences. Within the Human Capital framework, Schooling is taken as indicating a worker's real or potential productivity, and coupled with a worker's length of labor force experience, they constitute the major dimensions of a worker's "human capital," through which wage differences are explained. Differences in earnings are essentially explained by individual differences in accumulated human capital stock, Schooling being a privileged variable in this analytical framework. On the other hand, job-competition models of the labor market, emphasize on-the-job or experience as prime determinant of worker's productivity, and hence his wages. Schooling from this perspective, primarily reflects a worker's "trainability," that is, his potential for learning in an on-the job-training program. Schooling

would merely determine one's relative position in the labor queue.

Thus, according to both job-competition models of labor market and the neoclassical models (such as the one underlying the Human Capital approach), higher levels of schooling would basically affect earnings by providing the individual with access to higher-paying occupations, given his relative privileged position in the labor queue. However, following the job-competition framework, there should be no relationship between one's schooling and one's earnings within occupational titles. This is in sharp contrast to Human Capital theory, in which schooling is taken as determining a worker's productivity and as such individual differences in schooling, other things being constant, should generate individual differences in earnings.<sup>3</sup> Now, clearly differences in length of labor market experience are undoubtedly connected to differences in earning through the obvious connection of changes in worker's productivity. All economic theories of wage determination emphasize this fact (Becker, 1964; Mincer, 1974; Doeringer and Piore, 1971; Gordon, 1972). Unfortunately the Brazilian Census gathers no information on worker's experience nor any other detail on his training, and thus we are unable to use a direct measure for this important variable. In situations like this a proxy using the information on age and schooling is used. More

specifically, if one assumes a sufficiently continuous work experience after one leaves school, then a convenient measure of experience on the labor market could be

$$\text{Experience} = \text{Age} - \text{Schooling} - c$$

where  $c$  is a constant measuring the average (or "normal") age at entrance in the schooling process. We will use this definition of "experience" because it provides us with a more interpretable measure of this variable (compared with other common alternatives, like using Age as direct proxy for experience), six being the value assumed for the constant  $c$ . The resulting variable has the distribution (by color) shown in Table VII.3. The major feature to be noticed on this table is the significantly more experienced black population, with more than one year of experience, in average, than both white and mulatto populations. This difference seems to be derived from the higher proportions of individuals in the very last experience groups within the black population, in particular in those including individuals with more than 45 years of experience.

In order to adequately specify a function relating earnings to experience, the average of income for each experience group shown in Table VII.3 was calculated. The results are presented in Figure VII.1. Clearly, the relationship between experience and income appears to be

Table VII.3. Distribution of Experience by Color, Rio de Janeiro, Brazil (1960) (Experience = Age - Schooling - 6).

Experience	Color					
	White (%)		Mulatto (%)		Black (%)	
0 - 4	464	(3.51)	83	(2.12)	23	(0.99)
5 - 9	1470	(11.10)	418	(10.69)	248	(10.67)
10 - 14	2011	(15.19)	622	(15.90)	325	(13.99)
15 - 19	1905	(14.39)	605	(15.47)	359	(15.45)
20 - 24	1702	(12.85)	539	(13.78)	305	(13.12)
25 - 29	1428	(10.79)	421	(10.76)	251	(10.80)
30 - 34	1254	(9.47)	408	(10.43)	236	(10.16)
35 - 39	1036	(7.83)	298	(7.62)	187	(8.05)
40 - 44	821	(6.20)	226	(5.78)	132	(5.68)
45 - 49	688	(5.05)	177	(4.56)	138	(5.94)
50 - 57	479	(3.62)	115	(2.94)	120	(5.16)
N	13238	(100.0)	3912	(100.0)	2324	(100.0)
Average Experience	23.66		23.53		25.03	



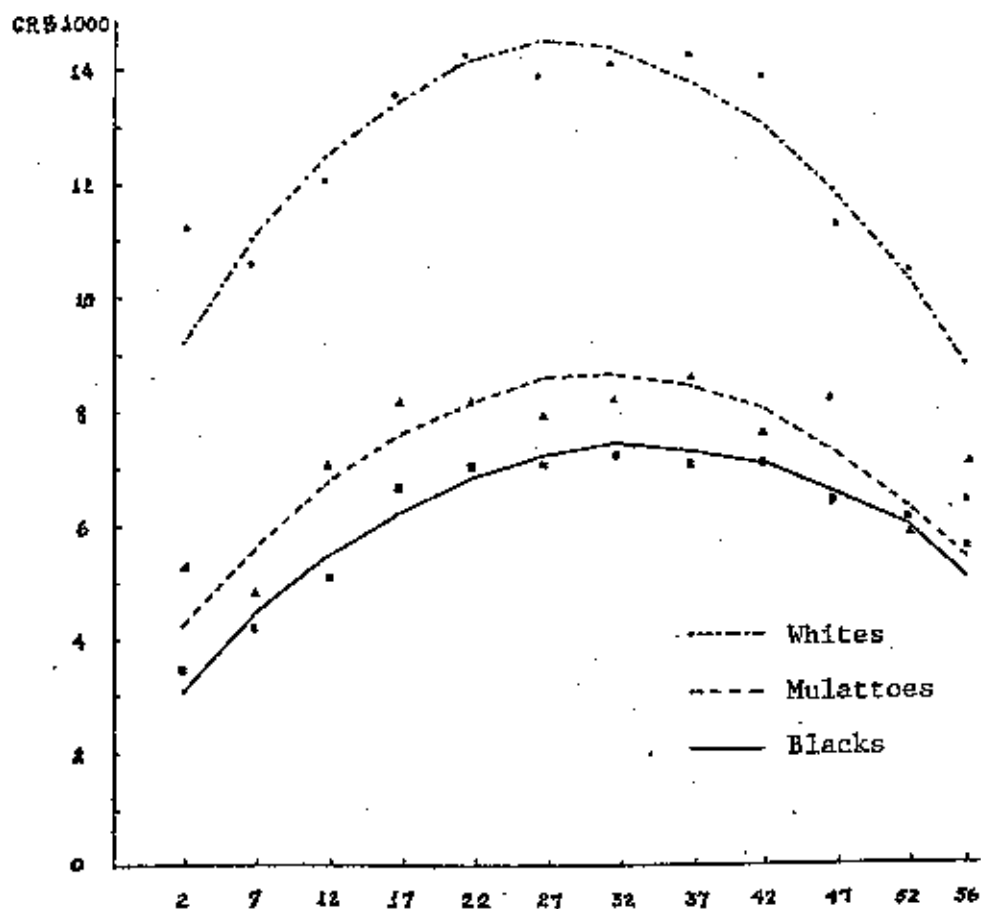


Figure VII.1. Average and Expected Income x Experience x Race, Males, 10-64 years, Rio de Janeiro (1960).

nonlinear. As can be readily seen in this figure, the "zero-order" returns to experience seem to describe a parabolic curve, attaining a peak around 20 years of experience, remaining stable for some time (from 15 to 30 years) and then declining. Blacks and mulattoes appear to have a less steep increase in income during their first years in the labor market, but on the other hand, their "stable earnings" period is longer and the decline afterwards is less steep than is the case for whites. The analysis of these experience-earning profiles suggests that an adequate analytical representation of this relationship is a second-degree polynomial, that is, we could represent this relationship by an equation like

$$\text{Income} = \beta_0 + \beta_1 \text{ Experience} + \beta_2 \text{ Experience}^2 .$$

Fitting this equation to our data we get the results presented in Table VII.4. Although the explanatory power of experience seems to be relatively small (less of 1 percent of the variance of earnings is explained by this variable within the white group), the results of the regressions are significant for all racial groups. Also, as can be seen in Figure VII.1, the fitted equations seem to describe quite well the average earnings-experience profiles. Both first degree and quadratic terms appear to have significant coefficients ( $\alpha < .01$ ), the coefficients for the white group being substantially larger (in absolute value) than those for the nonwhite groups.

Table VII.4. Regression of Income on Experience by Color, Rio de Janeiro, Brazil (1960).

Variable	Color					
	White		Mulatto		Black	
	$\hat{\beta}$	$\beta/S.E.(\hat{\beta})$	$\hat{\beta}$	$\beta/S.E.(\hat{\beta})$	$\hat{\beta}$	$\beta/S.E.(\hat{\beta})$
Constant	8359.80		3543.00		2500.70	
Experience	420.39	9.574	323.22	9.662	292.22	9.603
Experience <sup>2</sup>	-7.40	9.246	-5.20	8.541	-4.38	8.350
R <sup>2</sup>	.007		.026		.045	
F-ratio (d.f.)	45.836(13235)		52.29(3909)		54.86(2321)	

Source: 1960 Brazilian Census 1.27 percent subsample.

The examination of earnings-schooling profiles also indicates a nonlinear relationship. The results of the regression of schooling, taken as a series of dummy variables representing the various schooling grades, on income for the three color groups is presented in Table VII.5, the corresponding adjusted averages are depicted in Figure VII.2. The importance of schooling as a determinant of economic attainment is immediately clear when one looks at those results. Educational attainment can explain 30 percent of the variance of income for whites, 21 percent for blacks and 17 percent for mulattoes, a clear indication that formal schooling is the major channel for mobility in Brazilian society. The relationship between formal education and income attainment appears to be predominantly nonlinear, suggesting an exponential-type of function.

But the most important feature of the results shown in Figure VII.2 is the striking similarity of the earnings-schooling profiles between the nonwhite groups. Clearly, these results indicate that average returns to formal education are almost identical for the two nonwhite groups and substantially lower than the average returns to schooling for the white group. Although these differences can be changed by the introduction of other variables in the equation, this pattern is so marked that these possible changes are not likely to be dramatic. White and nonwhite

Table VII.5. Regressions of Income on Schooling by Color.

Years of Schooling	Color		
	White	Mulatto	Black
Constant	12876.21	7448.31	6288.50
S = 0	-6998.50	-2374.11	-1749.10
S = 1	-6617.52	-1532.28	-1546.85
S = 2	-5853.64	-1551.19	-517.08
S = 3	-4451.26	107.84	804.49
S = 4	-2021.90	681.15	1258.07
S = 5	-753.20	2233.95	3281.96
S = 6	-1534.60	140.11	2954.34
S = 7	664.90	2603.59	3498.15
S = 8	1834.20	1843.34	3080.05
S = 9	2508.70	5264.19	6215.20
S = 11	6560.20	8393.99	10482.00
S = 14	32172.30	19338.10	18711.50
S = 17	34347.50	18801.70	18711.50
R <sup>2</sup>	0.300	0.168	0.209

Source: 1960 Brazilian Census 1.27 percent subsample.

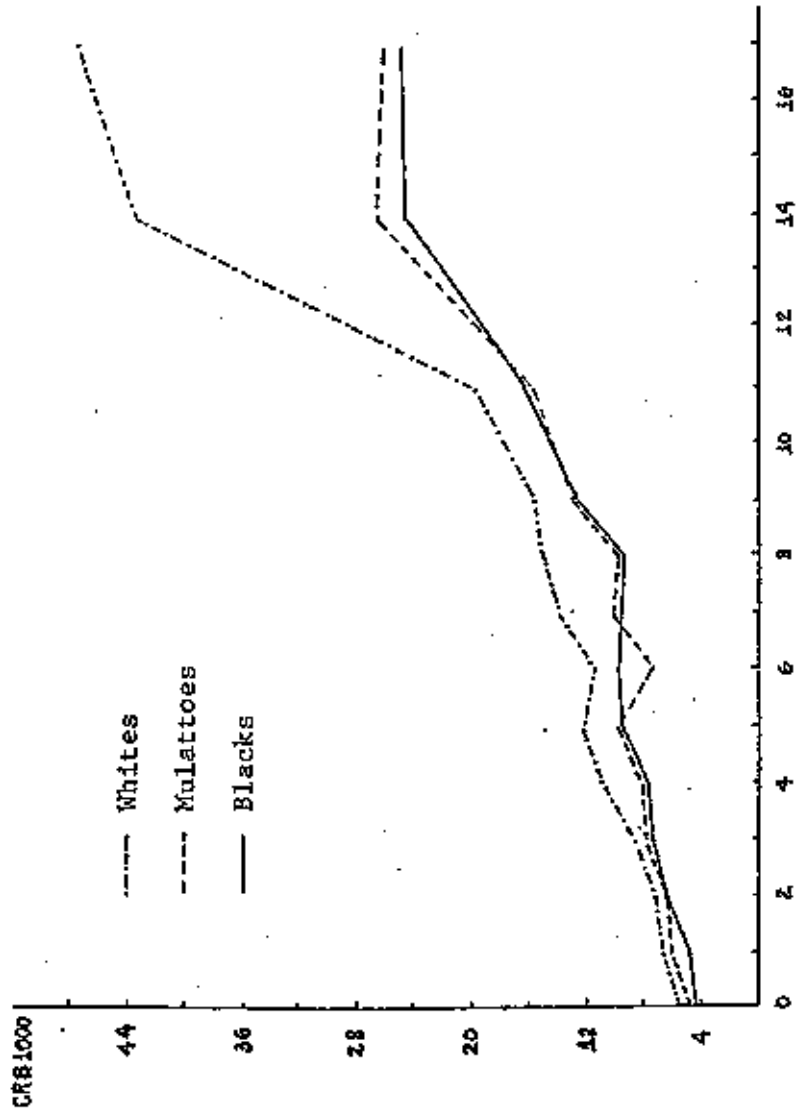


Figure VII.2. Average Income x Schooling x Race, Males, 10-64 years, Rio de Janeiro (1960).

earnings functions seems to have not only different intercepts favoring whites but also different slopes, the difference between the two groups apparently increasing with increases in schooling. A more detailed analysis of racial differences in returns to schooling will be presented after we introduce other variables in the earnings functions. For now, it suffices to point out that formal education seems to play a very central role in the process of economic attainment in Brazilian society and that large racial differentials in average returns to schooling are likely to emerge from our analysis, indicating the possible existence of discriminatory mechanisms in the labor market.

The Specification of an Earnings Function: A Note

The results of the previous sections seem to indicate that an adequate and convenient specification of an earnings function based on our data could be

$$Y = \beta_0 + \beta_1 E + \beta_2 E^2 + \sum_{i=3}^{14} \beta_i S_i + \sum_{i=15}^{24} \beta_i D_i$$

where  $Y$ ,  $E$ ,  $S$  represent "average monthly income," "length of labor market experience" and "years of schooling," respectively; the  $D_i$ 's are dummy variables representing the effect of locational-background variables and marital status; and the  $\beta$ 's are regression coefficients. The schooling variable is in a dummy-variable form, each

category representing one schooling grade, as before, in order to preserve the intrinsic linearity of the earnings function.<sup>4</sup>

Before going about fitting the model above to our data, some remarks should be made on some specification errors eventually involved in the proposed model. First, we are implicitly assuming that there are no differences in schooling for two individuals with the same amount of formal education. A common criticism of models using years of schooling as an indicator of "educational attainment" is the fact that they ignore differences in the "quality" of schooling. In this sense although two individuals may have the same amount of formal education as measured by their years of schooling, they still could differ as to the "quantity" of education they have. It is argued that because nonwhites are typically exposed to a lower quality education, the observed differences in returns to education could merely be a result of differences in their "quality" of education (Arrow, 1971; Welch, 1966, 1967). Now, although this effect can very possibly be present in our data, it could be argued that lower quality of education is in itself a handicap for the access to higher grades, and unless we have two parallel complete educational systems, one low-quality and the other high-quality, years of schooling will be positively correlated to quality of schooling. As Duncan observes,



"for one thing, inferior quality at any one level of the school system is likely to result in impaired chances as proceeding to the next level. Hence, school years completed has partly built into it a correlation with quality" (Duncan, 1969, p. 104). Thus, although we do not know the extent to which differences in quality of schooling affect income differentials, the arguments delineated above suggest that the bias introduced should be relatively minor.

Another latent problem with our specification is the possible bias introduced by the omission of "hours worked." Clearly, differences in income could be the result of differences in the averages of hours worked and, if the observations made by dual labor market theorists are correct, this could be an essential source of racial differences in income attainment. Because nonwhites are restricted to secondary sector jobs, they present a much more unstable pattern of labor market involvement and thus lower wages. In other words, because they are periodically unemployed or chronically underemployed, they have lower wages, this constituting the basic labor market mechanism generating racial differences in income. Now, it could undoubtedly be argued, as it really is within the dual labor market framework, that this mechanism represents the process of discrimination itself, and as such should be considered as discrimination and not as result of differences in voluntary involvement in the labor market.

In other words, because differences in hours worked are essentially mediated by the intervention of differences in occupational pursuits, those with smaller amounts of labor market participation being basically those involved in certain kinds of (secondary sector) occupations, this fact in itself is an aspect of discrimination that will be explicitly considered when we examine intra-occupational wage differentials. In this context, when occupation is held constant, it will be more reasonable to assume no racial differences in average hours worked, these differences being legitimately ascribed to differences in the relative access to occupations, one of the two types of discrimination that will be examined.

Another possibly important specification error can arise from the omission of other variables, particularly parental background and mental ability. As to the latter, as we saw in Chapter II, there is some empirical evidence for the U.S. that its effect is completely mediated by the intervening variables normally included in the attainment models (schooling in particular), with no discernible direct effect. As to the first variable, although other characteristics of parental background seem to have no direct effect on income, there is a considerable amount of evidence that average parental income is an important predictor of individual's income attainment (Sewell and Hauser, 1972). Thus, the omission of this variable could

possibly introduce a bias in our estimates of labor market discrimination. Two remarks should be made about this problem.

First, we are not here analyzing the process of status attainment, that is, the transmission of status from one generation to another. Rather, we are concerned with violations of the rules of distributive justice, and as such we are focusing our attention in the relationship between achieved statuses, between "investment" and "reward" status dimensions. Putting it differently, we will be concerned with the question whether two individuals having made the same investment, say schooling, receive the same return to this investment, independently of other non-investment variables. In other words, we will not want to deflate the coefficients for these investment variables by the introduction of other "non-investment" variables sharing a common variance with them. Thus we could ask whether it is legitimate to introduce, in this context, a variable representing parental background. This question is particularly crucial for the computation of the returns to schooling and thus we will concentrate our attention on the bias introduced on the computed effect of this variable.

