

THE IMPACT OF INDUSTRIAL AND OCCUPATIONAL STRUCTURE ON BLACK-WHITE EMPLOYMENT ALLOCATION*

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This research focuses on the factors associated with the differential distribution of black and white men across labor market positions. Hypotheses concerning the effects of industrial and occupational characteristics are derived using an eclectic approach which draws heavily on the labor market segmentation literature. Incorporated, as well, are ideas from neoclassical and institutional economics and from the occupational segregation and class approaches in sociology. The results raise some intriguing puzzles in terms of the contrasting effects of occupational versus industrial unionization and the opposite-signed effects of market power and size. Overall, the results provide a mixed evaluation of both the neoclassical approach and the dual economy approach to the explanation of black-white employment differences. Perhaps the most important result from this research is the demonstration of the existence and form of the systematic patterning of the allocation of blacks and whites to labor market positions, net of the influence of their individual work-related characteristics.

Even the most casual reading of the sociology literature on black-white socio-economic inequality reveals a curious gap in the empirical research. Research from an assimilationist perspective (e.g., Hirschman and Wong, 1984), from a status attainment perspective (e.g., Featherman and Hauser, 1976), from a queuing perspective (e.g., Lieberman, 1980), from a segmented economies perspective (e.g., Beck et al., 1980), or from a class perspective (e.g., Wright, 1978), repeats the same refrain: the differential allocation of blacks and whites to economic positions is a crucial, if not the crucial, mediating factor in the causal chain which produces and maintains racial inequalities within the United States. Despite the importance attributed to this "fact," little systematic research has examined how the nature and characteristics of positions are related to the representation of black workers.

This situation partly reflects the past predominance of studies utilizing an assimilationist or a status attainment approach. As Hirschman and Wong (1984) note, in the assimilationist approach the causes and correlates of group differentials, especially those

due to discrimination, are usually taken for granted and ignored, perhaps because the differentials are assumed to be rapidly disappearing. Status attainment studies, while not always explicitly espousing an assimilationist stance, divide the sources of such differential sorting into one part due to individual differences (such as human capital differences) and one part due to discrimination. But discrimination as measured in a status attainment approach is a residual which, by definition, is unexplainable by the status attainment model. Since it is not possible to explain discrimination in a status attainment paradigm, it does not prompt research on discrimination by those who use the paradigm.

In part this empirical gap can also be attributed to the rise of class and segmented economies approaches as alternative explanations of labor market phenomena. These approaches have attempted to address the issue of differential sorting of blacks and whites. But research using these perspectives has also attempted to reduce the explanation of racial inequalities to a single overriding causal factor of class or economic segment. An emphasis on single causes provides an incomplete explanation and tends to limit the scope of ensuing empirical research.

This paper explores more fully the set of factors which affect the allocation of blacks and whites across a large number of relatively detailed positions in the economy. Labor market positions are defined as a combination of an individual's industry and occupation of employment. Hypotheses and expectations are derived using an eclectic approach which draws heavily on the labor market segmenta-

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tion literature but also incorporates ideas from neoclassical and institutional approaches in economics and from occupational segregation and class approaches in sociology. Data from the 1970 Census as well as a variety of archival sources of industrial and occupational characteristics are used to evaluate the hypotheses and expectations developed in the next section.

PAST RESEARCH AND CURRENT SPECULATIONS

A number of perspectives have addressed the issue of the differential allocation of blacks and whites to economic positions. In some cases, the different perspectives are complementary in that they address different aspects of the same phenomenon. In other cases, the perspectives may focus on the same aspects but do not necessarily come to the same conclusions. The discussion which follows draws out such contrasts and similarities. It is assumed throughout this discussion, as is usual in the literature, that the concern is with the allocation of blacks and whites who are equivalent in human capital and personal characteristics. Otherwise there could be a confounding of the effects of labor market processes with the effects of processes which occur prior to labor market entry.

The dual economy approach posits the division of the economy into two basic sectors. The core sector consists of firms which have oligopolistic markets, large economic scale (including high levels of profitability), conglomeration, and long-run planning capabilities, while the periphery sector is defined by the opposite characteristics (Hodson and Kaufman, 1982).

Dualists argue that minorities are initially forced into the periphery sector because of the geographic proximity of ghetto minorities to periphery employment, the use of minority status as an inexpensive screening device for productivity, the ability of core firms to absorb the costs of indulging in their tastes for discrimination, and the use of discrimination as a means of creating and maintaining disunity within the working class (Hodson and Kaufman, 1982). This initial sorting is maintained by the fact that periphery employment forces workers to have an unstable work history which makes it difficult for them to gain employment in the core sector. In addition, an exploitation argument suggests that wage discrimination against minorities should be greater in the core sector. That is, core employers generally devalue the credentials of minority employees as a way of minimizing the economic "risk" of hiring potentially unproductive workers. The profits of the core sector,

then, are built in part upon the wage exploitation of minorities.

Thus, the dual economy approach hypothesizes that discrimination against minorities in terms of both employment likelihoods and wages is greater in the core than in the periphery sector. Extrapolating from the definition of the two sectors would suggest that discrimination in wages and employment increases with monopoly power, with size, and with profitability.

Paradoxically, some of the same conclusions are reached using a neoclassical labor economics approach but using very different reasoning. Neoclassical labor theorists (Becker, 1971; Arrow, 1972, 1973; Cain, 1976) argue that labor market discrimination is caused by the exercise of "tastes for discrimination" (i.e., preferences for whites) on the part of various actors in the labor market: firms, employees, and consumers. This model conceptualizes two possible expressions of such preferences: either the payment of premiums or discounts (depending on a worker's race) or the total exclusion of blacks from employment in particular firms.

