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ABSTRACT

In this study, the occupational advancement of black and white workers of comparable ages is compared through longitudinal census data. Two specific hypotheses are tested which propose (1) large and systematic racial differentials exist in the effect of mobility on occupational advancement between firms; and (2) differentials in intrafirm occupational advancement exist for workers of equivalent endowments within firms. A model of occupational advancement along with empirical variables from two sources of longitudinal data are discussed. Results indicate that neither the young nor the old men in the sample provide evidence of a systematic racial differential in the effect of mobility between firms on occupational advancement. The evidence on advancement within firms is said to be less unequivocal. Given the racial differential in initial occupational levels, however, small black-white differences in advancement are shown to appear within internal labor markets. (AM)

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OCCUPATIONAL ADVANCEMENT IN THE LATE 1960S: AN INDIRECT TEST OF THE DUAL LABOR MARKET HYPOTHESIS

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ABSTRACT

The occupational mobility of black and white males during the late 1960s is examined to test the hypotheses that large and systematic racial differentials exist in both between-firm and within-firm job upgrading. Longitudinal data from the 1970 Census and the National Longitudinal Surveys are used in the empirical analysis. Neither sample provides evidence of a systematic racial differential in the effect of interfirm mobility on occupational advancement. The evidence with respect to intrafirm advancement is less unequivocal. Given the racial differential in initial occupational levels, however, only small black-white differences in advancement appear within internal labor markets.

OCCUPATIONAL ADVANCEMENT IN THE LATE 1960S: AN INDIRECT TEST OF THE DUAL LABOR MARKET HYPOTHESIS

I. Introduction

Most discussions of the dual labor market hypothesis distinguish the primary and secondary sectors of the labor market by the level of wages paid and the opportunities for advancement. The primary sector offers high wages and formal job hierarchies, while jobs in the secondary sector pay low wages and offer little chance for advancement. Within the secondary sector, workers are alleged to develop irregular work habits because employment stability is not rewarded by employers. For their part, employers tend to organize the structure of work and production in such a way that worker instability does not disrupt production or reduce efficiency. As a result, the secondary sector can be characterized by high turnover; and since employers view workers as nearly homogeneous, personal characteristics are of little importance in determining wages in secondary jobs. Most dualists argue that minority workers are much more likely to begin (and continue) their working lifetimes in the secondary sector than are white men (see, for example, [4, p. 183]. In his recent survey article, Wachter [14, p. 660] states that racial discrimination is the major institutional barrier between sectors.

Since a critical feature of the dual hypothesis is the rigidity of the barrier between sectors, a test of the hypothesis involves determining the extent to which workers are able to move from secondary to primary jobs. Surprisingly, however, dualists offer very little guidance in the form of criteria to use in designating which jobs should be classified into one or the other sector. An approach that has been

taken, therefore, is to assign jobs (measured by occupation or occupation-industry) to the primary or secondary sectors by earnings (Andrisani [2]) or by intuition (Osterman [11])[1] and then to estimate an earnings function across workers in each sector. The test involves determining whether or not human capital endowments are substantially less important in the earnings relationship for secondary workers than in the primary sector relationship. As noted by Cain [3], however, the truncation bias inherent in this procedure may cause the results to be quite misleading.

This study takes an alternative, indirect approach to testing the dual hypothesis. No attempt is made to assign particular jobs to either the primary or the secondary sector. Rather, use is made of two propositions of the theory: (1) Secondary sector jobs are characterized by lack of upgrading opportunities, and (2) black workers are disproportionately confined to the secondary sector. Using occupational mobility as a measure of job upgrading, the present approach compares the occupational advancement of black and white workers of comparable ages, employing longitudinal data. Two specific hypotheses are tested:

Hypothesis 1: Large and systematic racial differentials exist in the effect of interfirm mobility on occupational advancement.

Hypothesis 2: Large and systematic racial differentials in intrafirm occupational advancement exist for workers of equivalent endowments.

With respect to Hypothesis 1, the observation of important racial differentials in occupational advancement would be compatible with the

dual labor market prediction that interfirm mobility of blacks is largely confined to job changes within the secondary sector. Among firm stayers, evidence consistent with Hypothesis 2 would support the dualist prediction that blacks tend to be either employed in secondary sector jobs in which advancement hierarchies are typically absent or placed on segregated progression lines within internal labor markets.[2] The null hypotheses are that the racial differentials in occupational mobility are small for both firm shifters and firm stayers. Acceptance of the null hypothesis is broadly consistent with the neoclassical theory of the labor market.

Section II of this paper presents a simple model of occupational advancement. In Section III, empirical variables from two sources of longitudinal data--the 1/1000 Public Use Sample of the 1970 Census and the National Longitudinal Surveys (NLS)--are discussed. Sections IV and V report the empirical results obtained for young men and older men, respectively, using both data bases. Some conclusions drawn from the empirical analysis are presented in Section VI.