The literature on status attainment indicates that one's schooling level is largely determined by one's parental background. Now, if we introduce parental

background in our earnings functions, because schooling is positively associated with parental background its estimated coefficient will be smaller than in the case in which parental background is omitted. However, because we are interested in testing the hypothesis that there are no racial differences in the returns to schooling, we will want our estimated effect of schooling not to be deflated by the fact that they eventually have differences in parental background. In other words, we are saying that if two individuals have the same schooling their returns to schooling, other investments being held constant, should be the same. So, we must ask, in what sense parental background can legitimately be considered an "investment"? Clearly, higher levels of parental background give the individual some advantages in the labor market, such as giving access to people capable of influencing employment and salary decisions. The inclusion of parental background (if available, naturally, which is not our case) seems to be justified, particularly if we are defining labor market discrimination as some sort of "residual" variance. However, if we are also interested in differences in returns to schooling, it could be argued, based on the discussion above, that parental background should be "residualized" for schooling, in which case, naturally, the estimated coefficients for schooling would be the same as in the case in which parental background is omitted.

In summary, while the omission of parental background can be important in the computation of discrimination defined as "residual" variance, it seems reasonable to argue that estimates of returns to schooling are essentially correct when parental background is omitted.

But, then, we must ask what effects has the omission of parental background on a measure of discrimination based on standardization, a "residual variance" method. As it will be argued later, the omission of parental background is likely to result in a lower estimate of total labor market discrimination than in the case in which parental background is included. If this is the case, then, the omission of parental background is not probably a serious problem for our analysis, particularly if we use simultaneously both "standardization" and "differences in return to schooling" measures of discrimination.

Finally, we should say a word about the functional form chosen. Although one could possibly obtain better fitting alternative functional forms, the one proposed, after some experimentation, proved to be the one best suited to our purpose, both in terms of clarity of results and in manageability for intra-occupational analysis.<sup>5</sup>

#### Fitting the Model

Having discussed some implications of the proposed earnings function, we can now proceed to examine the

results of the fit of such model to our data. These results are reported in Table VII.6.

In the preceding sections and chapters we have emphasized the similarity between blacks and mulattoes as to most of the relationships examined so far. In particular, even when one can find significant differences between these two groups, they clearly contrast with the results for the white groups. The results in Table VII.6 seem to support once more these observations, because not only the coefficients in general are of a similar magnitude, but also even when they significantly differ in this respect from each other they agree in the direction and form of relationship. Thus the reference to a "nonwhite pattern" as opposed to a white one seems appropriate and seems to deserve some attention. Table VII.7 reports the results of the fit of our earnings function to the non-white group, that is, for a group composed by mulattoes and blacks. The contrast with the white group is remarkable. The form of the relationship is different for several variables when we compare the two groups, "Time in Place" being an example of a case in point.

#### Returns to Experience

The impact of any factor such as schooling and experience on earnings can be found by calculating the marginal rate of returns to the factor, that is, the partial derivative of the earnings function in respect to

Table VII.6. Complete Earnings-Functions by Color.

Variable	Color		
	White	Mulatto	Black
Constant	3564.80	1984.47	2641.36
Area			
Rural	-1756.97	-1101.87	-871.36
Urban	416.75	378.20	432.35
Village	-818.27	454.87	792.56
Background			
Rural	-917.59	-901.13	-721.62
Urban	243.92	384.36	507.72
Time			
0, 1	-1019.87	-431.00	-1020.50
2, 3	-227.88	-172.97	409.82
4, 5	-139.09	669.99	592.07
6-10	56.93	688.65	426.68
11+	105.33	232.04	-25.19
Origin			
Undeveloped	279.50	399.70	187.40
Developed	-474.00	-964.28	-54.75
Foreign	2157.09	-1890.43	-517.38
Marital Status			
Single	-1489.25	-336.44	-599.92
Married	784.42	224.29	394.97
Schooling			
0	-6719.52	-2058.65	-1406.31
1	-5704.49	-1716.15	-1162.39
2	-5495.54	-1421.53	-531.63
3	-4874.05	-241.38	403.76
4	-2678.78	373.35	945.48
5	-1913.09	1896.18	2630.07
6	-313.40	1039.84	3069.29
7	1341.73	2945.64	375.87
8	2543.54	2585.94	3586.80
9	5543.78	6694.33	6947.22
11	8204.88	9565.05	11074.00
14	32859.70	19532.60	16542.20
17	35004.70	19539.50	20801.00
Experience	705.09	411.43	243.44
Experience <sup>2</sup>	-10.05	-5.93	-3.04
R <sup>2</sup>	.353	.269	.354

Table VII.7. Earnings-Function for Nonwhites.

Variable	Coefficient
Constant	2306.82
Area	
Rural	-1002.45
Urban	395.23
Village	580.64
Background	
Rural	-834.95
Urban	433.97
Time	
0, 1	-734.00
2, 3	-147.33
4, 5	509.90
6-10	463.31
11+	-16.46
Origin	
Undeveloped	333.38
Developed	-122.18
Foreign	-945.85
Marital Status	
Single	-436.91
Married	288.85
Schooling	
0	-2423.30
1	-2076.88
2	-1670.68
3	-581.27
4	25.98
5	1602.63
6	942.86
7	2661.80
8	2341.12
9	6198.47
11	9276.80
14	18951.80
17	19255.90
Experience	344.20
Experience <sup>2</sup>	-4.80
R <sup>2</sup>	0.293



that factor. In the case of experience, the marginal rate of return is given by

$$\frac{\partial Y}{\partial E} = \beta_1 + 2\beta_2 E .$$

Turning to the data on Tables VII.6 and VII.7 we can see that the marginal rates of return to experience for the three racial groups is

$$\frac{\partial Y_w}{\partial E} = 705.09 - 20.10 E ,$$

$$\frac{\partial Y_m}{\partial E} = 411.43 - 11.86 E ,$$

and

$$\frac{\partial Y_b}{\partial E} = 234.44 - 6.07 E ,$$

where the subscripts w, m and b stand for white, mulatto and black, respectively. The marginal rate of returns to experience for nonwhites is

$$\frac{\partial Y_n}{\partial E} = 344.20 - 9.60 E .$$

Whites have typically much larger marginal returns to experience than nonwhites. Since, however, the marginal returns are a negative function of experience itself, and whites have a much steeper rate of decline than nonwhites, in the long range nonwhites can eventually have larger marginal rates of return than whites. The marginal rate

of return functions are depicted in Figure VII.3. Clearly, whites enjoy larger marginal rates of return to experience during their first 35 years in the labor market, that is, up to the peak of their productive lives. After they attain this peak a steady decline follows and the marginal rate of return for whites becomes negative. It is during this negative phase of the marginal rate of decline that nonwhites start to have larger gains (or better, lower decreases) than whites. All groups attain their return peaks at about the same period, the steeper decline for whites then determining the relative advantage for nonwhites. It should be emphasized, though, that 35 years is for most people most of their active life and thus we could say that whites have higher relative gains to experience than nonwhites for most of their productive lives.

But relative gains do not tell the whole story. There are situations in which nonwhites actually enjoy greater returns to experience than whites. However, schooling plays a central role in these nonwhite gains, these gains being dependent on very low levels of schooling. In order to see this, let us examine Figures VII.4 and VII.5.

Figure VII.4 presents a situation in terms of locational-background variables and marital status that is very much favorable to nonwhites: the case in which the values of these variables are set to zero. That is, the

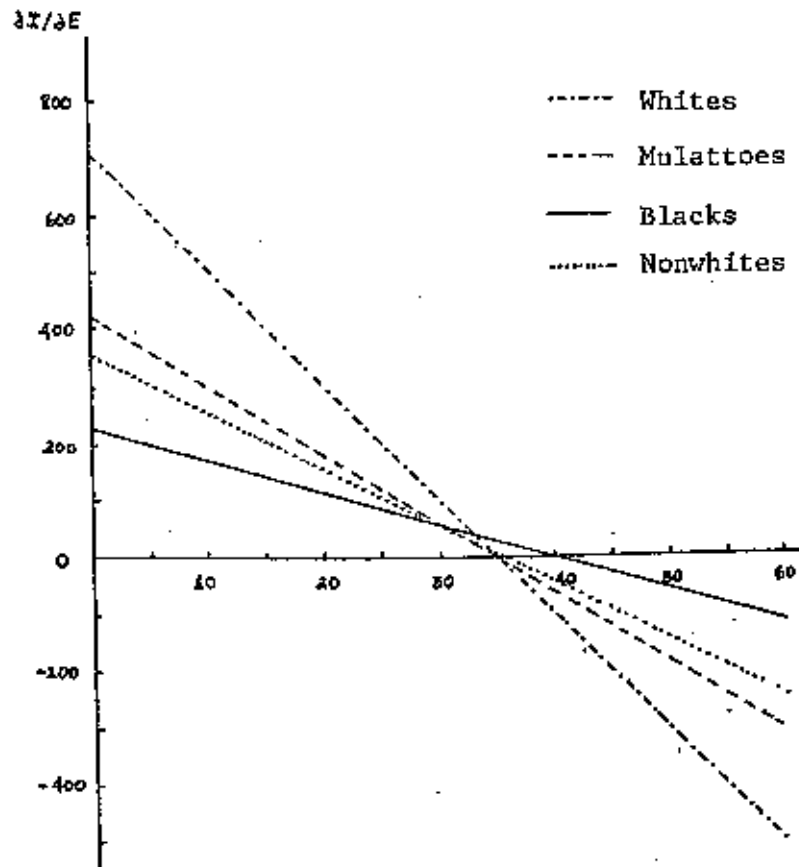
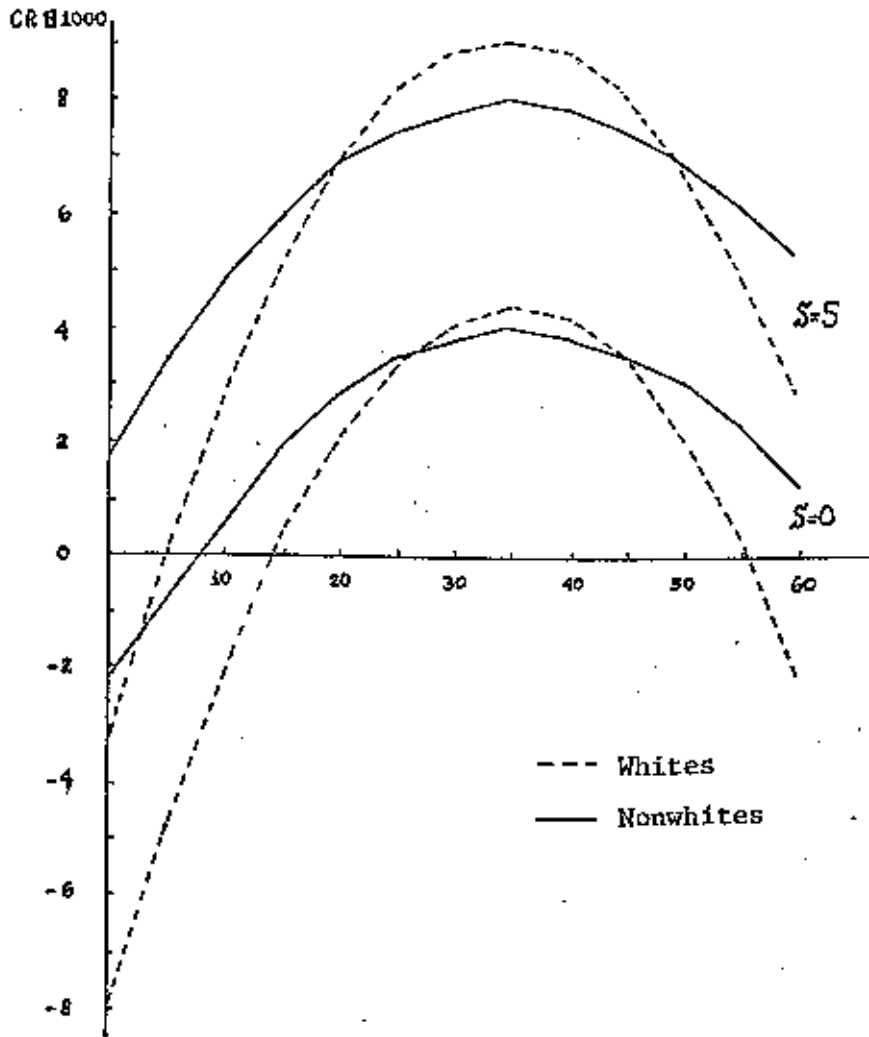


Figure VII.3. Changes in the Rate of Return Due to Experience, by Race, Males, 10-64 years of Age, Rio de Janeiro (1960).



Results for Schooling (S) = 0 & 5  
Whites and Nonwhites

Figure VII.4. Expected Returns to Experience, Rural Areas, Rural Background, Recent Migrant (less than two years), Underdeveloped Area Origin, Single.

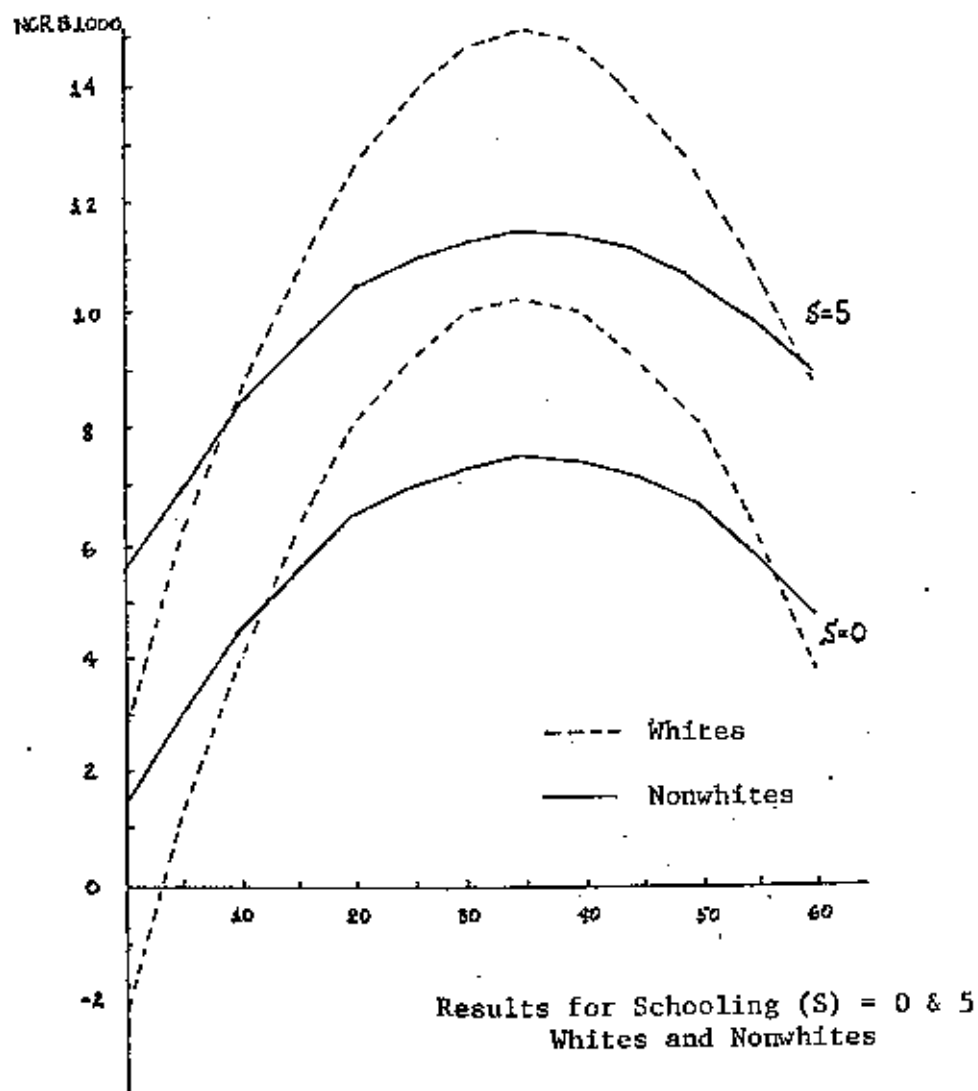


Figure VII.5. Expected Returns to Experience, Urban Residents, Non-Migrants, Married.

case for individuals in rural areas, with rural background, recent migrant (less than two years), coming from an underdeveloped area of Brazil, single. Given these characteristics, two situations are examined: the case of individuals with no schooling and that of those who completed elementary school. These values were chosen because they delimit the range within which comparisons between white and nonwhite populations are more meaningful, since the bulk of the nonwhite population is concentrated in this range. As one can see from Figure VII.3, those nonwhites with no schooling enjoy a larger advantage in returns to experience during most of their active life. However, even in this extremely favorable condition, whites are seen as receiving higher returns to experience during a certain period of their lives, corresponding to their period of peaked earnings. This period of white gains increase with higher levels of schooling, as a comparison with the case of individuals with five years of schooling make clear. Thus even under these most unfavorable conditions whites are capable of getting higher returns than nonwhites during part of their lives.

A more favorable situation for whites, and one by far more common, is the one depicted in Figure VII.5. Here we examined the case of married urban residents, either born in the current place of residence or long time migrant coming from another developed area of Brazil. Here

we can clearly see that nonwhites are able to get higher returns to experience only during the first few years of their involvement in the labor market. This period of advantage actually decreases with higher levels of schooling, as a comparison with those completing elementary school makes clear. At higher levels of schooling these advantages eventually disappear, whites having higher absolute returns to experience throughout their productive lives.

Because, as I said above, situations like those depicted in Figure VII.5 are more common, and we can say that in general, other things being equal, whites enjoy higher returns to experience than nonwhites, these advantages increasing systematically as the level of schooling also increases. Nonwhites seem to be able to have some advantages in terms of returns to experience only during their first few years in the labor market, their returns at the peak of their earning power being typically lower than those for whites. Later in the process they may eventually regain some advantages, but for most people this will probably be too late. In other words, nonwhites seem to enjoy advantages in the labor market vis-à-vis whites only when the income levels involved are at their very lowest, that is, in relatively backward areas, at very low levels of skill and when they are at an incipient phase of labor market experience. When higher

levels of monetary returns are involved, whites appear to have substantial advantages, these advantages actually increasing with the level of rewards involved.