Mathematical modeling using this approach, and assuming perfect competition in markets, leads to the conclusion that discrimination based on firms' or employees' tastes for discrimination cannot persist in the long run. Only consumers' tastes for discrimination can create lasting discrimination, but only in those limited situations in which consumers possess the knowledge of who (which race) produced a good or service being purchased.

In light of these conclusions and faced with the long persistence of discrimination, Becker (1971) argued that discrimination must therefore spring from various market imperfections reflecting a lack of competition. Since competition is supposed to eliminate discrimination, discrimination can only persist in those parts of the economy where there are barriers to competition. Becker identifies and focuses upon two sources of such barriers: monopoly (oligopoly) power and labor unionization. Specifically, Becker argues that discriminators who are monopolists do not face competitive market pressures not to discriminate. Monopolists could, in fact, use some of their excess monopoly profit to indulge their tastes for discrimination without affecting the demand for their goods or services (Becker, 1971; Cain, 1976). Similarly, since labor unions also raise barriers to competition, Becker argues that labor unions provide a vehicle for white workers to manifest their tastes for discrimination which should lead to greater discrimination in the unionized sector of the economy.

A corollary to the neoclassical theory of dis-

crimination can be made by recognizing the central role of firm profitability in the activation of a discriminatory action (Comanor, 1973). If a firm is earning profits in excess of the market rate, for whatever reason, it can use this excess to pay for the costs of discriminating. Although neoclassical economics argues that profits in competitive markets will be zero in the long run, it must be acknowledged that there is a great deal of variation in the medium and short run which permits firms to discriminate without "losing" money.

Some of the conclusions from both approaches have been challenged, however, on both empirical and conceptual grounds. Empirically there has been a great deal of inconsistency in studies of the effect of monopoly market power on discrimination (compare Becker, 1971, and Shepherd, 1970, to Comanor, 1973, and Kaufman and Daymont, 1981) and of the racial composition of the core and periphery sectors (compare Beck et al., 1980, and Bibb and Form, 1977, to Zucker and Rosenstein, 1981, and Hodson, 1983).

Questions have also been raised concerning the motivation and processes by which monopolistic (core) firms discriminate against blacks and other minorities. Marshall (1974) notes that the neoclassical theory conceptualizes discrimination as a desire for physical distance between whites and blacks which results in an exclusion of blacks from a workplace. As an institutional economist, Marshall argues that a desire for social distance between groups in terms of status and authority is a much more plausible conceptualization. Using social distance instead of physical distance as the method for discriminating in the neoclassical mathematical models alters the conclusion that there is no long-run discrimination in competitive markets and, hence, that monopolists and unions are the source of discrimination in wages and employment.

A similar critique can be made of the motivations and processes by which discrimination occurs according to the dual economy approach. It is much more realistic to assume that tastes for discrimination and desires to fragment labor would be expressed by creating social distance, not physical distance, between whites and blacks. On that basis, both core and periphery firms hire blacks but segregate them by jobs. However, core firms have greater possibilities for practicing job segregation because they are larger and more formally stratified.

There are also factors which provide opposition motivations and results. Anti-discrimination pressure by the government and citizens' organizations during the last two decades has focused more on large and visible firms, such as monopolies, than on smaller,

competitive firms (Marshall, 1974). Such pressure is intended to motivate highly visible firms to make greater efforts in the hiring and retention of minorities. Moreover, oligopolistic firms can more readily undertake the costs of recruitment and training to offset prior discrimination than can competitive firms. In addition, many minorities have been able to establish niches within some oligopolistic industries because of their historical use as strike-breakers in such industries (Spero and Harris, 1968; Marshall, 1974).

On balance, the social distance conceptualization and the visibility argument provide a stronger rationale for hypothesizing about the effect of market power than do the neoclassical and dual economy approaches. Thus, it is hypothesized that:

1. black employment likelihoods increase with higher levels of monopoly market power.

An opposite result would accord with both the neoclassical and the dual economy approaches.

A similar argument about visibility can be applied to the effect of industrial size on black employment likelihoods. In addition, organizational theory suggests that greater size leads to greater bureaucratization and an increased use of universalistic criteria in place of particularistic criteria such as race. This leads to the hypothesis that:

2. black employment likelihoods increase with higher levels of industrial size.

An opposite result is predicted by extrapolating from the dual economy approach.

Few scholars have considered profitability as a direct cause of employment differentials, although Comanor (1973) and Kaufman and Daymont (1981) both found that the representation of blacks relative to whites declined with increasing levels of industrial profitability. In some ways, this factor is the central causal variable in a neoclassical approach since it is assumed that discrimination by an employer can occur only when the utility of discrimination is greater than the utility of the loss in profits which accompanies discrimination (Becker, 1971). Thus, assuming a declining marginal utility of profits, higher levels of profitability make discrimination an acceptable tradeoff for more employers. The reason that the direct effect of profitability has not been customarily studied by economists is that the neoclassical approach assumes that, in the long run, such excess profits can only occur in the case of monopolies and oligopolies (Becker, 1971; Cain, 1976). But economic behaviors studied at any point in time are not just the

result of long-run processes but also of short- and medium-run processes. It is certainly true in the short and medium run that firms and industries vary in the extent of profitability and, hence, vary in the likelihood of discriminatory actions. In addition, high levels of profitability provide resources to oppose outside pressures. Thus, a crucial test of the neo-classical approach is provided by the hypothesis that:

3. black employment likelihoods decrease with higher levels of profitability.

Such an hypothesis is also consistent with predictions from a dual economy approach.

Neoclassical and segmented markets approaches can be contrasted on the effect of unionization on black employment likelihoods. Becker (1971) argues that discrimination should be greater in the unionized economic sector. From a segmented markets approach it has been generally argued that craft-type unions usually practice employment discrimination, while industrial-type unions have not been active discriminators since the late 1930s (Hill, 1974; Marshall, 1974; Ashenfelter, 1972; Spero and Harris, 1966; Bonacich, 1976).

The different practices of craft-type and industrial-type unions can be traced to the divergent sources of power and strength of control over job access. Craft-type unions exercise substantial control over the size and composition of the labor pool for certain select positions. Such monopoly power derives from their control of access to skills and credentials. Since craft-type unions have historically been able to obtain and maintain such power and control without including blacks, they have had little incentive to do so. The pervasive racism in society and historical hostilities between black and white craftsmen additionally have provided ample incentive not to do so (see Bonacich, 1976, for more detail).

Historically, industrial-type unions have had much weaker and limited control over access to jobs, dependent upon their ability to negotiate formal rules concerning hiring and job changes. The power of industrial-type unions lies instead in acting as agents for collective bargaining, backed up by the threat of strikes and other collective actions. Since the 1930s, they have increasingly recognized that the success of such actions is contingent upon the union's not excluding blacks and other minorities (see Marshall, 1965, and Bonacich, 1976, for more detailed discussion of the changes in union policies and strategies).

Some researchers (e.g., Beck, 1980) have argued that the distinction between craft and industrial unions, while once valid, is no longer relevant since the 1955 merger of the AFL and

CIO created more uniform union practices. While it is true that this distinction is not as clear as it once was, research since the merger has continued to show the importance of this distinction for the actions and policies of unions with respect to many issues, not just racial practices (Ashenfelter, 1972; Marshall, 1974; Perry and Angle, 1981; Pfeffer and Ross, 1981; Kaufman and Daymont, 1981; Holzer, 1982; Chaison, 1984).

Thus, it is hypothesized that:

4. black employment likelihoods decrease with increases in craft-type unionization.
5. black employment likelihoods increase with increases in industrial-type unionization.

The literature on occupational racial segregation has been largely ignored by the neoclassical and dual economy approaches, but it motivated Marshall to emphasize the social distance conception discussed above. In this approach, two general factors have been utilized to explain how occupational segregation occurs: through the creation of protective barriers to competition (e.g., craft-type unionization as discussed above) and through the racial typing of work (Taueber et al., 1966; Synder and Hudis, 1976; Kluegel, 1978; Franklin and Resnik, 1973). Racial typing occurs when there is a normative specification (by employers, other workers, and clientele/consumers) that some occupations are appropriate and some are inappropriate for blacks to perform.

Research suggests that occupations typed as appropriate for blacks include those that require menial task performance or heavy physical labor, and that have low status, low earnings, and poor working conditions. Occupations typed as inappropriate for blacks include those that require the exercise of formal authority over non-minority workers or non-minority clientele, or the exercise of informal authority based on technical expertise or specialization or other forms of status-discrepant interactions.

There are several key characteristics which encompass most of the possibilities enumerated above. Low skill levels and the extent to which work tasks are routinized are good indicators of the kinds of work normatively typed as appropriate for blacks. On the other hand, high skill requirements impart a certain degree of informal authority to members of an occupation, authority that defines it as normatively inappropriate for blacks. In addition, on-the-job interaction with others as a superior (in authority or status) defines work as normatively inappropriate. A class theorist might add

that segregating minorities into positions, especially according to skill and authority differentials, serves to further a "divide and conquer" strategy by employers (Reich, 1971; Szymanski, 1976; Bonacich, 1976). Thus, it is hypothesized that:

6. black employment likelihoods increase with increasing levels of work routinization.
7. black employment likelihoods decrease with increasing skill levels.
8. black employment likelihoods decrease with increasing levels of status dominance in interaction with others.

A key factor which could affect the results if left uncontrolled is what one might call the openness of the opportunity structure; that is, the ease of getting into positions. When the opportunity structure of a position is relatively closed, blacks generally face lesser chances of securing employment because of white workers' efforts to exclude blacks and minorities to lessen the competition (Bonacich, 1972; Lenski, 1966; Taeuber et al., 1966). When the opportunity structure is relatively open, on the other hand, (when positions are easy to get into), not only is it unlikely that white workers will perceive blacks as a threat but also employers are more likely to be eager to hire all qualified workers. That is, when the demand for labor exceeds the supply, the costs of discrimination increase rapidly. This line of argument suggests that:

9. black employment likelihoods increase with increasing openness of the opportunity structure.

A final issue concerns the impact on employment processes of forces and institutions external to the labor market. The 1960s and 1970s (but not the 1980s) have seen increasing efforts by most levels of government to reduce labor market discrimination in two ways. First, the government has increasingly monitored and modified its own employment practices to establish a role model as "the vanguard of equality" (Krislov, 1967). Thus, as prior studies have shown (Shepherd, 1970; Kaufman and Daymont, 1981; Smith and Welch, 1977), it is predicted that:

10. black employment likelihoods are higher in the public than in the private sector.

Second, the government can create and enforce legislation and executive orders requiring non-discriminatory practices by private employers. It has been argued that the visibility of firms or industries to the government affects the likelihood of their being the target of active

governmental pressure. One of the most important monitoring and enforcement agencies is the Office of Federal Contract Compliance (OFCC). Executive Order 11246 gave OFCC strong sanctions to use against discriminating firms which had government contracts (Burman, 1973). Thus, one might expect that blacks would have better employment likelihoods in firms that were large government suppliers. But any effect which this threat of sanctions might have had during the 1960s and early 1970s was nullified by the fact that the OFCC did not employ a single sanction until well into the 1970s (Burstein, 1979; Burman, 1973; Selznick, 1969). It is thus hypothesized that:

11. black employment likelihoods remain constant or, at most, increase slightly with increasing levels of federal contracting in industries.