#### Returns to Schooling

As the discussion above implies, there are substantial differences in returns to schooling favoring whites, so that even in situations in which they are at greatest disadvantage, whites are able to enjoy absolute advantages at higher levels of schooling. These observations suggest that while whites are favored with high returns to schooling, nonwhites are subject to increasing disadvantages as they try to go up the educational ladder. These seems to have differences not only in their initial returns to schooling but also, and more importantly, the marginal rate of return to schooling for nonwhites seems to be significantly lower than for whites. Thus, on average, whites enjoy much greater returns to schooling than nonwhites, this difference increasing as schooling levels also increase.

In order to see the extent to which this happens, let us consider an "average" individual, i.e., an individual who has the average characteristic for each variable in our data, except schooling. Obviously nobody can be actually "average" in respect to marital status or to area of residence, but in theory one could think about such an abstraction. If we compute the expected earnings



for such an individual, for each schooling level and for each color group, we would have calculated the average or expected income returns to schooling, that is how much one should expect in average to receive as income for one given level of schooling. The results of such an operation are reported in Table VII.8.

The first thing to notice in these results is the remarkable similarity in the average returns to schooling for blacks and mulattoes. In fact these results give support to the assertion that to consider black and mulattoes as forming a rather homogeneous group does not do much violence to reality, and thus the results presented in the last column of Table VII.8 seem to accurately represent the average experience of individuals in these two color groups.

Another important point is the striking divergence between the results for the white and nonwhite groups. Not only whites have higher initial returns to schooling, that is, higher average income for no formal schooling, but the white-nonwhite relative difference actually increase as schooling levels increases. Thus, while for individuals with no schooling the average white income is about 19 percent larger than nonwhite incomes, the corresponding figure for those completing Junior High School (9 years of schooling) is 33 percent.

Table VII.8. Average Income Returns to Schooling by Color, Rio de Janeiro, Brazil (1960).

Schooling	Color			
	White	Mulatto	Black	Nonwhite
0	6140.6	5386.9	4882.6	5177.7
1	7155.6	5729.4	5126.5	5524.1
2	7364.6	6024.0	5757.3	5930.3
3	7986.1	7204.2	6692.6	7019.8
4	10181.3	7818.9	7234.4	7627.0
5	10947.0	9341.7	8919.0	9203.7
6	12546.7	8485.3	9358.2	8543.9
7	14201.9	10391.1	10041.8	10262.8
8	15376.7	10031.4	9875.7	9942.1
9	18403.9	14139.8	13236.1	13799.5
11	21065.0	17010.6	17362.9	16877.8
14	45719.8	26978.1	22831.1	26192.8
17	47864.8	26985.0	27089.9	26856.9

Source: 1960 Brazilian Census 1.27 percent subsample.

These results suggest that, in fact, the marginal rate of return to schooling for whites is substantially larger than that for nonwhites. In order to calculate a general average marginal rate of returns to schooling we could try to fit a curve to the data in Table VII.8. A visual inspection of these data suggests that a suitable functional form to describe these returns to schooling is an exponential type of function

$$Y = e^{\beta_0 + \beta_1 S}$$

where  $Y$  and  $S$  are as previously defined and the  $\beta$ 's are regression coefficients,  $\hat{\beta}_1$  being the estimated marginal rate of returns to schooling. Estimating the equation above by least squares using the data in Table VII.8, each observation being weighted by the number of cases in each schooling cell, we arrive at the following estimates

$$\text{Whites: } \ln Y_w = 8.69 + 0.124S \quad r_w^2 = .985$$

$$\text{Mulattoes: } \ln Y_m = 8.57 + 0.104S \quad r_m^2 = .973$$

$$\text{Blacks: } \ln Y_b = 8.48 + 0.111S \quad r_b^2 = .980$$

$$\text{Nonwhites: } \ln Y_n = 8.54 + 0.107S \quad r_n^2 = .977$$

Based on these estimates one can measure the impact of schooling on earnings by calculating the average

marginal rate of returns to schooling, the partial derivative of the average earnings functions estimated above in respect to schooling being

$$\frac{\partial Y}{\partial S} = \beta_1 e^{\beta_0 + \beta_1 S}.$$

The similarity between the results for blacks and mulattoes can again be clearly seen, as Figure VII.6 indicates. Not only are their marginal returns to schooling strikingly similar, but if anything, blacks seem to enjoy greater rates of returns than mulattoes at the higher levels of schooling. In fact, the rate of returns to schooling ( $\beta_1$ ) for blacks is larger than that for mulattoes (11.1 percent increase per year of schooling for blacks, 10.4 percent for mulattoes), contradicting clearly the usual assumption of considerably more mobility for mulattoes. In other words, the analysis for differences in returns to schooling indicates that not only blacks and mulattoes have strikingly similar profiles, composing a nonwhite group clearly differentiated from the white group, but that the only slight differences emerging from the analysis seem to point to actually higher returns to blacks than to mulattoes, contrary to what is usually supposed. On the other hand, the large differences in marginal returns to education favoring whites vis-à-vis nonwhites unmistakably indicates the probable existence

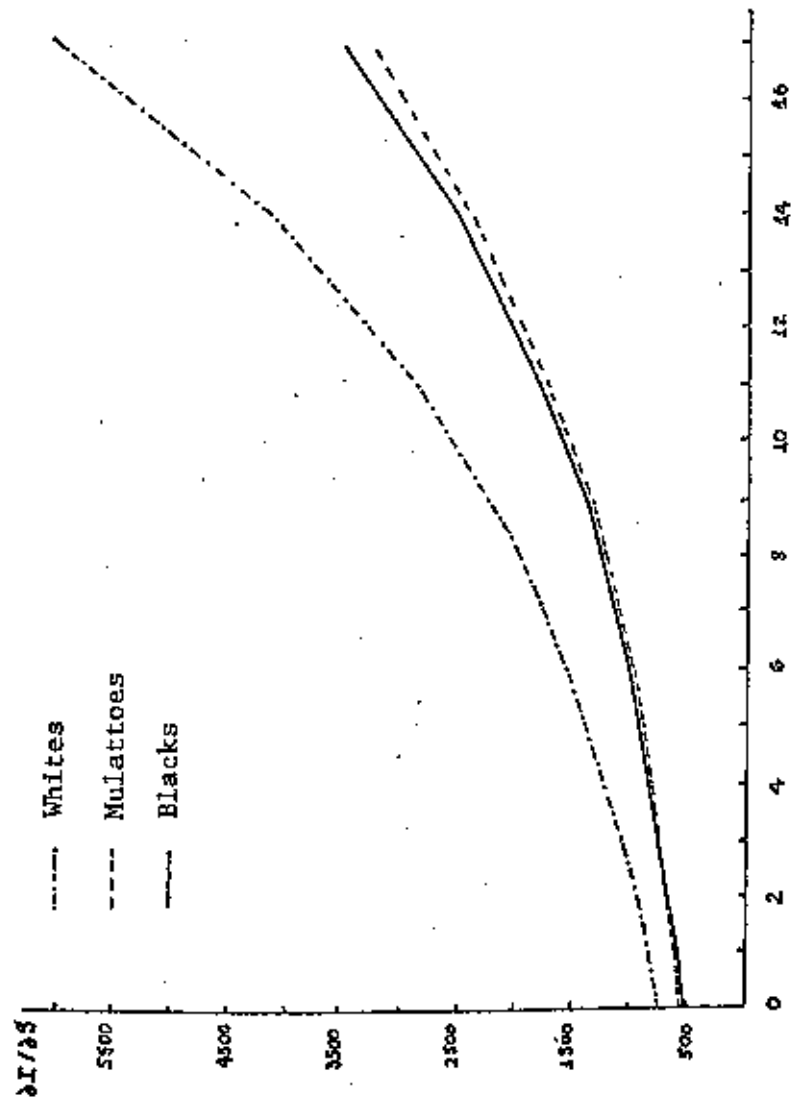


Figure VII.6. Marginal Average Returns to Schooling.

of discriminatory processes in the operation of the labor market.

A Summary Measure of Labor Market Discrimination

The usual approach to the study of differences in income attainment between two groups, say whites and non-whites, is to specify an earnings function

$$Y = b_0 + \sum_{i=1}^k b_i X_i$$

where Y is the level of income and the X's are the characteristics used to explain Y. This earnings function is estimated for the two groups

$$Y_w = b_0^w + \sum_{i=1}^k b_i^{w,w} X_i$$

$$Y_n = b_0^n + \sum_{i=1}^K b_i^{n,n} X_i$$

where the w and n subscripts indicate the two groups. Now, noting  $\bar{Y}$  and  $\bar{X}_i$  as the averages for the Y and  $X_j$  variables respectively, we know that

$$\bar{Y}_w = b_0^w + \sum_{i=1}^k b_i^{w,w} \bar{X}_i$$

and

$$\bar{Y}_n = b_0^n + \sum_{i=1}^k b_i^{n,n} \bar{X}_i$$

Likewise, we can standardize the income variable by using the group's average  $X_i$  values into the other group regression coefficients. Thus we can note this procedure as

$$f_w(\bar{N}) = b_0^w + \sum_{i=1}^k b_i^w \bar{X}_i^n,$$

$$f_n(\bar{W}) = b_0^n + \sum_{i=1}^k b_i^n \bar{X}_i^w.$$

These measures are interpretable as the expected income one group would have if it had the same returns structure (i.e., regression coefficients) of the other group. So,  $f_w(\bar{N})$  indicates the expected average income for nonwhites if they had the same earnings functions as whites.

The difference in average income between the two groups can be decomposed according to a well known procedure (Althäuser and Wigler, 1972; Iams and Thornton, 1975) into four different components

$$\bar{Y}_w - \bar{Y}_n = (b_0^w - b_0^n) + \sum_{i=1}^k (b_i^w - b_i^n) \bar{X}_i^n + \sum_{i=1}^k b_i^n (\bar{X}_i^w - \bar{X}_i^n) + \sum_{i=1}^k (\bar{X}_i^w - \bar{X}_i^n) (b_i^w - b_i^n).$$

The first component is the difference between the two intercepts. The second component reflects the impact of differences in slopes on the income differences. These two components are typically attributed to discrimination (e.g., Thurow, 1967; Blinder, 1973; Masters, 1975). The third component is a "composition differences" component,

indicating the contribution of differences in the distribution of the explanatory variable to the income difference between the two groups. Finally, the last term, usually called the "interaction component," indicates the covariation between means and the coefficients of the two groups.

The first two effects, those reflecting labor market discrimination can be rearranged as

$$D = (b_0^w - b_0^n) + \sum \bar{X}_i^n (b_i^w - b_i^n) = f_w(\bar{N}) - \bar{Y}_n ,$$

representing the difference between the expected income for nonwhites if there was no discrimination in the labor market and the actual average income for this group. Likewise, the "composition" and "interaction" components can be rewritten as<sup>6</sup>

$$G = \sum \bar{X}_i^n (b_i^w - b_i^n) = f_n(\bar{W}) - \bar{Y}_n$$

and

$$I = \sum (\bar{X}_i^w - \bar{X}_i^n) (b_i^w - b_i^n) = \bar{Y}_w + \bar{Y}_n - f_n(\bar{W}) - f_w(\bar{N}) .$$

Thus we can decompose the average incomes for our color groups into these components, taking D as a summary measure of labor market discrimination.

But before we proceed to this decomposition, a word about the effect of omitted variables, more specifically



(as we discussed before) the omission of parental background, on the value of D. As Masters (1975, pp. 128-130) has shown in a similar situation, if we assume that

1. Parental background (PB) has both a direct and an indirect effect through the other intervening variables on income,
2. For a given level of PB, the average nonwhite has lower or equal Schooling than the average white,

then it can be shown that it is likely that our measure of labor market discrimination D will be larger when PB is included in the equation than when it is omitted. In other words, our measure D is likely to be an underestimate of labor market discrimination.<sup>7</sup> In fact, some analyses of the situation in the U.S. have suggested that while about 40 percent of the differences in income can be attributed to income discrimination, the inclusion of family background variables, because of the cumulative character of discrimination, can increase the estimates of the effect of discrimination on income differences up to about 70 percent.<sup>8</sup>

Applying the proposed decomposition to our data one arrives at the results reported on Table VII.9. The white group is taken as a basis of comparison so that the decomposed income differences are taken by comparing the white group with the two other nonwhite groups.

Table VII.9. Decomposition of Income Differentials by Color, Rio de Janeiro, Brazil (1960) (Base Color Group: Whites).

Component	Color		
	Mulatto (%)	Black (%)	Nonwhite (%)
Total: $\bar{Y}_w - \bar{Y}_n$	5425.0 (100.0)	6587.7 (100.0)	5860.1 (100.0)
'Discrimination'	954.3 (17.6)	959.0 (14.6)	955.0 (16.3)
'Composition'	2456.2 (45.3)	3699.9 (56.1)	2827.6 (48.2)
'Interaction'	2014.5 (37.1)	1928.8 (29.3)	2077.5 (35.5)

Source: 1960 Brazilian Census 1.27 percent subsample.

In general, although discrimination does not appear to be as important as differences in composition as a component of racial income differences, it still appears as determining a large proportion of these income differences. Thus, while differences in the distribution of the explanatory variables account for a total of 45.3 percent of the white-mulatto average income difference, 37.1 percent can be attributed to the fact that differences in averages of explanatory variables tend to covary with differences in coefficients and 17.6 percent can be attributed to discrimination in the labor market.

Likewise, the corresponding figures for blacks are 65.1 percent for the "composition" component, 29.3 percent for the "interaction" component and 14.6 percent for the

discrimination component. So, here again we find the surprising result that, if anything, blacks tend to be less discriminated against than mulattoes, contradicting the common assumptions found in the historical-sociological literature.

Another important aspect is that the monetary disadvantages of mulattoes and blacks are virtually identical, the value calculated for the whole nonwhite group being about 955 cruzeiros in 1960. This value can be taken as representing the typical "cost of not being white."

#### Summary and Conclusions

Several facts seem to emerge from our analysis of racial income differentials. The first important aspect surfacing in our results is the support of some observations made in the previous chapters, namely, that blacks and mulattoes, contrary to the usual assumptions found in the literature, seem to have strikingly similar profiles in terms of the interrelationships analyzed. This is particularly true when one examines the patterns of returns to experience and schooling, but also being true to a lesser extent in respect to other variables. This also has an important empirical implication in that to consider blacks and mulattoes as composing a rather homogeneous racial group of "nonwhites" does not seem to do much violence to reality. In fact, more than being merely a

simplification, it seems to constitute a sensible approach to the analysis of racial discrimination in Brazil.

A second fact emerging from our analysis is the acknowledgement of substantial differences in economic attainment between the races, even when we control for the variables considered relevant in the process of income attainment. Although the magnitudes of the income differences that can be attributed to "discriminatory factors" operating in the labor market are considerably lower than those observed in other places, the U.S. in particular, still a very substantial proportion of the income differences between the racial groups in Brazil can be identified as being caused by discriminatory practices.

In particular, it has been shown that while nonwhites seem to enjoy certain advantages in the very lowest levels of attainment, these advantages are overcome by the whites' superior rates of returns to experience and schooling. The net result of this fact is that nonwhites are only able to profit from a better position at the early phase of their involvement in the labor market, at very low levels of skill and in generally poor environments, such as rural areas. Whites are much more efficient in their conversion of experience and educational investments into monetary returns while nonwhites suffer increasing disadvantages as they try to go up the social ladder. In the next chapter we will examine the role played by

racial differences in occupational attainment in the realizing of whites' advantages.

These observations have some theoretical as well as practical implications. Although inferences from cross-sectional data is a rather risky business, the data provide no support for the view that investment in education for nonwhites can remove the economic handicap imposed to this group. Rather, it seems to indicate that, at least in the short run while these market structures are maintained, increases in the educational attainment of nonwhites can lead to an actual increase in the racial income differentials, since these differentials were shown to increase as educational attainment increases. Thus, the prospects for racial equality in Brazil seem to be quite remote, a fact that is reinforced by the extraordinary resilience of the "racial democracy" myth in that country.

In our review of the Brazilian literature on race relations we pointed out that two independent hypotheses seemed to characterize this literature. First, we showed that some authors emphasize that one should expect mulattoes and blacks to be clearly differentiated from each other. In particular, one should expect mulattoes to show higher levels of educational, occupational and income attainment than blacks. Second, other authors clearly state that race has no significant role in the process of mobility, the present situation of nonwhites being explainable in terms

of the relatively disadvantageous position they started from. Although the levels of attainment may differ from one color group to another, one should expect to find no racial differences in the returns to the investments made.

In this chapter we examined the race differentials in income attainment. The results obtained, as summarized above, seem to indicate that we should reject the two hypotheses inspired in the Brazilian sociological literature as being implausible. Neither do mulattoes seem to be clearly differentiated from blacks nor does race seem to play a negligible role in income attainment. Rather, we found that whites seem to enjoy substantial advantages in the labor market, being thus clearly differentiated from nonwhites.

Footnotes

<sup>1</sup>This has been one of the traditional explanations for the economic problem of black living in urban areas in the U.S., where large numbers of black migrants from rural south are concentrated in the central cities.

For a more detailed discussion of this topic as well as for an empirical test of these propositions, see Masters (1975), pp. 49-68, and Long and Haltman (1975), pp. 1391-1409.

<sup>2</sup>It should be noticed that the assumed consequence of marital status on women's income are the opposite to those assumed for men. In the case of women, marriage seems to represent a negative factor in work stability, at least for those at younger ages.

<sup>3</sup>For a different view on this subject, see Stolzenberg (1975), pp. 302-303.

<sup>4</sup>As we observed before, the earnings-schooling profiles seem to indicate an exponential relationship between these variables, a view that is also justified at a theoretical level by some versions of Human Capital theory (e.g., Mincer, 1974). Thus, a consistent specification of an earnings function would be

$$Y = e^{\beta_0 + \beta_1 S} + \beta_2 E + \beta_3 E^2 + \sum_{i=4}^{13} \beta_i D_i$$

However, this is an intrinsically nonlinear model, implying nonlinear estimation. For a discussion of intrinsically nonlinear models and their estimation, see Kmenta (1971), pp. 461-472.

<sup>5</sup>Various alternative formulations were tried. For instance, a Cobb-Douglas type of earnings function, such as the one proposed by Thurow

$$Y = AE^{\beta_1} S^{\beta_2} \frac{24}{\pi} D_i^{\beta_i}$$

would imply for its estimation the elimination of all cases for which one of the variables were zero, a dramatic loss of information.

Another alternative specification, a semi-log function which is very common in Human Capital analysis

$$\log Y = \beta_0 + \beta_1 E + \beta_2 E^2 + \beta_3 S + \sum_{i=1}^{24} \beta_i D_i$$

although providing a somewhat better fit than the one proposed, was rejected because it does not provide us with results on racial discrimination (particularly the white/nonwhite distinction above) as simple and clear as the ones observed when we used the proposed specification. Moreover, because the semi-log function implies a change in argument from absolute increases of differences in income to relative (or percent) differences, it appeared to be difficult to find a theoretical rationale connecting variables such as area of residence or marital status and this transformed variable.

<sup>6</sup>To obtain these two equations one must add  $b_0^n - b_0^w = 0$  to the "composition" component and  $b_0^w - b_0^n + b_0^n - b_0^w = 0$  to the "interaction," rearranging the terms.

<sup>7</sup>We can show that this is the case by following a similar demonstration advanced by Masters (1975, pp. 128-130). To simplify the argument, assume that we have only two variables besides income: schooling (S) and Parental Background (PB). Now, by assumption 1, the "true" earnings model is

$$S = c_0 + c_1 PB + u$$

$$Y = b_0 + b_1 S + b_2 PB + r$$

while we used instead

$$S = c_0 + o_1 PB + u$$

$$Y = a_0 + a_1 S + w$$

Now by the well known "excluded variable formula" we have

$$a_1 = b_1 + b_2 c_1$$



Assuming that  $c_1$ ,  $b_1$  and  $b_2$  are positive, and then  $a_1 > b_1$ . Also, by implication

$$c_1 = \frac{a_1 - b_1}{b_2} .$$

Now, assume  $\bar{Y}_w > f_w(\bar{N}) > \bar{Y}_n$ . Then to prove that  $D = f_w(\bar{N}) - \bar{Y}_n$  is smaller when based on the "wrong" earnings function than when based on the true one is equivalent to prove that  $\bar{Y}_w - f_w(\bar{N})$  is larger in the same situation. Based on the "wrong" earnings function we have

$$E^* = \bar{Y}_w - f_w(\bar{N}) = (a_0 + a_1 \bar{S}_w + w) - (a_0 + a_1 \bar{S}_n + w) = a_1 (\bar{S}_w - \bar{S}_n)$$

while based on the "true" earnings function we would have

$$E = \bar{Y}_n - f_n(\bar{N}) = b_1 (\bar{S}_w - \bar{S}_n) + b_2 (\bar{P}\bar{B}_w - \bar{P}\bar{B}_n)$$

$$E^* - E = (a_1 - b_1) (\bar{S}_w - \bar{S}_n) - b_2 (\bar{P}\bar{B}_w - \bar{P}\bar{B}_n) .$$

Now,

$$\bar{S}_w = c_0 + c_1 \bar{P}\bar{B}_w$$

and

$$S_w(\bar{N}) = c_0 + c_1 \bar{P}\bar{B}_n$$

so that

$$\bar{S}_w - \bar{S}_n(\bar{N}) = c_1 (\bar{P}\bar{B}_w - \bar{P}\bar{B}_n) .$$

By assumption 2, we have that  $s_w(N) \geq S_n$ , and thus

$$\bar{S}_w - \bar{S}_n \geq \bar{S}_w - S_w(\bar{N}) = c_1 (\bar{P}\bar{B}_w - \bar{P}\bar{B}_n) ,$$

so

$$\bar{S}_w - \bar{S}_n \geq c_1 (PB_w - PB_n) ,$$

then

$$E^* - E \geq (a_1 - b_1)c_1(\bar{PB}_w - \bar{PB}_n) - b_2(\bar{PB}_w - \bar{PB}_n) ,$$

$$E^* - E \geq (b_2c_1)c_1(\bar{PB}_w - \bar{PB}_n) - b_2(\bar{PB}_w - \bar{PB}_n) .$$

So

$$E^* - E \geq b_2(c_1^2 - 1)(\bar{PB}_w - \bar{PB}_n) .$$

In the expression above  $b_2$  is positive and  $(\bar{PB}_w - \bar{PB}_n)$  should also, under normal circumstances, be positive. Thus, the direction of the right hand expression depends on the value of  $c_1^2$ . Now,  $c_1$  measures the effect of Parental Background on Schooling, being positive by assumption. If we assume further that the correlation between these two variables is high,  $c_1$  is likely to be large. Another way to visualize these conditions is to recall that  $c_1 = (c_1b_2)/b_2$  where  $c_1b_2$  is the "bias" built into  $a_1$  and  $b_2$  is the direct effect of Parental Background on income. When PB and S are highly correlated it is likely that the bias introduced by the omission of PB will be large relative to the direct effect of PB on income. So that it is likely that

$$E^* - E \geq 0$$

and thus our measure D is likely to be an underestimate of the "true" amount of labor market discrimination.

<sup>8</sup>For instance, Duncan (1969) finds that while difference in family background can explain 26.6 percent of the racial differences in income, 35.6 percent of these differences can be attributed to discrimination in attainment of intervening statuses (education, occupation, etc.), and 37.8 percent can be attributed to income discrimination. Thus, more than 70 percent of the income difference in

economic attainment can be attributed to discrimination. Although using different estimation procedures, very similar results are advanced by Blinder (1973), who reports an initial estimate of about 40 percent for the effect of discrimination of racial income differentials. When family background and other exogenous variables are included, the estimation based on a reduced form model increase to about 70 percent.

## CHAPTER VIII

### OCCUPATIONAL AND WAGE DISCRIMINATION

#### Introduction

Having shown significant racial differences in income attainment the next step is, naturally, to ask: how are these differences realized? In other words, what are the labor market processes that can possibly generate such differences? As we saw in Chapter II, labor market racial differences in income can occur in two possible ways. First, nonwhites can be prevented from entering some better paying occupations, regardless of their qualifications. We labelled the process generating income differences as "occupational discrimination." Second, nonwhites can earn less for performing the same jobs as whites, that is, in the same occupation and having the same qualifications. This process was called "wage discrimination."

Clearly, implicit in this view is the argument that occupation is the basic labor market variable intervening in the establishment of income differences among races. It is through the performance of an occupational role that an individual's income is realized and thus income

differences between equally qualified individuals of two different groups, in our case racial groups, must ultimately be accompanied either by differences in occupational achievement (that is performance of better paying occupational roles) or by differences in pay within an occupation, that is, differences in economic reward for the performance of the same task. Thus, occupational roles play a key central role in the examination of the process by which labor market discrimination against non-whites is accomplished.

The study of occupational achievement is a common concern among sociologists, forming the bulk of the analyses of social mobility. Although the analysis of occupational achievement is a well established area of research, the analysis of the relationship between occupation and income attainment seems to be based on far less satisfactory procedures. Typically, in studies of economic attainment, occupation is introduced as a factor with purely additive effects on income. However, as some sociologists and economists have come recently to realize, there are good reasons to view the labor market as basically stratified along occupational lines, and as such, occupation should be viewed as not only having a net effect on income but also as possibly affecting all the process of income attainment. In other words, occupation seems to affect the way the other independent variables are related to income achievement (see Stolzenberg, 1975b).

Among the arguments advanced in support of the view that the labor market is segmented along occupational lines is the observation that workers often make tremendous occupation-specific training investments, and that the higher the level of such investments the less likely it is that workers will seek jobs in another occupation. This undoubtedly would provide a strain toward segmentation of competition among workers in the labor market along occupational lines. As an extreme example, physicians do not compete for jobs with lawyers or engineers.

But, more importantly for our argument here, it has been suggested that some socially-determined factors vary substantially from one occupation to another and these factors affect the wage determination process. In particular, it has been proposed that racial discrimination is one of such factors. Hodge and Hodge (1965) and Stolzenberg (1973) have indicated that both the amount and direction of racial differences in returns to schooling varies from one occupation to another.

For these reasons, the analysis of racial differences in returns to labor within occupational groups should play a central role in the study of labor market discrimination. This argument will be explored in more detail later. For now, it suffices to point out that the introduction of occupation in the analysis of racial differences in income leads us to the examination of

intra-occupational earnings functions. This implies, in turn, that some simplifications necessary to save degrees of freedom are in order. In particular, a first modification in our analytical framework will be to consider only two racial groups, whites and nonwhites. This is necessary because, for the analysis within detailed occupational categories, the number of blacks would frequently be too small to guarantee an acceptable level of reliability. And, as we observed before, to consider blacks and mulattoes as composing a rather homogeneous group does not seem to do much violence to reality, actually seeming to constitute a sensible approach to the analysis of racial discrimination in Brazilian society. Thus in this chapter, instead of comparing whites, mulattoes and blacks, our analysis will be restricted to the contrast between whites and nonwhites.

#### Occupational Discrimination

In this section we will examine first the process by which labor market discrimination can be accomplished: occupational discrimination. As defined above, occupational discrimination consists in the results of certain market mechanisms by which the access of racial groups to some better paying occupations is blocked. Clearly, the emphasis here is on the economic characteristics of occupational positions, and not some other socially relevant aspects of these positions, such as for instance

"occupational prestige." We are essentially talking about better or worse paying occupations, that is, about the general level of returns to labor associated with a specific occupational position. A suitable indicator of this general economic dimension of occupations is its associated average income. In other words, we can represent the general level of return to labor associated with a given occupation by its average income. And thus, the intra-occupational analysis to be advanced later will consist then in the examination of the variance of income around this average value.

We can then calculate the average income value for each occupational group, taking this measure as characterizing one's occupation. Thus, for each individual we can have the average income associated with his occupation as representing the economic dimension of his occupation. We will call this measure "occupational status" for short. We can then proceed to apply an achievement model in which "occupational status" is the dependent variable. Racial differences in occupational attainment thus measured will be one indication of occupational discrimination, of racial differences in access to better paying occupations.

The occupational achievement model could have the same form as the one used to examine income attainment. Because we are studying the economic aspect of occupational role, the rationale for the selection and use of each independent variable should basically be the same as



in the preceding chapter. Thus, the occupational achievement model we will use is

$$OS = \beta_0 + \beta_1 E + \beta_2 E^2 + \sum_{i=3}^{14} \beta_i S_i + \sum_{i=15}^{24} \beta_i D_i ,$$

where OS represents the "occupational status" variable defined as before and all other terms in the equation are as previously defined. Because we can understand occupational achievement as essentially an intervening step towards income attainment, the same general causal structure used in the previous chapter can be used here in the study of the economic aspects of occupational achievement. Thus before we estimate the complete model above, it will be useful to explore first the relationship between the locational-background variables and "occupational status." Then we will examine the connections between the Human Capital variables, experience and schooling, to our dependent variable, finally moving to the estimation of the complete model.

Table VIII.1 presents the results of the regression of occupational status on the locational-background variable, and marital status. Although these results for occupational achievement agree in general with the observations made for income attainment, some important differences seem to emerge. In particular, the analysis of the impact of time in current place of residence on

Table VIII.1. Regression of 'Occupational Status' on Locational-Background Variables.

Variables	Color	
	Whites	Nonwhites
Constant	11634.38	7783.02
Area		
Rural	-4770.79	-2414.51
Urban	1057.92	1015.04
Village	-863.09	740.20
Background		
Rural	-1598.81	-702.92
Urban	425.00	365.35
Time		
0, 1	252.73	1294.65
2, 3	-1312.83	-353.89
4, 5	-889.34	-1.54
6-10	-463.00	11.70
11+	212.75	184.55
Origin		
Underdeveloped	164.95	-42.02
Developed	-9.26	11.21
Foreign	-260.01	3168.73
Marital Status		
Single	-971.55	-35.44
Married	514.89	23.53
R <sup>2</sup>	0.094	0.177

Source: 1960 Brazilian Census 1.27 percent subsample.

occupational achievement seems to indicate substantial differences between the two racial groups. While time in place seems to have a positive impact on occupational status (i.e., less negative effect as time increases) for whites, the pattern for nonwhites is actually the reverse. It indicates that the longer the time nonwhites have spent in the current place of residence the worse their occupational prospects. This clearly suggests serious barriers to occupational mobility for nonwhites, a fact that should, however, be supported by the analysis of the effects of experience on occupational achievement.

Another important difference between the two groups to be noticed is related to impact of marital status. While marriage appears to be a very significant factor in whites' occupational success, no such effect is present among nonwhites. In fact, with the exception of foreign origin, all the relationships in Table VIII.1 indicate larger increments for unit changes in the variables among whites than among nonwhites, the coefficients being generally significant. On the other hand, the explanatory power of locational-background variables (as indicated by  $R^2$ ) appears to be substantially stronger among nonwhites than among whites. In fact, as we shall see later, occupational achievement among nonwhites seems to be relatively more dependent on these locational-background variables than among whites, possibly indicating the

greater importance of ascription vis-à-vis achievement within the former racial group.

For both groups however, Schooling seems to be closely related to occupational achievement. Table VIII.2 presents the results of the regression of occupational status on schooling. Schooling alone can account for 30.5 percent of the variance in occupational status among whites, and 25.4 percent among nonwhites, both undoubtedly constituting very impressive figures. This is a clear indication that in Brazilian society occupational success is closely dependent on educational attainment, higher levels of achievement during the educational process literally opening the doors to better paying positions in the occupational structure.

Another aspect to notice in the "zero-order" relationship between schooling and occupational achievement is that this relationship seems to be nonlinear. However, a cursory inspection of the results in Table VIII.2 indicates that this linearity seems to be basically due to the effect of college education on occupational attainment. The extraordinary high monetary returns to occupations requiring a college degree imposes a curvilinear trend to an otherwise seemingly linear relationship. This pattern is clear for both racial groups, whites having higher occupational returns throughout the schooling spectrum.

Table VIII.2. Regression of 'Occupational Status' on Schooling.

Variables	Color	
	Whites	Nonwhites
Constant	11634.38	7783.02
Schooling		
0	-5505.30	-2158.22
1	-5233.08	-1512.57
2	-4322.43	-845.15
3	-2856.03	246.05
4	-1287.00	1294.21
5	-649.90	2194.79
6	245.20	3399.88
7	1192.60	3106.18
8	1567.80	3311.98
9	2689.40	5542.18
11	6054.40	7737.28
14	5910.70	9336.78
17	28093.60	20287.70
R <sup>2</sup>	0.305	0.254

Source: 1960 Brazilian Census 1.27 percent subsample.

The introduction of experience into the equation, although not drastically changing these results, clearly shows the importance of this variable for the study of occupational achievement. The results of the regression of experience and schooling on occupational status are reported in Table VIII.3. First, although for both groups the inclusion of experience terms in the occupational achievement function represents a significant increase of explanatory power (for both groups the F-test for increase in  $R^2$  indicates  $\alpha < .001$ ), the improvement in fit for the white group is very substantial,  $R^2$  increasing in this case from 0.305 to 0.510. On the other hand, the increase in  $R^2$  for nonwhites is only modest, changing from 0.254 to 0.261. If, as it is usually the case, we interpret the impact of experience as the individual's lifetime chances of upward mobility, and in our particular case, occupational mobility chances, then those differences in the improvement in explanatory power by the inclusion of experience terms can be interpreted as a clear indication that while occupational mobility is a very central aspect in whites' occupational achievement process, it seems to play a far less important role in the same process among nonwhites. A further confirmation of these observations can be grasped by the comparison of magnitude of the coefficients for the experience terms between the two racial groups. The coefficients for whites imply a much higher level of occupational mobility opportunities than those for nonwhites.

Table VIII.3. Regressions of 'Occupational Status' on Schooling and Experience.

Variables	Color	
	Whites	Nonwhites
Constant	9626.85	7116.59
Schooling		
0	-5565.16	-2204.34
1	-5262.73	-1628.65
2	-4369.69	-1015.02
3	-2959.83	53.19
4	-1376.21	1064.97
5	-724.98	2020.71
6	454.59	3221.68
7	1335.30	2958.54
8	1714.07	3156.85
9	3207.29	5425.70
11	6395.24	7636.89
14	6138.34	9132.16
17	28331.70	20152.80
Experience	176.90	85.91
Experience <sup>2</sup>	-2.97	-1.88
R <sup>2</sup>	0.510	0.261

Another important aspect to notice is that the introduction of experience terms in our occupational achievement model introduces some meaningful changes in the returns to schooling. Actually, in the equations in which the experience terms were included, the occupational returns to schooling for nonwhites are higher than those for whites up to the sixth grade of schooling. That is, for the first levels of schooling, nonwhites seem to start life better positioned than whites do. This is however rapidly compensated by the whites' high mobility chances, so that after a few years in the labor market, even those whites with relatively low educational achievement are able to display a better position than nonwhites with the same levels of qualification.

The estimation of the complete model, by the introduction of the locational-background variables to the equation already containing the human capital variables, largely supports these partial observations. The results are reported in Table VIII.4. Clearly, the increase in explanatory power brought about by the inclusion of locational-background variables is substantially higher for nonwhites than for whites. Although both increases are significant at any conventional level, while  $R^2$  increased from 0.510 to 0.524 for the white group, the corresponding increase for nonwhites is from 0.251 to 0.331, indicating the importance for nonwhites of these

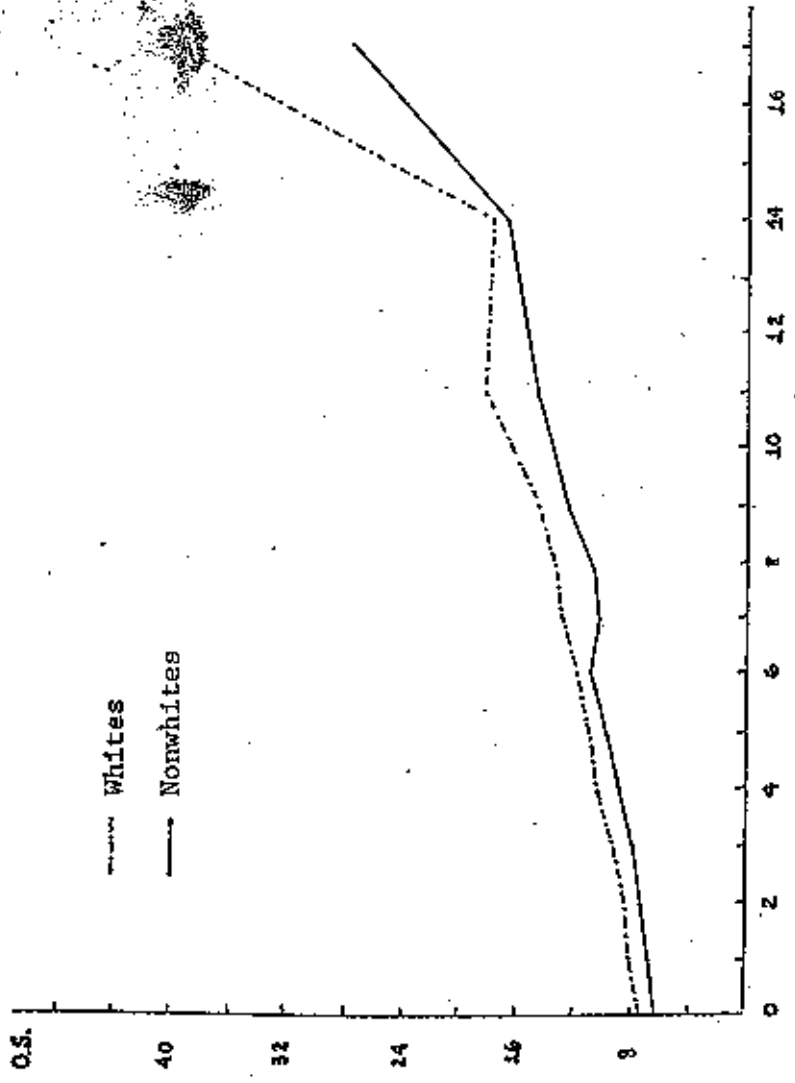


Table VIII.4. Complete Occupational Achievement Model.