DATA AND METHODS

A variety of data sources were used to evaluate the hypotheses outlined above. The data utilized to create the dependent measure of black employment likelihoods were extracted from the 1970 Census Public Use samples (the State 5 and 15 percent samples and the Neighborhood 5 and 15 percent samples). The sample of 1,502,386 whites and 130,929 blacks represents a four percent sample of the male experienced civilian labor force age 20 or older in 1970. The primary rationale for choosing the Census PUS instead of other alternatives is that they contain considerably more individual observations for a single time point than any other data source. Further, the method used to measure black employment likelihoods in labor market positions necessitates such a large sample size.

A number of factors were considered in deciding whether or not to include members of the Armed Forces in the analysis. On the one hand, the Armed Forces did serve as an important source of employment and, to a lesser extent, of training for young blacks and whites during the 1950s and 1960s. In 1970, 14.1 percent of white males and 12.6 percent of black males age 18 to 24 and in the labor force were in the military.¹ But, among those meeting entry requirements, blacks were more likely than whites to become members of the Armed Forces (Moskos, 1966). As Foner (1974) and Moskos (1966) argue, voluntary participation of blacks in the military during much of this period was higher than that of whites due to a

¹ Calculated from U.S. Bureau of the Census, 1973, Table 1.

strong belief among blacks that military life was more egalitarian than civilian life, despite continuing racial inequities within the military.

On the other hand, participation in the Armed Forces during the late 1960s and early 1970s was not voluntary for a substantial portion of those serving in the military. Not only did the Selective Service draft conscript large numbers of young adults, but a higher proportion of eligible blacks than eligible whites were drafted (Foner, 1974). At the same time, the re-enlistment rates of whites and, especially, of blacks declined dramatically during this period (Foner, 1974). Given the lack of voluntary participation, it is difficult to consider the employment allocation of blacks and whites to and within the military as part of the same process that affects the voluntary employment allocation of blacks and whites in the civilian labor force. Thus, to include members of the Armed Forces in the analysis would introduce a set of cases that are part of a different and heterogeneous process.

Moreover, military employment for the sample as a whole is not especially sizable, except for the youngest members as shown above. In 1970, only 3.5 percent of white males and 3.6 percent of black males age 20 and over and in the labor force were members of the Armed Forces.² Inclusion of the military in the analysis would be difficult since the Census data does not provide the occupational information needed to assign occupational characteristics to cases. Nor does it permit the identification of branch of service or rank within service which are crucial distinctions affecting the allocation of blacks relative to whites within the Armed Forces (Moskos, 1966; Foner, 1974).

The units of analysis for this research are labor market positions. In accord with much of the recent segmented market literature (Hodson, 1983; Schervish, 1983; Hodson and Kaufman, 1982; Wallace and Kalleberg, 1981), these units are defined by considering both the character of economic segmentation (industry) and the nature of the work performed (occupation). In the census sample there was a total of 32,332 actual 6-digit codes representing combinations of 1970 Census 3-digit industry codes with 3-digit occupation codes.

Since a reliable and stable estimate of employment likelihoods for each unit of analysis was desired, each unit for analysis was required to contain at least 50 whites and at least 50 blacks. The vast majority of the 6-digit codes had to be combined in order to meet this requirement. A total of 837 units were defined

by aggregating across the industry portion of the 6-digit code, across the occupation portion of the 6-digit code, or sometimes across both.

Whenever possible, 6-digit codes with sufficient numbers of blacks and whites were not combined. When aggregation was necessary, only industries which were "similar" in terms of their economic segmentation characteristics and occupations which were "similar" in their nature of work characteristics were aggregated together. Industries were considered similar enough to be aggregated if they were both in one of the industrial sectors defined by a variant of the industrial classification of Kaufman et al. (1981). Occupations were considered similar enough to be aggregated if they were both in one of the occupational segments defined by Kaufman (1981).

These industrial sectors are clusters of industries that are similar in terms of concentration, size, capital intensity, profitability, foreign involvement, growth, productivity, unionization, autonomy, and government ties. The original 16 sectors were reduced to 12 by merging the four single-industry outlier clusters into the remaining 12.³ In some ways these 12 sectors reproduce a core-versus-periphery distinction with broad industrial product types (e.g., core-versus-periphery utilities). They cannot be grouped readily into global core and periphery sectors, however, since many of the more detailed industrial sectors do not have consistent values on the defining characteristics (see Kaufman et al. [1981] for more details). In addition to these 12, the public sector is used as a separate industrial sector since there are well-documented differences between the public and private sectors in their treatment of minorities.

These occupational segments are clusters of occupations that are similar in terms of skill, routinization, occupational task, unionization, and demand for labor. The eight segments can be divided globally into one set of high-skilled and less routinized occupations and another set of low-skilled and more routinized jobs. But this distinction is qualified within each set by the kinds of work tasks performed and the extent of unionization (see Kaufman, 1981, for

³ Tobacco was merged into the oligopoly sector since it is essentially an outlier higher than the oligopoly sector on most characteristics (see Kaufman et al., 1981, Table 4). Ordnance was collapsed into the core instead of into the oligopoly sector because it was closer to the core on most characteristics. The placement of brokers and real estate was difficult to specify since both have very irregular patterns of characteristics. They were placed in the periphery utilities sector since the cluster analysis results indicated that they were closest to this sector.