Variables	Color	
	Whites	Nonwhites
Constant	10534.00	7683.50
Area		
Rural	-2375.71	-1678.89
Urban	493.27	682.95
Village	171.53	757.74
Background		
Rural	-259.79	-323.87
Urban	69.06	168.33
Time		
0, 1	840.40	1444.48
2, 3	-545.84	-444.35
4, 5	.27.96	-130.81
6-10	-10.75	-97.39
11+	-28.79	-238.90
Origin		
Underdeveloped	-205.52	-9.09
Developed	-60.32	-0.91
Foreign	815.79	3122.08
Marital Status		
Single	-593.83	-225.63
Married	313.00	149.80
Schooling		
0	-4282.91	-1398.78
1	-3872.66	-1297.04
2	-3569.86	-779.73
3	-2696.05	-250.28
4	-1603.33	544.67
5	-1186.24	1403.35
6	42.50	2688.15
7	795.22	2281.29
8	1198.59	2547.88
9	2544.13	4479.86
11	5754.99	6808.45
14	5400.81	8564.17
17	27574.20	19776.60
Experience	117.48	40.38
Experience <sup>2</sup>	-2.29	-1.17
R <sup>2</sup>	0.524	0.331

locational-background variables. An examination of the actual coefficients for these variables indicates that in most of the circumstances nonwhites seem to enjoy better occupational position than whites in the start of their labor market career. This is compensated, though, by the whites higher returns to experience and schooling.

In order to examine the impact of schooling on occupational achievement one may construct the schooling-occupation function for the "average" individual, that is, someone who has the average value in all characteristics included in the occupational achievement model. This procedure is similar to that employed to the analysis of average income returns to schooling in the preceding chapter. The results of the averaging operations are depicted in Figure VIII.1. As has been observed before, the schooling-occupation function appears to be nonlinear, with whites showing higher occupational returns to schooling than nonwhites. In other words, other things being constant, whites are more able to convert their schooling investments into higher paying occupations than nonwhites throughout the schooling spectrum. The non-linearity in the function seems to be basically caused by exceptionally high occupational returns to college education, and correspondingly, one can observe a very large racial difference in occupational status among those holding a college degree.

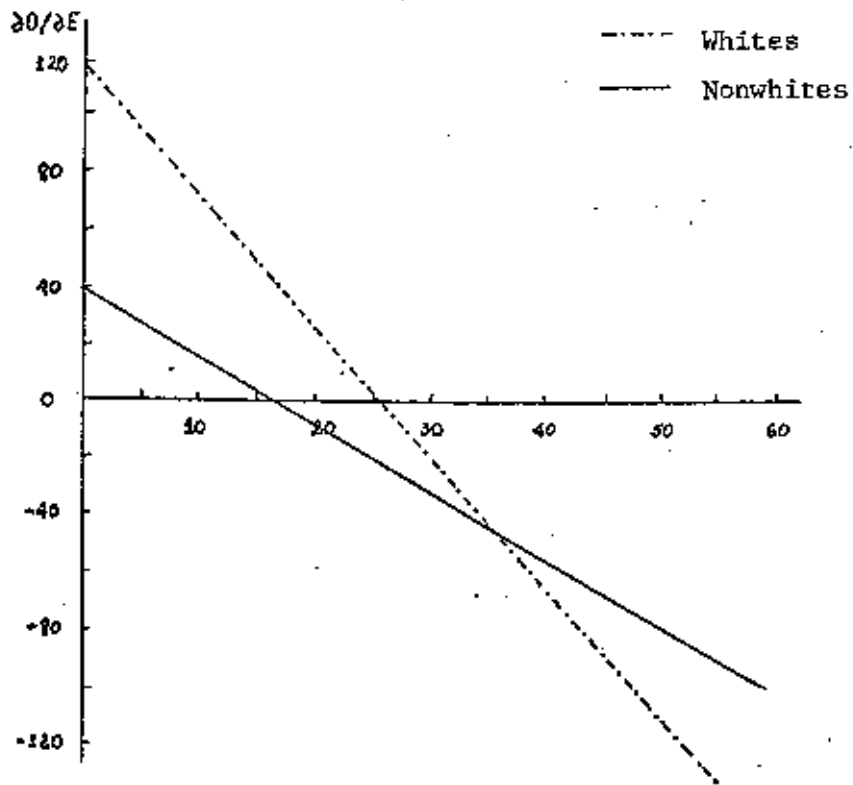


Source: 1960 Brazilian 1.27 percent subsample.

Figure VIII.1. Average Occupational Returns to Schooling by Color, Rio de Janeiro, Brazil (1960).

More marked differences, however, can be observed in the occupational returns to experience. This seems particularly important because, as we observed before, these returns to experience can be interpreted as indicating differences in occupational mobility chances. The differences in the coefficients for the experience terms between the two racial groups clearly indicates that nonwhites have a substantially flatter occupational mobility profile than whites do. In fact, the profile for nonwhites indicates that typically they have very little mobility during the first 25 years in the labor market, and after this period of stability they actually seem to decline in their occupational achievement. This is clearly shown in Figures VIII.2 and VIII.3.

In Figure VIII.2 we have depicted the marginal occupational returns to experience, that is, the partial derivative of occupational status in respect to experience. Whites are seen to enjoy much greater upward mobility chances for each additional year in the labor force than nonwhites during the first 35 years of work, what constitutes most of one's active working life. To have a better grasp of what these differences in return to experience represent for the mobility chances in both groups, Figure VIII.3 presents the comparison of lifetime occupational achievement between whites and nonwhites in two different situations: one extremely favorable to nonwhites, the other relatively favorable to whites. The



Source: 1960 Brazilian Census 1.27 percent subsample.

Figure VIII.2. Marginal Occupational Returns to Experience, Rio de Janeiro, Brazil (1960).

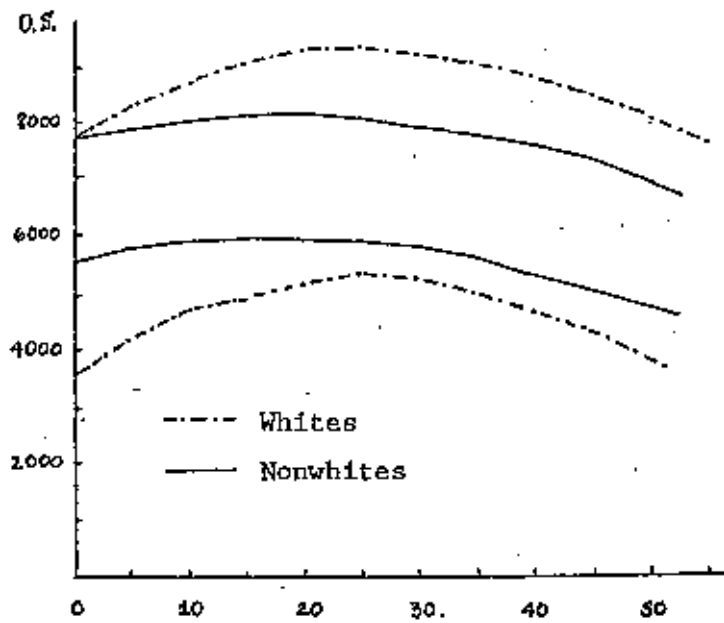


Figure VIII.3. Occupational Returns to Experience by Color, Rio de Janeiro, Brazil (1960).

first situation, corresponding to the case of rural residents with rural background, recent migrants (time less than one year), coming from an underdeveloped area, single and illiterate, is not a very usual one. In this situation nonwhites are shown to enjoy a more favorable achievement profile than whites throughout their working life. However, because whites have a steeper occupational-experience function, the nonwhite-white differences decrease during the life cycle. On the other hand, in a more common situation, like that of native urban residents, married, with two years of schooling, although whites and nonwhites seem to start at virtually equal occupational positions, whites show a substantially higher mobility profile than nonwhites, the relative difference growing during most of the working life.

These observations seem to support some conclusions reached when we examined the racial differences in income attainment, that is, that nonwhites seem to enjoy some advantages only at very low levels of skill, during the early phases of their careers and in situations implying low levels of income attainment. This also supports some observations made by dual labor market theorists that nonwhites seem to be confined to low-paying, dead-end occupations, that is, occupations with very low mobility chances. In this respect they seem to diverge significantly from the white patterns.

To obtain a summary measure of occupational discrimination one can calculate the difference between the expected level of occupation achievement for nonwhites if they had the same return structure as whites, i.e., in the absence of discrimination, and their actual level of achievement. To calculate the former one standardizes the nonwhite occupational achievement by using whites' equation and nonwhites average value for each independent variable. The result of this operation yields a value of 8371.1 which, when compared to the actual nonwhite mean level of occupational achievement (7783.0), produces as an estimate of occupational discrimination a value of 588.1. The total white-nonwhite gap in occupational achievement is 3851.4, and thus, one can say that about 15.3 percent of this difference is due to occupational discrimination. The remaining 84.7 percent of the racial difference in occupational attainment can be attributed to racial differences in the mean values of the independent variables.

In summary, the analysis of occupational discrimination resulted in significant evidence of its existence as a labor market mechanism. In particular, it has been found that while nonwhites seem to enjoy some relative advantage at very low levels of skills and at the earliest phases of their career, the much higher returns to schooling and experience among whites rapidly overcompensates these initial nonwhite advantages. The substantial racial



differences in returns to experience represent evidence that tend to support the dual labor market hypothesis-- that nonwhites are largely restricted to low skill, low paying, dead-end jobs, jobs with very modest mobility prospects. Nonwhites seem to have a "place" in society, and as long as they stay there they are able to enjoy relative advantages; however, any attempt to move out of this "place" seems to generate increasing contrary pressure in order to "keep them in their place."

Wage Discrimination: Model and Selection  
of Occupation

According to the argument developed above the proper analysis of wage discrimination, that is, unequal pay for equal job, should be performed within each occupational group. In this way we will be allowing occupation to freely interact with all the variables included in the model.

This represents a drastic reduction in the degrees of freedom for each analysis, and thus some simplifications are necessary. One of such simplification has already been made: the collapse of the black and mulatto color categories into one "nonwhite" group. But further simplifications must be made; more specifically, we must reduce the number of variables in the equation. For the intra-occupational analysis, thus, the following simplifications were made:

1. The Area of Residence variable was reduced to a urban/nonurban dichotomy.
2. The time in Current Place of Residence variable was reduced to a distinction between recent migrants and Native and Long Time migrants. That is, only the 'Time: 11+' dummy was maintained.
3. The Origin variable as simplified to a dichotomy between Origin from a Developed area and Other Origin. Natives are included in the first group.
4. Because within most occupations certain schooling cells have no cases in it, the Schooling dummies were regrouped in the following way: (0, 1) (2, 3) (4, 5) (6, 7, 8, 9) (11, 14, 17). The three first groups correspond to the elementary school level, the fourth group corresponds to junior high school level and the last group indicating a schooling achievement higher than junior high school.

To ensure a certain reliability level to our analysis, only the occupations having a minimum number of incumbents (30) from each racial group were selected. A total of 45 occupations satisfying this criterion were selected. A summary of the racial composition of the main occupational groups is presented in Table VIII.5.

Clearly, whites and nonwhites are far from having similar occupational distributions. They seem to diverge in particular at the top of the occupational structure, the Managers, Administrators and Office Workers group and Professional and Technical group, and at the very bottom of the occupational hierarchy, the Agricultural and Mining workers group. Calculating an Index of Dissimilarity from the data in Table VIII.5 we reach a value of 22.87, indicating that one would have to reallocate about 23 percent

Table VIII.5. Racial Composition of Occupations, Rio de Janeiro, Brazil (1960).

Occupational Group*	All Occupations in Group		Occupations Selected (% from group total)	
	Whites (%)	Nonwhites (%)	% Whites	% Nonwhites
Managers, Administrators, and Office Workers (111 - 191)	2588 (19.41)	332 (5.24)	82.75	88.25
Professional and Technical (211 - 235)	733 (5.51)	72 (1.14)	19.92	61.11
Agricultural and Extraction Workers (311 - 441)	1991 (14.98)	1583 (25.00)	96.33	94.76
Manufacturers and Construction Workers (511 - 689)	2850 (21.44)	1952 (30.83)	84.84	85.66
Commerce Workers (711 - 733)	1201 (9.04)	307 (4.85)	76.85	89.90
Transportation Workers (811 - 876)	1144 (8.61)	540 (8.53)	81.91	84.82
Service Workers (911 - 958)	2783 (20.94)	1545 (24.40)	90.80	93.46
TOTAL	13290 (100.0)	6331 (100.0)	81.99	89.10

Source: 1960 Brazilian Census 1.27 percent subsample.

\*Major Census Occupational Groupings.

of the individuals in any racial groups to reach an equal occupational distribution by race.

The last top columns in Table VIII.5 indicate the proportions between the number of incumbents in the occupations selected for analysis and the total number of incumbents in each major occupational group. The best represented group is the one at the bottom of the hierarchy, the agricultural and mining workers, with 96 percent of the whites in the group being represented and 95 percent of the blacks.

The worst represented occupational group is the Professional and Technical group. In this category only about 20 percent of the whites are represented; however, 61 percent of the nonwhites in this category will be analyzed.

In all groups the occupations selected constitute a very considerable proportion of the cases: 82 percent of the whites will be included in the analysis, while the corresponding figure for nonwhites will be as high as 89 percent. The results of the intra-occupational analysis are thus representative of the vast majority of the working population. Having in mind the possible slight bias introduced by the relative underrepresentation of the top positions in the occupational structure (Professionals and Technicians), these results are undoubtedly a very reliable picture of the situation faced in the labor market by all individuals from each racial group.

Moving to the intra-occupational analysis of racial differences in income attainment, we will concentrate on three aspects of these differentials: first, we will examine the general measure of labor market discrimination  $D$ , described in the preceding chapter. The relative magnitude of discrimination vis-à-vis the actual level of nonwhite attainment will also be examined.

As we have been arguing when we analyzed the racial differences in income and occupational attainment, racial differences in the returns to experience, an indicator of lifetime mobility chances, seems to play a crucial role in labor market discrimination. In the last section we suggested that whites seem to be subject to a very low level of occupational mobility opportunities. In this and the next sections, we will examine white/nonwhite relative improvement opportunities within each occupation.

The third aspect to be examined is whether the equations for whites and for nonwhites are significantly different from one another. The procedure for this test is the following: for each occupation three models are fitted: One including only the independent variables as described above; the second model includes a term for the dummy variable color (white = 1, 0 = otherwise); finally, the third model includes the previous terms plus "interaction" terms for the variable color with all the other dependent variables. The results of the third model are

the ones used in the calculation of the discrimination measure D and the racial differential in income returns to experience. Having fitted the three models we can then proceed to a two-step procedure to test whether the introduction of the terms for race and its interaction represent a significant increase in the fraction of explained variance. This is done by using the F-test described in Chapter IV following two steps:

- a) We first test the third model:

$$H_0: \beta_{12} = \beta_{13} = \dots = \beta_{23} = 0$$

where  $\beta_{12} \dots \beta_{23}$  are the coefficients for the main and interactive terms of color.

- b) We can also test the second model, that is, whether the two racial groups differ as to their regression constant. Thus we test the null hypothesis:

$$H_0: \beta_{12} = 0$$

using a similar F-test (cf. Kerlinger and Pedhazur, 1973, pp. 231-280).

#### Wage Discrimination: White Collar Occupation

The white collar occupations selected were the following: Store Owners, Office Workers, Office Clerks, Technical and Kindred Workers and Members of the Armed Forces. Table VIII.6 and Figure VIII.4 present the results for the analysis within these occupations.

Table VIII.6. Selected Racial Differential Characteristics, White Collar Occupations, Rio de Janeiro, Brazil (1960).

Occupation	D	D/ $\bar{Y}_n$ (%)	Significance				N
			F <sub>I</sub> →	III	F <sub>I</sub> →	II	
Store Owners (115)	2016.8	18.40	n.s.		n.s.		695
Office Workers (181-189)	2630.6	20.24	n.s.		n.s.		466
Office Clerks (191)	1786.6	16.77	n.s.		**		1322
Technical and Kindred Workers (214, etc.)	2349.0	22.50	n.s.		n.s.		236
Members of Armed Forces (971)	3261.1	41.16	**		**		868

Source: 1960 Brazilian Census 1.27 percent subsample.

Note: D = Labor market discrimination measure;

$\bar{Y}_n$  = Nonwhite average income;

Significance = Result of the F-tests: n.s. = not significant

\* = significant at .05

\*\* = significant at .01

N = Number of cases

A.

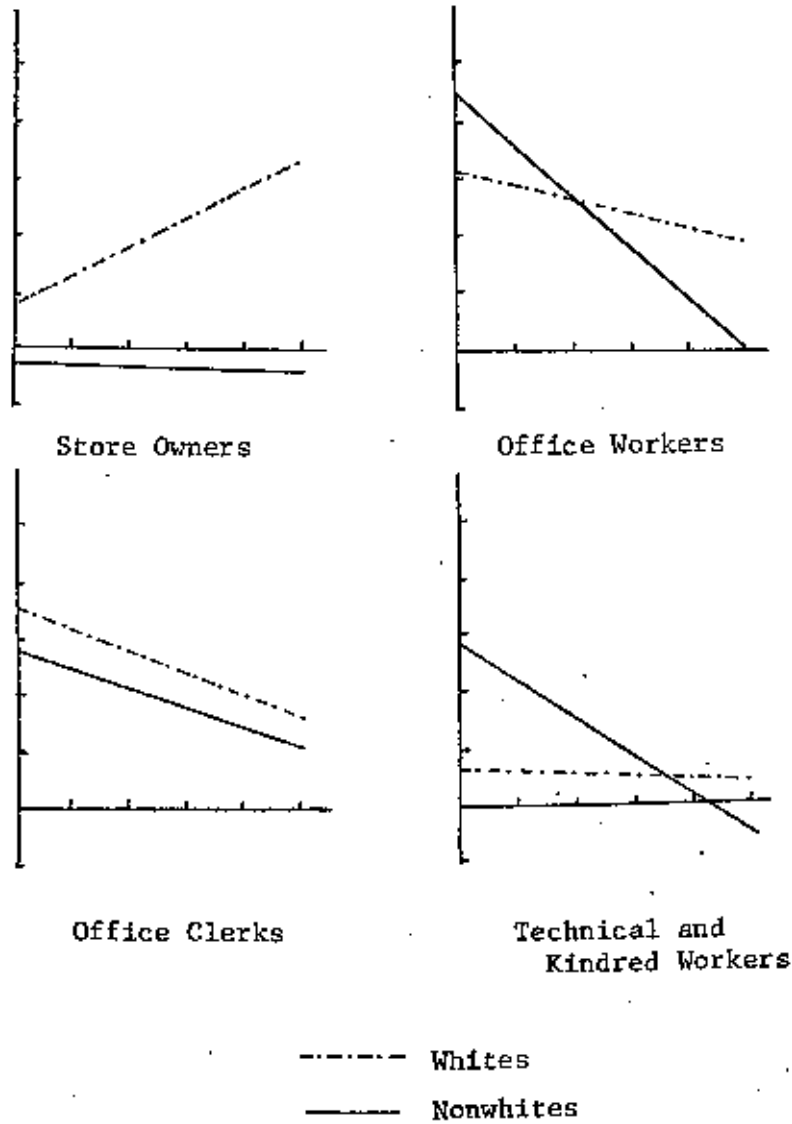
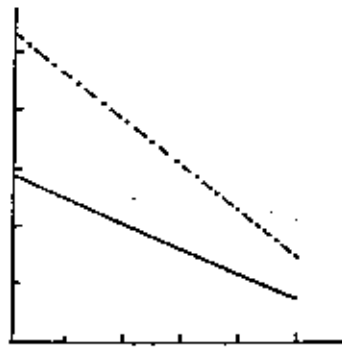


Figure VIII.4. Intra-Occupational Marginal Returns to Experience, White Collar Occupations.



B.



Members of Armed Forces

----- Whites  
—— Nonwhites

In all five occupations the amount of the racial difference attributable to discrimination is substantial, ranging from about 17 percent of the nonwhite income (for Office Clerks) to as high as about 41 percent of the nonwhite income, the case of Members of the Armed Forces.

However, for some of the occupations we cannot reject the hypothesis of equality between the white and nonwhite equations. In fact, in only two cases  $H_0$  can be rejected: for Office Clerks we can reject the hypothesis that whites and nonwhites have the same intercept ( $\alpha < .01$ ) and for Members of the Armed Forces we can reject the hypothesis of equality in the whole equation. Thus, in the latter case not only we have a very substantial amount of racial income difference attributable to discrimination but also we can be confident that this is statistically a very significant difference. However, one should have in mind that statistical significance is also dependent on the number of observations, and thus some cases in which we failed to reject the null hypothesis could turn out to be significant if we had a larger number of cases.

As to the returns to experience, consistent with the idea of labor market segmentation along occupational lines, each occupation seems to have a peculiar pattern of returns to experience. Moreover their patterns seem to be sharply differentiated according to color classification.

In the case of Store Owners, while the patterns of returns to experience for whites is one of increasing returns as experience increases, the pattern for nonwhites indicates negative marginal returns throughout the working life. This however, seems to be an extreme case.

The usual pattern is one of decreasing returns to experience. In two cases, those of Office Clerks and Members of Armed Forces, whites appear to have higher marginal returns to experience than nonwhites throughout their working life. On the other hand, among Office Workers (n.e.c.) and Technical and Kindred Workers, nonwhites are seen to initially enjoy higher marginal returns to experience than whites. However, due to their steeper rate, whites are able to have actually higher returns later in the life cycle. This is seen to happen some 20 years after one's entrance to the labor market in the case of Office Workers and some 35 years in the case of Technicians, so that only in the latter case do nonwhites seem to enjoy advantages during most of their working lives. It should be recalled, though, that in both cases we failed to reject the null hypothesis of equal coefficients for whites and nonwhites, so that we cannot discard the idea that nonwhites advantages do not exist in the population.

Summarizing the findings for the white collar occupations, we can say that we found a very substantial amount of income differences attributable to labor market

discrimination, and that in at least one case, that of Members of Armed Forces, the result was found to be statistically very significant. The analysis of the marginal returns to experience, with the possible exception of the case of technical and kindred workers, indicated that whites enjoy typically much larger returns to experience, an extreme case being that of Store Owners.

Wage Discrimination: Blue Collar  
Occupations-Industrial Workers

The picture emerging from the analysis of industrial occupations is a more varied one. The calculated measure of labor market discrimination varied from a high of about 35 percent of nonwhite income for the Millers and Drillers group to a low of about -12 percent for Linotypists. That is to say that for the latter group the expected nonwhite income given the white earnings structure is lower than the actual nonwhite average income. In fact, in four out of the 19 selected occupations the coefficient of discrimination is negative, indicating nonwhite advantages in the labor market vis-à-vis whites. However, it should be noticed that in none of the four occupations in which nonwhites seem to have advantage we were able to reject the null hypothesis that the main and interactive effects for color are null. Thus, it is possible that for these occupations there are no racial differences in the process of income attainment.

On the other hand, in seven out of the 15 occupations in which whites appear to have advantages we were able to reject at least one of the two null hypothesis concerning racial equality in intra-occupational earnings functions. In four of these we rejected the hypothesis of equality in the whole equation and in the remaining three we rejected the hypothesis of equality in the regression constant. Thus, in all, there is a tendency towards positive coefficients of discrimination and several of these appear to be statistically significant, as the data in Table VIII.7 clearly shows.

The analysis of the intra-occupational marginal returns to experience depicted in Figure VIII.5, also indicates some mixed results. In nine of the occupations selected whites are seen to enjoy higher marginal returns to experience than nonwhites throughout their working lives; in six of the occupations selected the reverse is true. From the four remaining occupations each group is able to enjoy higher rates of returns to experience during part of their lifetime work experience: in two occupations whites enjoy greater returns for most of the working lives; in the other two the reverse is true. Thus, here again, it appears that in most industrial occupations whites appear to enjoy net advantages over nonwhites, although in several of these industrial positions nonwhites actually fare better than whites.

Table VIII.7. Selected Racial Differential Characteristics, Blue Collar Occupations, Industrial Workers, Rio de Janeiro, Brazil (1960).

Occupation	D	D/ $\bar{Y}_n$ (%)	Significance				N
			F <sub>I</sub> →	III	F <sub>I</sub> →	II	
Millers and Drillers (523)	2808.3	34.81	n.s.		*	93	
Mechanics, Auto (524)	1007.2	10.79	*		n.s.	520	
Mechanics and Repairmen (525)	2169.5	23.31	n.s.		n.s.	104	
Solderers (524)	-847.1	-9.91	n.s.		n.s.	80	
Blacksmiths (529)	1629.0	24.17	n.s.		*	125	
Textile Workers (547)	213.5	3.09	n.s.		n.s.	137	
Tailors (571)	3369.1	38.85	n.s.		*	157	
Shoemakers (575)	632.6	8.51	n.s.		n.s.	195	
Cabinetmakers (581)	315.7	3.98	n.s.		n.s.	161	
Carpenters (582)	1245.9	16.71	n.s.		n.s.	253	
Fillers and Polishers (587)	1013.0	13.10	*		n.s.	67	
Electricians (591)	-125.0	-1.19	n.s.		n.s.	237	
Brickmasons (613)	782.0	11.34	**		*	683	
Construction Helpers (614)	102.6	1.74	n.s.		n.s.	497	
Wall Painters (615)	1136.0	15.17	*		*	261	
Plumbers (618)	-722.8	-8.89	n.s.		n.s.	125	
Bakers (637)	625.2	9.83	n.s.		n.s.	109	
Linetypists (651)	-1071.6	-11.71	n.s.		n.s.	144	
Glaziers (661)	671.2	12.54	n.s.		n.s.	93	

Source: 1960 Brazilian Census 1.27 percent subsample.

Note: D = Labor market discrimination measure;

$\bar{Y}_n$  = Nonwhite average income;

Significance = Result of F-tests: n.s. = not significant

\* = significant at .05

\*\* = significant at .01

N = Number of cases

A.

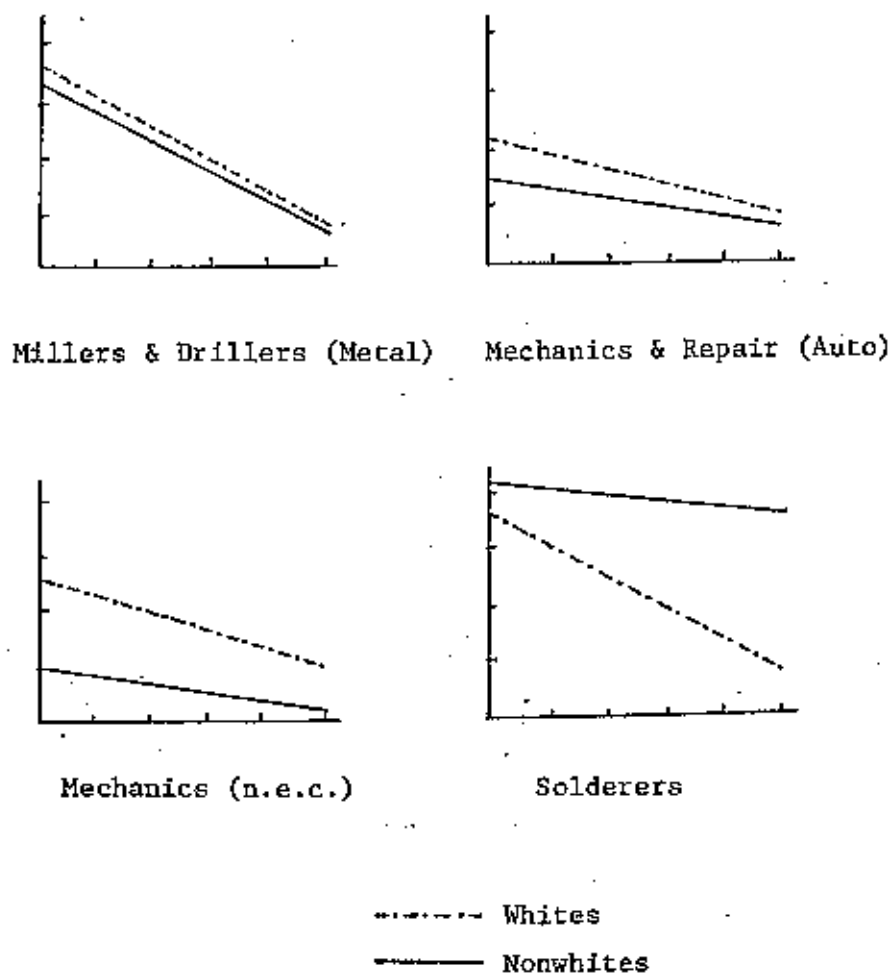
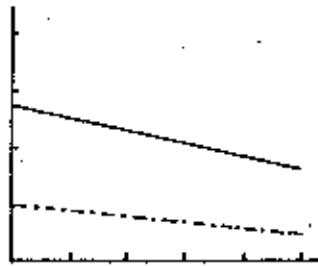
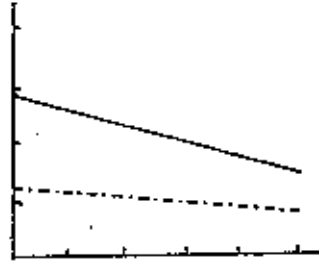


Figure VIII.5. Intra-Occupational Marginal Returns to Experience, Blue Collar, Industrial Workers.

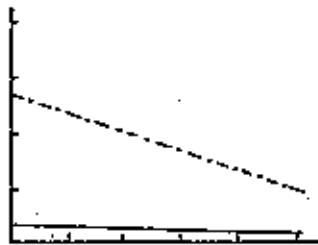
B.



Blacksmiths & Locksmiths



Textile Workers

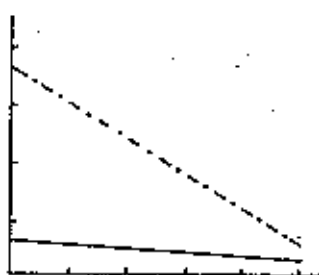


Tailors

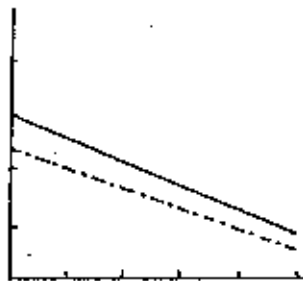
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——— Nonwhites



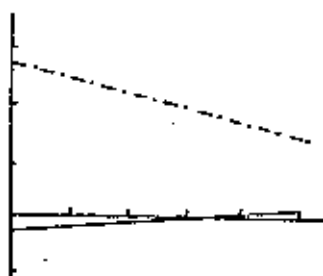
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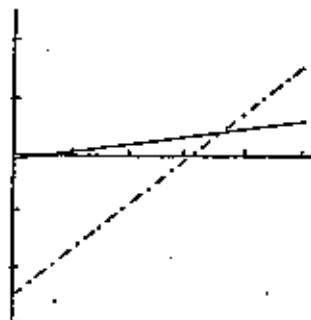
Shoemakers



Cabinetmakers



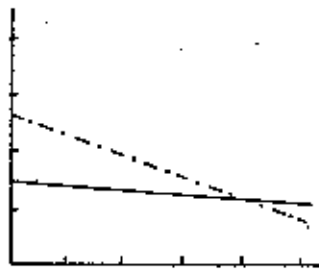
Carpenters



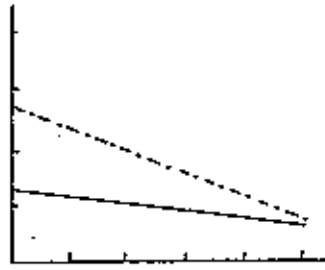
Fillers &amp; Polishers

----- Whites  
———— Nonwhites

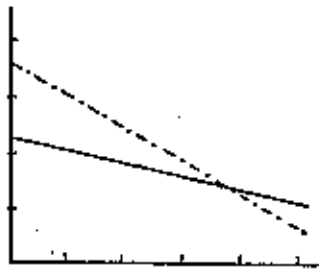
D.



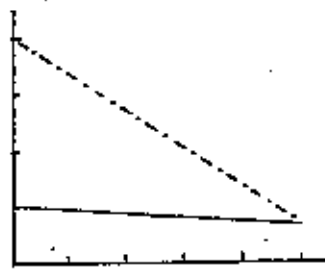
Electricians



Brickmasons



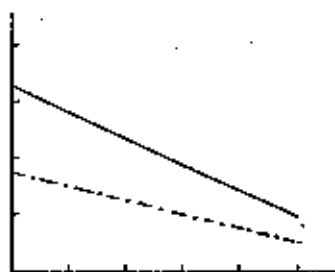
Construction Helpers



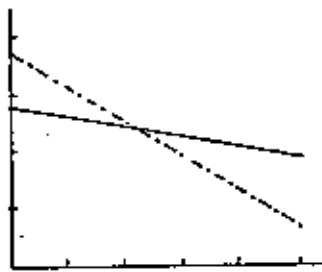
Wall Painters

----- Whites  
———— Nonwhites

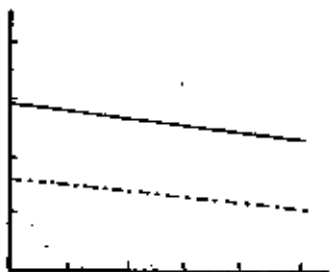
E.



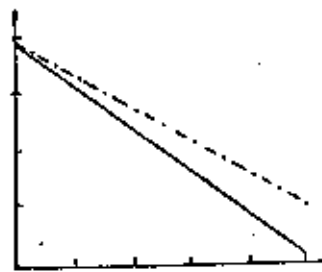
Plumbers



Bakers



Linotypists



Glaziers

----- Whites  
———— Nonwhites

Wage Determination: Blue Collar Occupations-  
Service Workers, Workers, n.e.c.

The case of Service workers seems to be as varied as that of industrial workers. The coefficient of discrimination has wide variation, both in absolute and relative terms, as can be seen in Table VIII.8. It ranges from a high of about 48 percent of the actual nonwhite average income for Port and Dock workers to a low of about -16 percent of the nonwhite income for Other Occupations in Transportation (n.e.c.). There is a clear tendency for discrimination to assume positive values; only three out of the 15 occupations selected have negative signs. In other words, in the vast majority of occupations whites seem to enjoy higher net labor market advantages than nonwhites, the amount of the white/nonwhite income difference that can be attributed to discrimination against nonwhite being in several cases very substantial. Besides Port and Dock workers, we find also very substantial positive discrimination coefficients for Post-Office workers (44 percent of nonwhite average income in the occupation), Auto Drivers (34 percent) and Peddlers (24 percent).