² Calculated from U.S. Bureau of the Census, 1973, Table 1.

more detail). Since both these factors are important determinants of minority employment likelihoods, the more detailed eight segments are used. In addition, self-employed workers are treated as a separate occupational segment because these workers are subject to different economic pressures and conditions of work.

In defining the black employment likelihood for each of the 837 labor market positions, it is important that the measure be net of compositional differences between blacks and whites in human capital and personal characteristics. Otherwise, the analysis could confound the effects of discrimination and other processes which occur in the labor market with the effects of discrimination and other processes which occur prior to labor market entry. Log-linear analysis is used to standardize the gross employment likelihoods of blacks versus whites being employed in each of the 837 labor market positions. This standardization was accomplished by performing a separate log-linear analysis for each of the 837 labor market positions. The dependent variable for each analysis (each labor market position) was a dichotomy indicating whether workers were employed in that particular labor market position or whether they were employed elsewhere. The independent variables utilized and their coding was as follows:

Race: black, white

Age: 20–29, 30–44, 45–54, 55 and older

Education; 0–8, 9–11, 12, 13–15, 16 or more years

Region: South, non-South

Residence: urban, rural

Employment level: part-time, full-time

Labor force participation in 1965: in the labor force, not in the labor force

The actual measure derived from the log-linear analysis is an odds ratio (Goodman, 1972; Page, 1977; Fienberg, 1980; Daymont and Kaufman, 1979) which contrasts the odds of a black gaining employment in a particular labor market position versus employment elsewhere to the odds of a white gaining employment in a particular labor market position versus employment elsewhere, net of the effects on employment likelihood of age, education, region, residence, employment level, and prior labor force participation. This measure is analogous to the ratio of the proportion of blacks employed in a labor market position to the proportion of whites employed in a labor market position, controlling for age, education, and so on. The natural logarithm of this odds ratio measure was used as the dependent variable in an ordinary least squares regression analysis. Logging the odds ratio transforms it from a multiplicative metric to an additive metric which is necessary for a regression analysis. Positive values of this measure indicate a greater black than white likelihood of employment, while negative values indicate a lesser black than white likelihood of employment.

The independent variables for the regression analysis are scales created from a variety of published and computer processed sources of industrial and occupational data (see Table 1

Table 1. Indicators Comprising the Industrial and Occupational Scales

MARKET POWER SCALE^a

Eight firm assets concentration ratio

Eight firm sales concentration ratio

Eight firm employment concentration ratio

Percent of assets in large (> \$250 million) firms

Percent of sales in large (> \$250 million) firms

Percent of employment in large (> 10,000 employees) firms

SIZE SCALE^a

Average sales per company

Average receipts per company

Average assets per company

Average value-added per company

Average employment per company

Average number of establishments per company

Average percent of companies with > 10,000 employees

PROFITABILITY SCALE^a

Average of net income as a percent of sales

Average of net income as a percent of assets

Average of net income as a percent of net worth

UNIONIZATION OF OCCUPATION SCALE^b

Percent of union members in 1971

Percent of union members in 1975

Percent of union members in 1976

Table 1. (Continued)

CRAFT-TYPE UNIONIZATION OF OCCUPATION SCALE
Interaction of dummy variable for craft occupations (1 = craft, 0 = non-craft) with occupational unionization scale
UNIONIZATION OF INDUSTRY SCALE^a
Percent of industry employees who are union members
Percent of industry employees covered by collective bargaining agreements
CRAFT-TYPE UNIONIZATION OF INDUSTRY SCALE
Interaction of dummy variable for craft-type union dominated industries (1 = craft, 0 = non-craft) with unionization of industry scale
ROUTINIZATION SCALE^a
Job situations involving repetitive or short-cycle operations carried out according to set procedures or sequences
Job situations involving doing things only under specific instruction, allowing little or no room for independent action or judgement in working out job problems
Job situations involving a variety of duties often characterized by frequent change (Scale reversed)
SKILL AND TRAINING REQUIREMENTS SCALE^a
Specific Vocational Preparation time
General Educational Development scale
STATUS DOMINANCE IN INTERACTION SCALE
Occupational tasks requiring interaction with people. Low scores indicate no interaction and low status interaction (e.g., serving) and high scores indicate high status interaction (e.g., instructing)
OCCUPATIONAL GROWTH RATE
Growth (or decline) in number of persons employed in an occupation in 1970 as a percent of 1960 employment
INDUSTRIAL GROWTH SCALE^a
Growth (or decline) in number of persons employed in an industry in 1970 as a percent of 1960 employment
Growth (or decline) in number of persons employed in an industry in 1972 as a percent of 1967 employment
Growth (or decline) in sales in an industry in 1972 as a percent of 1967 sales
GOVERNMENT AS EMPLOYER
Dummy variable coded as one for public sector workers and as zero for private sector workers
GOVERNMENT AS ENFORCER: FEDERAL PURCHASES SCALE^a
Federal purchases as a percent of total industry output
Average federal purchases per firm

^a Scale based on an average of the standardized component indicators.

^b Scale based on an average of the unstandardized component indicators.