On the other hand, with the possible exception of Sales Clerks and Post-Office workers, for all the selected occupations from the service sector we fail to reject the null hypothesis of equality in coefficients between the two racial groups. That is to say, in all but these two

Table VIII.8. Selected Racial Differential Characteristics, Blue Collar Occupation, Service Workers, Workers n.e.c., Rio de Janeiro, Brazil (1960).

Occupation	D	D/ $\bar{Y}_n$ (%)	Significance				N
			F <sub>I</sub> →	III	F <sub>I</sub> →	II	
Peddlers (712)	1624.6	24.32	n.s.		n.s.	315	
Sales Clerks (713)	713.0	10.76	n.s.		*	849	
Port Workers (831)	3192.0	48.16	n.s.		n.s.	73	
Railroad Workers (841)	-115.3	-1.17	n.s.		n.s.	139	
Auto Drivers (851)	2777.3	33.81	n.s.		n.s.	915	
Occ. in Transp. n.e.c. (861)	-1553.9	-15.64	n.s.		n.s.	127	
Post-Office Workers (871)	3643.6	44.13	n.s.		*	122	
Waiters (912)	915.7	13.40	n.s.		n.s.	240	
Dishwashers (913)	215.4	5.58	n.s.		n.s.	89	
Doormen (921)	-606.2	-8.06	n.s.		n.s.	215	
Barbers (931)	343.6	4.24	n.s.		n.s.	177	
Janitors, etc. (983)	265.3	3.63	n.s.		n.s.	697	
Garbage Collectors (986)	921.7	13.25	n.s.		n.s.	68	
Workers n.e.c. (989)	273.3	3.83	n.s.		n.s.	597	
Other Occup. n.e.c. (998)	950.3	12.46	n.s.		n.s.	750	

Source: 1960 Brazilian Census 1.27 percent subsample

Note: D = Labor market discrimination measure;

$\bar{Y}_n$  = Nonwhite average income;

Significance = Result of F-tests: n.s. = not significant  
\* = significant at .05

N = Number of cases

A.

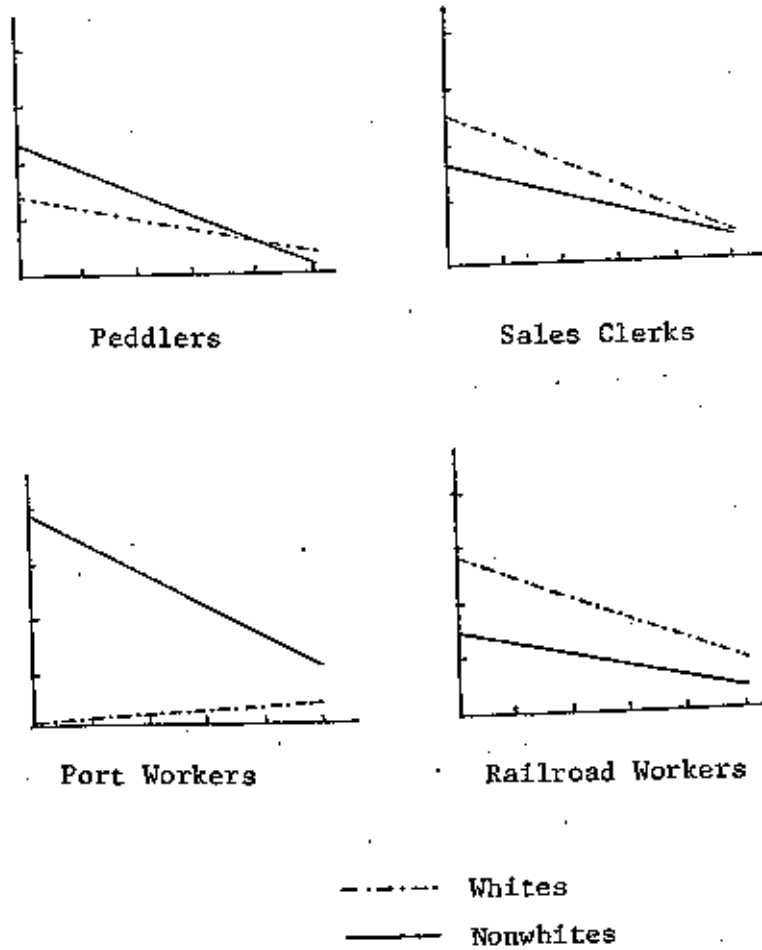
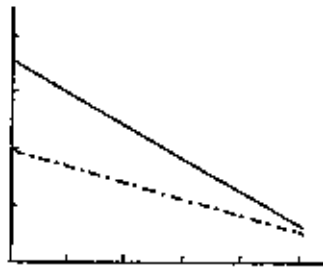
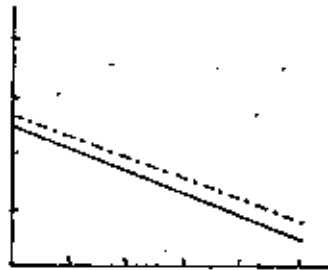
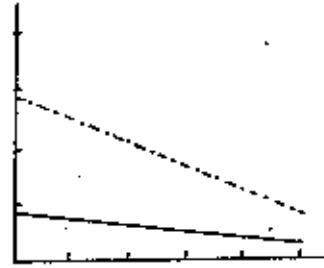


Figure VIII.6. Intra-Occupational Marginal Returns to Experience, Blue Collar, Service Workers, n.e.c.

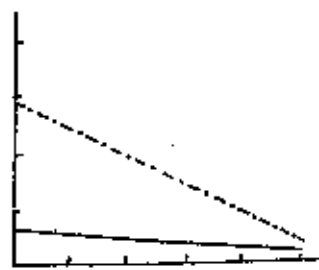
B.



Auto Drivers



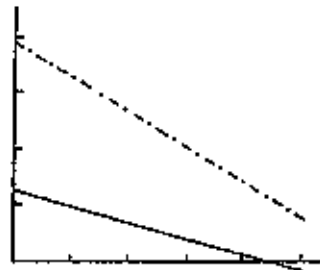
Post-Office Workers



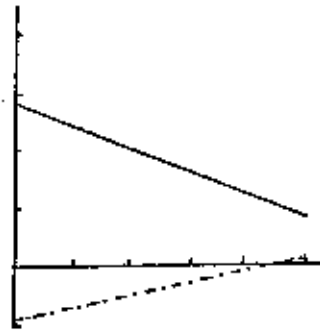
Waiters

----- Whites  
———— Nonwhites

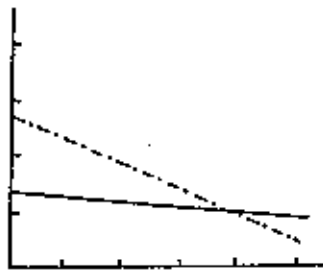
c.



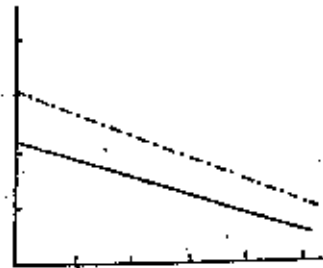
Dishwashers



Doormen



Barbers

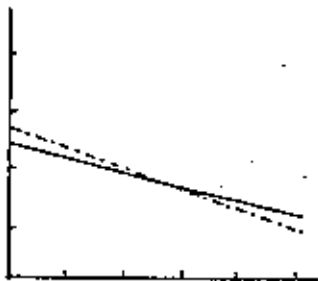


Janitors, etc.

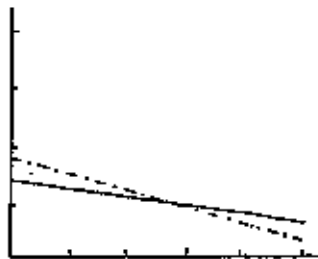
----- Whites  
———— Nonwhites



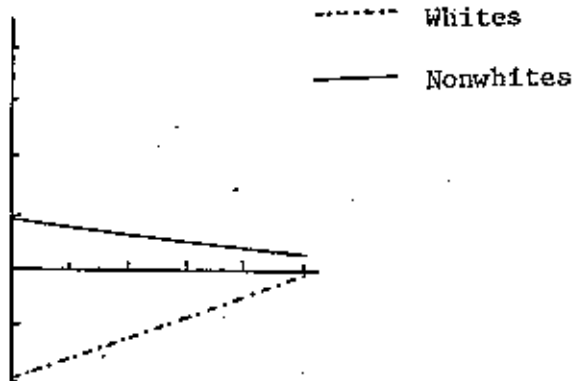
D.



Other Occup. n.e.c.



Workers n.e.c.



Garbage Collectors

exceptions, we cannot reject the idea that these observed racial differences merely resulted from random factors, no differences being real in the population. Even for the two occupations mentioned above, we were able to reject only the null hypothesis stating equality of regression constant, at a .05 level of significance.

The analysis of the marginal returns to experience also reveals a tendency for white advantages. Of the 15 occupations selected from the service sector, seven showed a pattern of higher white returns throughout the working life and in these occupations whites have higher marginal returns to experience during most of their working life. It should be recalled, again, that in none of these occupations were we able to reject the hypothesis that the equations for the two racial groups are equal, and thus these different returns to experience appear not to be statistically significant.

#### Wage Discrimination: Agricultural Workers

Six occupations from the Census' Agricultural and Mining Workers classification met the requirements for analysis: these were Truck Farmers, Gardeners, Agricultural Laborers, Livestock Farm Workers, Fishermen and Farm Foremen. The coefficient of discrimination varies widely among these occupations, ranging from 41 percent of nonwhite income for Truck Farmers to -4 percent for Gardeners. The latter occupation, though, is the only

one to permit net advantages for nonwhites, the others having positive signs. Moreover, for three of the six selected occupations we were able to reject the null hypothesis concerning the whole equation at the .01 significance level, one of these occupations being the very important Agricultural Laborers' group, composing more than 10 percent of our sample. In one case, (Livestock Farm Workers) we were able to reject only the null hypothesis concerning equality in regression constant at the .05 level of significance. In all, this is an indication of the somewhat clear tendency for whites to enjoy privileges in the more traditional sectors, like agriculture, where incidentally, nonwhites are relatively more numerous.

The analysis of marginal returns to experience also tend to support the observations above. In only one occupation, Fishermen, do nonwhites enjoy higher returns to experience, and this only after some 20 years of labor market experience. In the important case of Agricultural Workers too, nonwhites seem to have higher returns to experience, but this happens during the first 25 years or so of labor market involvement. After this period whites are seen to have higher marginal returns to experience up to the end of their working lives.

Table VIII.9. Selected Racial Differential Characteristics, Blue Collar Occupations, Agricultural Workers, Rio de Janeiro, Brazil (1960).

Occupation	D	D/ $\bar{Y}_n$ (%)	Significance				N
			F <sub>I</sub> →	III	F <sub>I</sub> →	II	
Truck Farmers (321)	1515.3	41.09	**		**	658	
Gardeners (322)	-192.8	-4.11	n.s.		n.s.	83	
Agricultural Workers (323)	337.5	10.65	**		**	2076	
Livestock Farm Workers (324)	1021.3	35.33	n.s.		*	92	
Fishermen (332)	240.7	4.03	n.s.		n.s.	82	
Farm Foremen (981)	804.9	8.27	n.s.		n.s.	94	

Source: 1960 Brazilian Census 1.27 percent subsample.

Note: D = Labor market discrimination measure;

$\bar{Y}_n$  = Nonwhite average income;

Significance = Results of F-tests: n.s. = not significant  
 \* = significant at .05  
 \*\* = significant at .01

N = Number of cases

A.

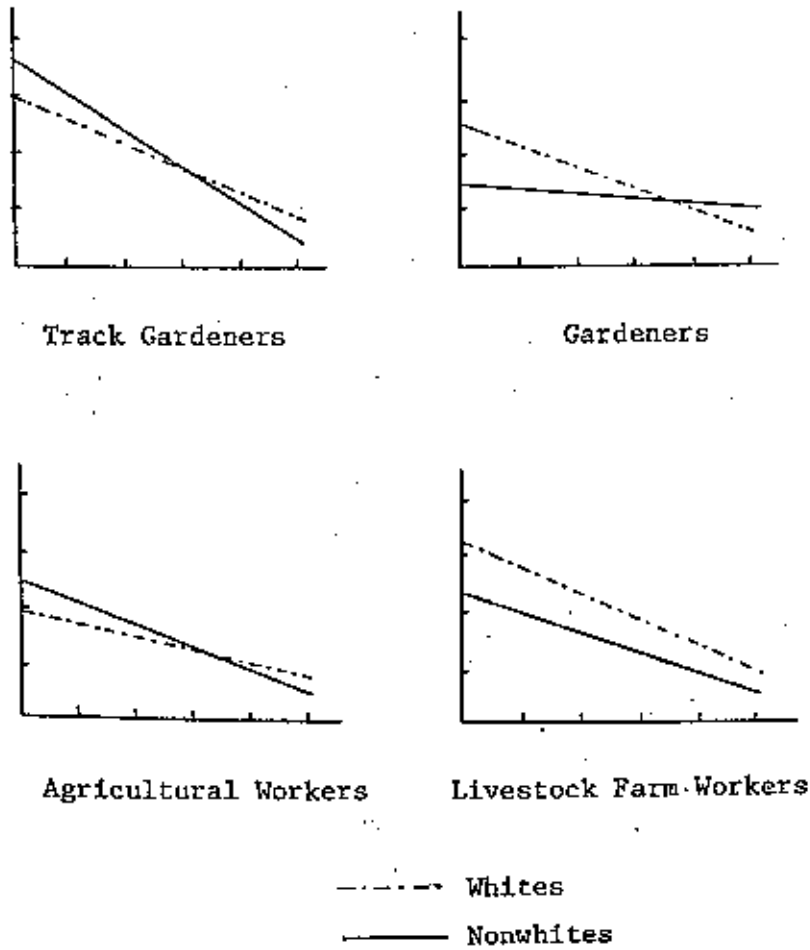
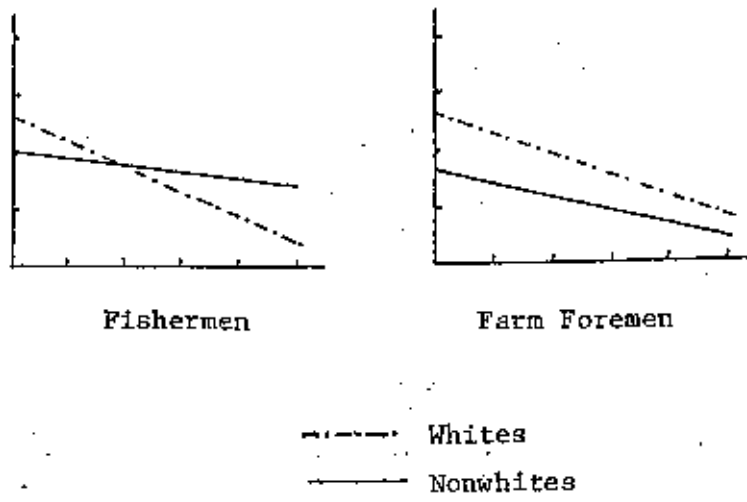


Figure VIII.7. Intra-Occupational Marginal Returns to Experience, Blue Collar, Agricultural Workers.

B.



Wage Discrimination: Summary and  
Structural Correlates

Summarizing the findings for the intra-occupational analysis of white/nonwhite differences in income attainment, we can say that there is a clear tendency for our measure of discrimination to be positive, indicating net white gains. As the diagrams in Table VIII.10 show most of both the absolute and relative coefficients of discrimination are positive (about 82 percent of the occupations examined were in this case), several of them being very substantial (in 12 cases out of 45 we found coefficients larger than 20 percent of the nonwhite average income). Moreover, in 14 of the occupations examined we found that these differences favoring the white group were statistically significant, while none of the differences favoring nonwhites were so. Thus, we can say that wage discrimination seems to be also an operative mechanism in the labor market allocation of economic rewards.

But the most interesting aspect of wage discrimination is, probably, not its existence as a labor market mechanism but the fact that it seems to vary in both magnitude and direction from one occupation to another. In particular, we saw that the magnitude of the discrimination coefficient seems to increase with the educational requirements to perform the occupation, and hence with its economic rewards. Some of the largest discrimination coefficients are to be found among the white collar

Table VIII.10. Univariate Distribution, Discrimination Coefficient: Absolute (D) and Relative ( $D/\bar{Y}_n$ ).

---

-1553.9		1 +X
-904.21		4 +XXXX
-254.53		3 +XXX
395.16		13 +XXXXXXXXXXXXX
1044.8		10 +XXXXXXXXXXXXX
1694.5		5 +XXXXX
2344.2		3 +XXX
2993.9		4 +XXXX
3643.6		2 +XX
Total		45 (Interval width = 649.69)

-.15600		2 +XX
-.76250	-1	4 +XXXX
.35000	-2	9 +XXXXXXXXXX
.83250	-1	8 +XXXXXXXXXX
.16300		10 +XXXXXXXXXXXXX
24275		4 +XXXX
32250		3 +XXX
.40225		4 +XXXX
.48200		1 +X
Total		45 (Interval width = .79750 -1)

---

Source: 1960 Brazilian Census 1.27 percent subsample.



occupations--those at the top of the occupational hierarchy.

On the other hand, we also observed that some occupations in the traditional, agricultural sector of the economy showed large and significant racial differences in returns to labor. So, it seems that a relatively more benign environment for nonwhites is that constituted by the occupations in the lowest ranks of the urban occupational hierarchy, typically the traditional services sector.

In the next paragraphs we test these impressionistic observations about the structural correlates of wage discrimination. But before we do that, let us examine two alternative hypotheses advanced in the literature to explain some aspects of wage discrimination against nonwhites: the "competitive process hypothesis" and the "crowding hypothesis." In a well known article, the Hodges (1965) argue that nonwhites are in a weaker economic condition than whites, and thus, are forced to accept lower wages than whites for the performance of the same job. Because these lower nonwhite wages tend to reduce the white wages in the same occupation, the Hodges hypothesize that the larger the proportion of nonwhite workers in an occupation the greater the amount of resentment by whites against their nonwhite co-incumbents. Their resentment, putting pressure on employers, will ultimately

lead to higher levels of discrimination against nonwhites, neutralizing the downward effect on wages caused by non-white competition. We could call it, as Stolzenberg (1973) does, the "economic threat hypothesis."