NOTE: These indicators are based on data gathered from a variety of published or machine readable sources. The occupational characteristics sources are: The 1977 Spenner Data set; the Current Population Surveys for 1971, 1975, 1976; and *Census of Population 1970: Occupational Characteristics*. The industrial characteristics sources are: The 1967 and 1972 *Enterprise Statistics*, the 1972 *Corporate and Business Income Tax Returns*, the 1972 *National Income and Product Accounts*, the 1972 *Census of Manufacturers*, the 1967 *Input Output Study*, the *Census of Population 1960: Industry Characteristics*, and the *Freeman-Medoff Unionization Data*. For more details on the operationalization of specific indicators, see Hodson (1983) for industrial data and Kaufman (1981) for occupational data.

note for specifics). The data sources were chosen to correspond as closely as possible to the year 1970 since the dependent variable is measured for that year. The indicators employed to operationalize each scale are shown in Table 1. Most of the operationalizations are straightforward, but a few require some comment.

Precisely distinguishing craft-type from industrial-type unionization on a national level is virtually impossible to do (see Beck, 1980:797-98). The best solution is the use of very rough proxy measurements. On an occupational basis, the unionization has been

classified as craft-type if the occupation is in the craft occupational segment defined by Kaufman (1981). On an industrial basis, the unionization has been classified as craft-type if the industry is one of the industries known to be dominated by craft-type unions (see Ashenfelter, 1972).⁴ Given the crudeness of

⁴ The industries identified by Ashenfelter (1972) as dominated by craft-type unions are construction, printing and publishing, railroad transportation, water transportation, air transportation, radio and television, and theaters.

these proxy measures, the unionization results must be considered as tentative. Since craft-type and industrial-type unions were hypothesized to have opposite signed effects, each scale was operationalized as a spline function. That is, craft-type unionization was coded as zero on the industrial-type unionization scale, and vice versa. Preliminary analysis indicated the need for a non-linear specification of these relationships. For the occupational unionization measures a logarithmic transformation proved most appropriate, while a parabolic transformation was best for the industrial unionization measures.

The "status-dominance in interaction" measure is a scale from the Dictionary of Occupational Titles which indexes both the extent of interaction as well as the nature of the interaction. The scale on this measure has been reversed from the original DOT scaling so that low scores represent no interaction or low status interaction (e.g., serving) while high scores represent high status interaction (e.g., mentoring). Preliminary analysis suggested that this relationship was parabolic in form.

To operationalize the openness of the opportunity structure measures of the extent of the growth of occupations and industries are used. The basic rationale is that the opportunity structure will be more open where growth has been most rapid and that the opportunity structure will be the most closed where there have been declines.

Each of the scales described in Table 1 was initially created for each 3-digit industry or 3-digit occupation. Since many units of analysis were aggregated across industry and/or occupation, scale scores for each unit of analysis were computed using a weighted average of the scores for the component industries or occupations which comprised the unit.

In performing the regression analysis, the units of analysis were weighted proportionate to the number of workers employed in the unit, but the weighting process maintained the original *N* of 837 observations. One rationale for this weighting was that the units varied greatly in sample size, and there was no reason to presume that each unit was equivalent and equally important since the units had been constructed rather than being naturally observed. A second reason for this weighting is that the error variance of the dependent variable varies inversely with unit sample size since the dependent variable is a simple function of additive log-linear parameters (Bishop et al., 1975). Thus, weighting proportionate to unit sample size reduces problems of heteroskedasticity (Hanushek and Jackson, 1977). However, the unweighted regression results are virtually identical to the weighted regression results.

Several observations were excluded from the analysis due to missing data for one or more of the independent variables.

RESULTS

Table 2 presents the results from a regression of the log odds ratio for black-white employment on the independent variables. The reported regression results exclude routinization, industrial growth, and federal purchases. All three had, as expected, positive effects but were not statistically significant. Recall that federal purchases was expected to have at most a small effect.

With only two exceptions, the hypotheses presented above are consistent with these results. As expected, market power has a moderate positive effect on the black employment likelihoods. That is, black employment likelihoods increase with the extent of market power in an industry such that blacks are more likely to achieve employment in oligopolistic than in competitive industries, all else being equal. In fact, the bivariate relationship of market power and the black employment likelihood is also positive. This result contrasts sharply with what is predicted by the neoclassical and the dual economy approaches. It is, however, consistent with the social distance and visibility hypotheses advanced above.

On the other hand, profitability has a small negative effect on the black employment likelihoods which is marginally significant ($p = .058$). This provides some support for the argument, made by both the neoclassical and the dual economy approaches, that employers utilize excess profits to indulge their tastes for discrimination.

While the zero-order correlation of size and black employment likelihoods is positive, the effect turns negative after controlling for both market power and profitability and is only marginally significant ($p = .077$, two-tailed test). Although this initially suggests multicollinearity, standard tests (variable intercorrelations and step-wise analyses) show that this is not the case. The small negative effect of size weakly supports the dual economy predictions and is inconsistent with the visibility and bureaucratization arguments.

The results for the unionization variables are mixed with respect to the hypotheses. The effects of the unionization of occupations support the hypotheses, while the effects of the unionization of industries partly contradict the hypotheses. These conclusions must be treated with some caution, however, given the crude proxy measurement of union type. Craft-type occupational unionization has a moderate negative effect whose magnitude declines at

Table 2. Regression of Log Odds Ratio for Black-White Employment on Industrial and Occupational Scales, Excluding Insignificant Variables

Variable	Metric Coefficient	Standard Error	Standardized Coefficient
Market power	.0375	.0164	.12
Size (log)	-.020	.0117	-.08
Profitability	-.0154	.0098	-.04
Industrial-type occupational unionization (log)	.0481	.0076	.28
Craft-type occupational unionization (log)	-.1408	.0370	-.16
Industrial-type industrial unionization	-.0478	.0096	-.18
Craft-type industrial unionization	-.0710	.0150	-.14
Industrial unionization squared	.0365	.0061	.19
Skill and training	-.1350	.0082	-.53
Status dominance in interaction scale	-.1082	.0080	-.90
Status dominance in interaction scale squared	.0193	.0013	.58
Occupational growth	.0573	.0104	.13
Government sector dummy	.1826	.0144	.29
CONSTANT	-.3230		
R ²	.6487		
Standard error of estimate	.1289		
Degrees of freedom	811		

NOTE: Routinization and industrial growth both had the expected direction of effect but were insignificant. As expected, the effect of federal purchases was positive but insignificant. Except for size and profitability (see text), all variables in the regression are significant at $p < .02$.

the highest levels of unionization. In contrast, industrial-type occupational unionization has a moderately strong positive effect. Again, the magnitude of this effect declines at the highest levels of unionization. Together these two results provide reasonable support for the hypothesis of divergent effects of craft-type versus industrial-type unionization on black employment likelihoods.

The unionization of industries, whether of craft-type or industrial-type, has a U-shaped relationship with black employment likelihoods. The form of these relationships is such that the effect of craft-type unionization is always more disadvantageous for black employment likelihoods than is industrial-type unionization. This supports the hypothesized direction of difference between industrial-type and craft-type unionization. But the effect of industrial-type unionization is not positive, as was hypothesized, except at the very highest levels of unionization. In fact, the sample data suggest that the effect is positive for only 25 percent of the sample—those at the top of the unionization scale. These results, thus, partly support the hypotheses since craft-type unionization is more detrimental than industrial-type for black employment likelihoods, but these findings partly contradict the hypotheses since the effect of industrial-type unionization is primarily negative.

There is also a high degree of support for the hypotheses derived from the occupational segregation literature. Routinization had a moderately strong zero-order effect which

turned weak and insignificant only after controlling for skill level. Skill has a strong negative effect on black employment likelihoods and is the strongest predictor of any of the independent variables. The “status dominance in interaction” measure shows a U-shaped relationship with black employment likelihoods. But across the range of sample values the effect was predominantly negative (81 percent) and strong. That is, net of the other factors, the higher the authority and status of the worker relative to others with whom the worker interacts, the lower the black employment likelihood. The anomalous change of effect could be due to the ordering of types of interaction on this scale. Instructing and mentoring are coded as higher levels of interaction than is supervising, and the teaching occupations are ones which have long been an avenue of employment for black professionals. This could create this form of the relationship.

Of the two indicators of the openness of the opportunity structure, only one was statistically significant. Occupational growth had a moderate and positive effect on black employment, suggesting that a general opening of the opportunity structure promotes greater employment likelihoods for blacks. While the effect of industrial growth was positive, it was not statistically significant. The results thus provide some support for the hypothesis.

The last hypotheses concerned the effect of the public sector on employment likelihoods. Largely as expected, the effect of federal purchases was small and positive but insignificant.

Given the lack of enforcement during the 1960s by the OFCC, this result comes as no surprise. It is also not surprising that the government sector employment dummy variable has a strong positive effect on black employment likelihoods.

DISCUSSION AND CONCLUSIONS

A caution concerning the generalizability of these results is important to keep in mind. These results may only be applicable to periods of sustained economic growth such as characterized the late 1960s and early 1970s in the United States. This factor is especially important since, as shown by this research and by other studies (e.g., Farley, 1984; Burstein, 1985), black-white differentials decline when the economy is growing and the opportunity structure is more open. During an economic recession, then, the magnitude of the effects of industrial and occupational characteristics on black employment likelihoods should change. A reasonable speculation is that the magnitude of positive effects would decrease but that the magnitude of the negative effects would increase as the macroeconomic conditions worsen. What is less clear is whether the direction of the effects might also change. While it is well known, for example, that oligopolistic industries make different employment and price responses to recessions than do competitive industries (Schervish, 1983), it is not known how this influences black-white differences between these industries. Thus, these results may have limited generality until subsequent research supports or disproves their validity in different macroeconomic contexts.

Overall, the regression analysis provides strong support for virtually all of the hypotheses. Only for industrial size and the unionization of industries did the results show the opposite of the hypotheses. Moreover, the measures of labor market characteristics "explain" a large amount of the structural variation in black employment likelihoods, net of individual differences, as shown by an R^2 of .65. These results demonstrate that, net of individual characteristics, black employment likelihoods (and, by implication, discrimination against blacks) vary systematically across labor market positions.

The analysis provides a mixed evaluation of the predictions of neoclassical economic theory. The positive effect of market power contradicts this theory and provides support for Marshall's (1974) arguments concerning social distance and visibility. The unionization results also suggest that it is not necessarily unions per se which create unfavorable employment likelihoods for blacks but that this

effect is dependent upon the union structure. On the other hand, the marginally significant negative effect of profitability does provide limited support for what was argued to be central to the neoclassical approach. Interpreted from a neoclassical viewpoint, this result suggests that discriminating employers do make rational economic decisions and that a solution to discrimination is to raise the potential costs of such discrimination.

The results also provide a mixed evaluation of the dual economy approach. The negative effects of profitability and size are only marginally significant and provide weak support for this approach, while the positive effect of market power contradicts this approach. The contrasting signs of these effects raise some interesting speculations. It may be the case that market power is more an index of the relative distribution of power within an industry while size is more an index of the absolute distribution of power across industries. That is, a high extent of market power means that a few firms within an industry have a great deal of power vis-a-vis their direct competitors. But such power does not necessarily translate into an ability to resist external pressures from the government and public. Size, on the other hand, may be more indicative of the ability to resist external pressures since it indexes absolute economic and non-economic scale. A study of the success and failure of government anti-discrimination cases as a function of size and market power might prove worthwhile in attempting to test this speculation. These results do suggest that the common practice of combining size and market power into a single index or a single dichotomous contrast of sectors is inappropriate, at least when studying racial inequality.