On the other hand, we have Bergman's (1971) "crowding hypothesis," already discussed in Chapter II. According to it, some occupations are open to nonwhites and others are not. The resulting crowding in nonwhite occupations causes the relative supply of labor in these occupations to exceed the normal levels, then reducing the wages in these 'nonwhite' occupations. The only whites who would be willing to work in these 'nonwhite' occupations would be those with high levels of occupation-specific skills, those able to earn higher wages in these occupations than they could get in 'white' occupations (cf. Bergman, 1971, p. 298).

Both "economic threat" and "crowding" hypothesis, then, assume that higher levels of participation by nonwhites in a given occupation will lead to higher levels of wage discrimination. To examine the plausibility of these hypotheses as well as the impressionistic observations made while analyzing the intra-occupational earnings function, we can correlate some selected characteristics of the occupations with their associated absolute and relative discrimination levels. The results of this correlation analysis is presented in Table VIII.11.

Table VIII.11. Correlations between Selected Occupational Characteristics, Rio de Janeiro, Brazil (1960).

Variable	Blacks	Urban	Income	Educ	Discr	Drel
1. Blacks	1.0000					
2. Urban	-.3842	1.0000				
3. Income	-.7024	.5144	1.0000			
4. Educ	-.7289	.5815	.8569	1.0000		
5. Discr	-.3936	.1804	.5353	.5291	1.0000	
6. Drel	-.1982	-.0757	.2968	.2802	.9305	1.0000

Source: 1960 Brazilian Census 1.27 percent subsample.

Note: Blacks = % nonwhites in occupation;  
 Urban = % urban residents in occupation;  
 Income = Average income in occupation;  
 Educ = Average schooling in occupation;  
 Discr = D  
 Drel =  $D/\bar{Y}_n$

As observed before, the magnitude of the absolute discrimination coefficient does seem to increase as average income and education increase. In fact, these two characteristics of occupation seem so highly correlated ( $r = .857$ ) that we could think of them as constituting a single "occupational status" dimension. Both correlations of income and schooling with absolute discrimination appear to be very significant ( $\alpha < .01$ ), the correlation of income with relative magnitude of discrimination also being significant (at  $\alpha < .05$ ).

On the other hand, the zero-order correlations with percent urban residents do not seem to be significant at any conventional level. In fact, while the correlation of the latter variable with  $D$  is positive, the corresponding correlation with  $D/Y_n$  is negative. However, the relatively large correlation between "percent of urban residents" and the "occupational status" variables may be in fact acting as a suppressor effect, the partial level of association between percent urban and the discrimination measures possibly being larger than the zero-order correlations.

The correlation between relative nonwhite participation and absolute level of discrimination is significant, and, contrary to the hypothesized relationship, it is negative rather than positive. In other words, contrary to the "economic threat" and "crowding" hypothesis, the

larger the relative number of nonwhite incumbents in a occupation, the lower the absolute and relative level of discrimination against nonwhites. However, again, because the percent nonwhite is highly correlated with average income and average schooling, this correlation being moreover negative, the partial effect of percent nonwhite on discrimination could very possibly turn out to be positive, as hypothesized.

Thus, we need to look further into controlled relationships, although the small number of cases will probably result in nonsignificant coefficients. The results of the regressions of the discrimination measures on the several occupational characteristics are presented in Table VIII.12.

The explanatory power of the occupational characteristics on the absolute measure of discrimination is not very significant, 33 percent of the variance of D being explained by the four predictors. The impact of the "occupational status" variables remained positive, supporting the hypothesis that discrimination tends to increase as one moves up the occupational hierarchy. But, the more interesting results are those referring to the nonwhite participation in the occupation and the level of "urbanization" of the occupational role. As can be seen in Table VIII.12, the partial regression coefficients for the variable percent urban, for both absolute and relative

Table VIII.12. Regressions of Intra-Occupational Discrimination on Selected Occupational Characteristics.

Variable	Dependent Variable: D		Dependent Variable D/ $\bar{Y}_n$	
	$\hat{\beta}$	sig.	$\hat{\beta}^*$	sig.
Constant	-532.96	0.688	0.07960	0.669
Percent Nonwhites	586.78	0.773	0.11605	0.685
Percent Urban	-1191.80	0.204	-0.27605	0.041
Average Income	0.125	0.337	0.00001	0.363
Average Schooling	297.86	0.165	0.03181	0.288
R <sup>2</sup>		0.333		0.183

measures of discrimination taken as dependent variables, actually become negative. The coefficient for the impact on the relative measure of discrimination is significant at  $\alpha < .05$ . This clearly indicates that, when one controls for the positive effect of occupational status on discrimination, the higher the level of "urbanization" of one occupational role the lower the level of discrimination against nonwhite incumbents.

Likewise, the impact of nonwhite participation in the occupation on the level of discrimination against nonwhites also changed substantially after the control for the other occupational characteristics. After we properly controlled for the positive effect of occupational status, the association between percent nonwhite and both the absolute and relative level of discrimination against nonwhites, although small and nonsignificant, appear to be positive. This seems to lend support to either the "economic threat hypothesis" or the "crowding hypothesis," when they assume that higher levels of nonwhite participation leads to higher levels of discrimination against nonwhites.

However, it should be recalled that due to the small number of observations, these results are statistically nonsignificant and thus should be considered as tentative and exploratory in character. Summarizing the findings on wage discrimination we could say that our results seem to

indicate that for a certain number of occupations wage discrimination seems to be an existing mechanism in the allocation of rewards to labor. Exploring the variations and conditions of the magnitude and direction of wage discrimination, we arrive at the following conclusions:

- a) Discrimination against nonwhites seems to increase as the general standing of the occupations also increases. Some of the largest coefficients of discrimination are to be found among white collar occupations, the very top of the occupational hierarchy;
- b) the relative level of "urbanization" of one occupation seems to be a relevant factor in determining the level of discrimination against nonwhites. The larger the proportion of urban residents among the incumbents of an occupation, other things being constant, the lower the level of discrimination against blacks. We observed that this seems to be particularly true of the more traditional urban services sector; and finally,
- c) the level of nonwhite participation in an occupation seems to have a positive, although small and possibly nonsignificant effect on the level of discrimination. This seems to lend support to some theories of discrimination which assume that the relative excess supply of nonwhites in an



occupation tends to increase the level of discrimination against its nonwhite occupants. This calls for further analysis on the process causing this increased discrimination, that is, for a closer examination and comparison between the two competing "economic threat" and "crowding" hypotheses.

## CHAPTER IX

### SUMMARY AND CONCLUSIONS

In this dissertation we examined racial differentials in income attainment in one developed area of Brazil--the Rio de Janeiro region. In doing so we had in mind two independent hypotheses springing from our examination of the sociological literature on race relations in Brazil. These two hypotheses were the following:

- A. One should expect mulattoes and blacks to be clearly differentiated from each other. In particular, one should expect mulattoes to show higher levels of educational, occupational and income attainment than blacks.
- B. The second hypothesis, which is slightly contradictory to the first, states that race has no significant role in the process of mobility, the present situation of nonwhites being explainable in terms of the relatively disadvantageous position they started from. More specifically, although the levels of attainment may differ from one color group to another, one should expect to find no racial differences in the returns to the investments made.

The empirical examination of these propositions was based in a recursive-type system of equations relating locational-background variables and age to schooling within each color group. We found the following antecedent variables substantially affecting one's level of

schooling attainment: current place of residence (basically a urban-rural continuum), urban background and age. These factors were all positively and significantly related to schooling. On the other hand, the remaining background variables were found to have a small and insignificant effect on educational attainment. At this point we noticed that blacks and mulattoes had very similar profiles in terms of the coefficients in the tested models, indicating that at least in regard to the Schooling process, blacks and mulattoes are very much alike, while the same cannot be said about whites.

The next step was to relate these variables, schooling included, to marital status. Because marital status is a dichotomous variable, a logistic response model was used. The analysis of marital status indicated that significant interactions between race and some of the variables were present in the data. In particular, whites seem to be rather sharply differentiated from nonwhites. Among whites, significant effects of Schooling and Place of Residence were found. For the nonwhite group, no other variable besides Age appear to significantly affect the log odds for being married. For both groups, Age is the primary determinant of marital status.

Finally we moved, in our recursive analytic structure, to the examination of income attainment. Several facts seem to emerge from this analysis. The

first important finding is the support for the earlier observation that blacks and mulattoes, contrary to the usual assumptions found in the literature, seem to have quite similar earnings functions. This was particularly verified in relation to the patterns of returns to experience and schooling, but also being true, to a lesser extent, in respect to other variables. A second finding emerging from the analysis of income attainment is the significant difference in the process of income attainment between whites and nonwhites. In particular, our results suggest that while nonwhites seem to enjoy certain advantages in the very lowest levels of attainment, these advantages are rapidly compensated for by the whites' superior rates of returns to experience. As a result, nonwhites are only able to profit from a better position at the early phase of their involvement in the labor market, at very low levels of skill and in generally poor environments. Whites are much more efficient in converting experience and schooling into monetary returns while nonwhites suffer increasing disadvantages as they try to climb the social ladder. An implication of these findings seems to be that the data provide no support for the hope that investment in schooling for nonwhites can remove the economic disadvantages imposed to this group. On the contrary, the findings do indicate that, at least in the short run while these market structures are maintained, increases

in the educational attainment of nonwhites can actually lead to an increase in the level of discrimination against nonwhites, since the racial income differentials seem to increase as educational attainment increases. The low educational achievement of nonwhites is functional in the sense that it keeps them in situations in which the effect of discrimination is comparatively mild.

We could thus reject the two hypotheses inspired in the Brazilian sociological literature as being implausible, and the next step was then to examine the labor market processes that can be thought as responsible for the observed racial differences in income attainment. We argued that it is through the "intervention" of occupational attainment that these differentials are realized. More specifically, we examined the two processes that can plausibly be regarded as the labor market mechanisms through which discrimination against nonwhites is accomplished:

- a) Occupational discrimination--this consists basically in racial differences in the process of occupational attainment, that is, nonwhites can have restricted access to some better paying jobs.
- b) Wage discrimination--nonwhites, while having the same qualifications as whites, can earn less for performing the same jobs.

Our results indicate that both processes are operative as mechanisms for reward allocation in the labor market. From the analysis of occupational discrimination, evidence emerged to suggest that nonwhites

enjoy some relative advantages at very low levels of skills and at the earliest phases of their careers. However, the much higher occupational returns to schooling and experience among whites rapidly overcompensates these initial nonwhite advantages. Of particular importance for the analysis of occupational achievement is the effect of experience, which under some assumptions can be interpreted as one's lifetime chances for occupational mobility. The substantial racial differences in returns to experience emerging from our analysis represent evidence that tend to support the dual labor market hypothesis, that is, the view that nonwhites are largely restricted to low skill, low paying, "dead-end" jobs, jobs with very modest mobility prospects. As we said before, nonwhites seem to have a "place" in society, and as long as they stay there they seem to be able to enjoy relative advantages; however, any attempt at upward mobility by nonwhites is likely to meet substantial opposition.

Likewise, our findings on wage discrimination indicated that for a considerable number of occupations wage discrimination seems to be a mechanism for the allocation of rewards to labor. And what is more important, it was shown that wage discrimination varies in both magnitude and direction from one occupation to another. Investigating the correlates of this variation in discrimination

against nonwhites, we concluded that some opposite influences seem to affect the level of discrimination against nonwhite incumbents of an occupation. In particular, it was found that the higher the "general standing" of an occupation the higher its internal level of discrimination against nonwhites; similarly, the relative level of "urbanization" of a given occupation seems to be negatively related to its level of discrimination against nonwhites. More specifically, the higher the proportions of urban residents in an occupation the lower its level of discrimination; finally, the level of nonwhite participation in an occupation seems to have a positive, although small and possibly insignificant effect on its internal level of discrimination against nonwhites.

Thus, on balance, the prospects for a Brazilian racial democracy seem to be quite remote. Although it is a very risky business to make predictions based on data already 18 years old, the findings of our research suggest that while the recent rapid urbanization of Brazilian society might have been beneficial for those in the lowest level of skill, the concomitant improvement in the schooling system might have a negative impact on the relative gains of the color groups, possibly contributing to an actual increase in the general level of labor market discrimination. Also, because nonwhites seem to be restricted to low skill occupations with very

low occupational mobility chances, an excess supply of nonwhites in those occupations could result, deteriorating even further the prospects for nonwhites.

Obviously, these observations, being made on the basis of one sample only, are necessarily exploratory in nature and should be confirmed by further research. In particular, we were unable to investigate the earlier phases in the process of achievement and future research should concentrate on this topic. At any rate, our results indicate that the traditional hypotheses found in the Brazilian literature should be rejected as implausible and allow one to seriously question the idea of a Brazilian racial democracy, a myth that had proven to have an extraordinary resilience.



APPENDIX

INTRA-OCCUPATIONAL RETURNS TO EXPERIENCE BY COLOR

$$y' = \frac{\partial Y}{\partial EX} = \hat{\beta}_{10} + 2\hat{\beta}_{11}EX$$

Occupation	Color	
	White	Nonwhite
(115) Store Owners	$y' = 31.7 + 3.8 Ex$	$y' = -10.1 - 0.4 Ex$
(181-189) Office Workers	$y' = 640.8 - 10.8 Ex$	$y' = 876.3 - 33.8 Ex$
(191) Office Clerks	$y' = 690.0 - 17.8 Ex$	$y' = 549.3 - 14.0 Ex$
(214) Technical & Kindred	$y' = 132.8 - 2.6 Ex$	$y' = 539.0 - 25.4 Ex$
(321) Truck Gardners	$y' = 150.4 - 3.8 Ex$	$y' = 164.8 - 5.2 Ex$
(322) Gardners	$y' = 119.7 - 3.4 Ex$	$y' = 58.6 - 0.6 Ex$
(323) Agricultural Workers	$y' = 92.4 - 2.0 Ex$	$y' = 110.9 - 3.4 Ex$
(324) Livestock Farm Workers	$y' = 180.0 - 9.8 Ex$	$y' = 248.0 - 8.6 Ex$
(325) Fishermen	$y' = 246.5 - 9.0 Ex$	$y' = 209.1 - 4.4 Ex$
(523) Millers & Drillers	$y' = 780.6 - 23.4 Ex$	$y' = 696.3 - 20.8 Ex$
(524) Mechanics: Motors	$y' = 520.1 - 13.4 Ex$	$y' = 330.9 - 7.8 Ex$
(525) Repairmen	$y' = 468.7 - 10.8 Ex$	$y' = 189.0 - 6.4 Ex$
(527) Solderers	$y' = 174.5 - 5.6 Ex$	$y' = 205.8 - 1.0 Ex$
(529) Blacksmiths	$y' = 108.0 - 2.4 Ex$	$y' = 264.2 - 4.6 Ex$
(547) Textile Workers	$y' = 129.5 - 1.6 Ex$	$y' = 282.0 - 2.7 Ex$
(571) Tailors	$y' = 499.6 - 12.4 Ex$	$y' = 41.8 - 1.0 Ex$
(575) Shoemakers	$y' = 693.3 - 23.6 Ex$	$y' = 99.4 - 2.8 Ex$
(581) Cabinetmakers	$y' = 231.8 - 6.2 Ex$	$y' = 299.8 - 8.0 Ex$
(582) Carpenters	$y' = 275.6 - 5.6 Ex$	$y' = -25.4 + 1.4 Ex$
(587) Fillers & Polishers	$y' = -754.5 + 44.0 Ex$	$y' = -10.1 + 7.4 Ex$
(591) Electricians	$y' = 479.4 - 13.4 Ex$	$y' = 276.7 - 3.8 Ex$

Occupation	Color	
	White	Nonwhite
(613) Brickmasons	y' = 252.6 - 7.6 Ex	y' = 124.8 - 2.8 Ex
(614) Brickmason Helpers	y' = 173.0 - 5.4 Ex	y' = 110.0 - 2.4 Ex
(615) Wall Painters	y' = 402.5 - 13.0 Ex	y' = 98.9 - 1.4 Ex
(616) Plumbers	y' = 324.0 - 10.0 Ex	y' = 629.5 - 17.6 Ex
(637) Bakers	y' = 339.5 - 11.0 Ex	y' = 257.3 - 2.8 Ex
(651) Linotypists	y' = 135.9 - 2.6 Ex	y' = 288.6 - 3.2 Ex
(661) Glaziers	y' = 371.7 - 10.0 Ex	y' = 375.2 - 15.6 Ex
(712) Peddlers	y' = 269.9 - 7.2 Ex	y' = 435.7 - 15.6 Ex
(713) Sales Clerks	y' = 459.8 - 14.2 Ex	y' = 325.1 - 9.8 Ex
(831) Port Workers	y' = -57.0 + 2.0 Ex	y' = 1083.7 - 29.0 Ex
(841) Railroad Workers	y' = 833.2 - 23.2 Ex	y' = 422.0 - 12.0 Ex
(851) Drivers	y' = 206.2 - 5.8 Ex	y' = 380.2 - 11.8 Ex
(861) Occ in Transp. n.e.c.	y' = 813.1 - 23.6 Ex	y' = 220.7 - 6.2 Ex
(871) Post Office Wrkrs.	y' = 500.4 - 13.0 Ex	y' = 471.7 - 14.6 Ex
(912) Waiters	y' = 433.9 - 15.6 Ex	y' = 92.7 - 2.8 Ex
(913) Dishwashers	y' = 384.5 - 12.4 Ex	y' = 102.5 - 5.6 Ex
(921) Doormen	y' = -147.6 + 5.8 Ex	y' = 485.6 - 13.0 Ex
(931) Barbers	y' = 514.2 - 17.2 Ex	y' = 245.8 - 3.8 Ex
(971) Members of Armed Forces	y' = 2658.2 - 82.0 Ex	y' = 1448.3 - 42.6 Ex
(981) Farm Foremen	y' = 702.2 - 19.8 Ex	y' = 494.7 - 14.6 Ex
(983) Janitors	y' = 313.2 - 8.8 Ex	y' = 215.4 - 6.4 Ex
(986) Garbage Collectors	y' = -576.3 + 40.6 Ex	y' = 274.5 - 8.1 Ex
(989) Workers n.e.c.	y' = 168.4 - 6.2 Ex	y' = 131.6 - 4.0 Ex
(998) Other Occupations	y' = 254.2 - 6.6 Ex	y' = 221.1 - 4.4 Ex

Source: 1960 Brazilian Census 1.27 percent subsample.

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