Overall the unionization results show consistent support for the argument that craft-type unions have generally been more exclusionary of blacks than have industrial-type unions, but these results must be treated cautiously, given the crude proxy measurement of union structure. The difference is clearest in the case of occupational unionization where craft-type and industrial-type unionization have opposite signed effects. The results for the unionization of industries are somewhat anomalous, however, in that industrial-type unionization has mainly a negative effect on black employment likelihoods. The effect of industrial-type unionization is only advantageous for blacks when the industries are highly unionized. Reconciling this relationship with the relationship for industrial-type unionization of occupations has proven difficult. Perhaps the greater employment likelihoods of blacks in the least unionized industries is a carry-over from suc-

cessful union-busting using, among others, blacks as strikebreakers. These results suggest that the relationship between unions and minorities may be somewhat more complex than has been believed. But the need for better measurement of union structure is also indicated, perhaps incorporating information on specific union policy and practices (see, for example, Leonard's [1985] analysis).

The idea that certain kinds of work have been racially typed finds strong support from these results. Both skill level and "status dominance in interaction" with others have very strong effects on net black employment likelihoods. The skill result suggests that low-skill work has been labelled as appropriate and high-skill work has been labelled as inappropriate for blacks by this society in the past. And the "status dominance in interaction" result implies that low status interactions have been labelled as appropriate, while high status interactions have generally been labelled as inappropriate. An interesting and important study would attempt to compare the changes in the extent of such racial typing of work over time, with the changes in expressed public attitudes and opinions.

The results on government efforts at promoting non-discrimination suggest that as of 1970 these efforts were more successful internally (within the public sector) than they were externally (within the private sector). Net black employment likelihoods were much higher in the public than in the private sector. But within the private sector, stronger ties to the government did not appear to significantly affect black employment likelihoods. These results are in accord with Lieberman's (1980:107-108) argument that the efforts of the government in promoting non-discrimination begin internally and that there will be a lag before such efforts are effective externally.

Perhaps the most important conclusion from this study is that black employment likelihoods do vary in a predictable fashion with structural characteristics of the labor market. This provides a counterpoint to the assimilationist and the status attainment literatures which focus on individual factors and which lump such systematic variation into an unexplained and unexplainable residual. The results here demonstrate that such "residuals" can, in fact, be understood.

But the research presented here also suggests the need for theoretical synthesis to unify the explanation of such structural inequality. The range of factors which have been shown to affect the allocation of blacks and whites into economic positions cannot be encompassed by any one of the perspectives discussed here. Neither a dual economy nor a neoclassical

economics approach are convincingly consistent with the empirical findings, nor do they appear to have obvious extensions to include the other important factors. The line of reasoning which may prove most fruitful in the future might blend social distance theory, which links some of Marshall's (1974) institutional economics to conceptions of occupational segregation, with a resource approach to segmented economies (Hodson and Kaufman, 1982), which focuses on how the dimensions of economic and labor market structure provide resources and vulnerabilities for different workplace actors. It seems feasible to develop a resource approach to the study of how different actors (firms, unions, white workers, and black workers) strive to create or to destroy social distance between white and black workers.

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JOB-SHIFT PATTERNS IN THE FEDERAL REPUBLIC OF GERMANY: THE EFFECTS OF SOCIAL CLASS, INDUSTRIAL SECTOR, AND ORGANIZATIONAL SIZE*

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Research on stratification has shifted from a focus on the characteristics of individuals to a focus on the characteristics of larger social structures such as organizations and industries. Structuralist perspectives have developed primarily in isolation from each other. Using new life-history data from the Federal Republic of Germany, we draw on three structuralist perspectives to specify more complete models of the mobility process. Specifically, we investigate the effects of organizational size, social class and industrial segmentation on job-shift patterns, using event-history methods. The findings show that recent structuralist perspectives which are commonly thought to be contradictory are in fact complementary.

Over the last decade, American sociologists have turned increasingly to structural arguments for the analysis of social stratification (Featherman, 1981; Matras, 1980). Three distinct yet overlapping lines of structural research can be identified. The first and most active line investigates industrially segmented labor markets (Kerr, 1954). The best known variation of this argument posits the hypothesis of a dual economy (Averitt, 1968; Doeringer and Piore, 1971; Galbraith, 1973), although more subtle variations are now entering the

literature (e.g., Stinchcombe, 1979; Hodson and Kaufman, 1982). The second line of structural research looks to firms rather than to industries for labor market constraints (Baron and Bielby, 1980). This approach examines the characteristics of organizations and relates these to the career patterns of individuals (e.g., White, 1970; Stewman, 1975). The third line argues for the preeminence of social class as the determinant of individual life chances (Goldthorpe, 1980). By this view, the social relationship of an individual to the societal production system transcends the boundaries of firms and industries (Wright and Perrone, 1977; Haller and Hodge, 1981).

Previous empirical research has shown merit in each of the three structuralist perspectives.¹

¹ For evidence supporting the dual economy hypothesis, see Oster (1979); Bibb and From (1977); Beck et al. (1978); Tolbert et al. (1980); Smith (1983); Dickens and Lang (1985). For evidence on organizational effects in the stratification process, see Pfeffer (1977); Stolzenberg (1978); Carroll and Mayer (1984); Baron and Bielby (1984). For recent evidence on the effects of social class on attainment, see Wright and Perrone (1977); and Wright (1978a). By

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