II. Determinants of Occupational Advancement

The Census sample allows the measurement of occupational change over the period between 1965 and 1970, while the NLS samples allow change over the 1966-1969 period to be calculated. Both data bases thus cover a time interval in which black gains in occupational status were relatively great [1].

Over the Census time period, the determinants of occupational change across individual males in a particular age-race category may be specified as follows:

(1) $\Delta OCCUP = f[OCCUP(65), ED, TRAIN, MARRY, INDUS(65), \Delta INDUS, REGION(65), \Delta STATE] + u$

where $\Delta OCCUP = OCCUP(70) - OCCUP(65)$; OCCUP(70) and OCCUP(65) are occupational standing in 1970 and 1965, respectively; ED is years of formal schooling; TRAIN is formal vocational training; MARRY is marital status; INDUS(65) is industry of employment in 1965; ΔINDUS is change in industry between 1965 and 1970; REGION(65) is region of residence in 1965; ΔSTATE is change in state of residence between 1965 and 1970; and u is a disturbance term. ED, TRAIN, and MARRY are assumed to be exogenously determined; OCCUP(65), INDUS(65), and REGION(65) are treated as predetermined variables. Following the approach of Wachtel and Betsey [13], INDUS(65) and REGION(65) are included in the model as "structural" variables representing demand-side factors that distinguish labor markets. Within the dualist framework, Wachtel and Betsey [13, p. 123] argue that intermarket differences in labor market rewards persist because of important barriers to mobility.

Finally, ΔINDUS and ΔSTATE appear in the model as endogenous decision variables. Workers are viewed as distinguishing between employers, not only with respect to wages and working conditions, but also with respect to available job hierarchies. If a worker's present employer fails to offer an appropriate job hierarchy, therefore, a shift of employers is a prerequisite for gaining access to a hierarchy of sufficient job levels. With respect to equation (1), a shift in firm reflected in a change of industry or state can be measured with available Census information.[3] The NLS samples also allow the direct measurement of employer change.

III. Data and Empirical Variables

The hypotheses specified in the introductory section are tested against the 1/1000 Census sample and the Young Men and Mature Men NLS samples. The 1970 Census contains information on respondents' occupation, industry, and state of residence in 1965 as well as in 1970. The particular Census respondents examined include males under age 65 in 1970 who (1) are either black or white; (2) report an occupation, industry, and state of residence in both 1965 and 1970; (3) are employed at least part-year in 1969 (26 weeks or more); and (4) do not receive substantial (more than half of total earnings) self-employment earnings in 1969. The second criterion restricts the sample to males at least 19 years of age in 1970 who were working at a job or business in 1965. Men who meet these criteria are stratified into three age categories: under 35, 35-44, and 45-64.

The Young Men NLS sample includes individuals aged 17 to 27 in 1969, while the Mature Men NLS sample is comprised of individuals aged 48 to 62 in 1969. For the older cohort, respondents must be either black or white and employed in 1969, in addition to having reported an occupation, industry, and state of residence in 1966 and 1969. The same restrictions were imposed on the younger cohort, with one exception. To maintain as large a sample as possible, occupational change and industry change for young men still enrolled in school in 1966 are measured between first job after leaving school and 1969.[4] Thus, occupational change for the members of the Young Men sample is measured over a time interval variable in length but not exceeding three years.

Analysis of two data bases is especially useful in studying the occupational mobility of individual workers, because of difficulties inherent in precisely identifying occupational titles over time. Occupational change measured in the NLS samples is based on job descriptions collected in 1966 and 1969. Comparison of occupations reported at two different times probably overstates "true" occupational mobility, due to variation in the manner of describing the occupation or to coding error (see [6, p. 90]). In contrast, occupational change in the Census sample is measured by retrospective comparison. Faulty recall may thus lead to an understatement of actual mobility. Consequently, examination of evidence collected from data sources in which occupational information is collected in different ways should provide a more accurate description of the advancement process than would the isolated consideration of either sample.

Turning to the measurement of the variables specified in equation (1), ΔOCCUP is measured by change in three-digit occupational title.[5] To distinguish upgrading from downgrading and lateral movement, each three-digit title is assigned the 1969 median wage and salary earnings (in hundreds of dollars) of all the male members of the occupation in the experienced labor force. Median earnings scores range between 5 and 204.

The remaining variables are treated as categorical variables. ED is measured by years of school completed, specified as six discontinuous steps. TRAIN is a set of dichotomous variables representing completion of a training program by type of training (Census sample) or by institutional source of training (NLS samples). MARRY is represented by two categories--married with spouse present, and otherwise. For

the Census sample, INDUS is measured by ten major industry categories including (1) agriculture, forestry, fisheries, and mining; (2) construction; (3) durable goods manufacturing; (4) nondurable goods manufacturing; (5) transportation, communications, and other public utilities; (6) wholesale and retail trade; (7) finance, insurance, and real estate; (8) business, repair, and personal services; (9) professional and related services, including entertainment; and (10) public administration. For the NLS samples, industry categories (8) and (9) were reconstituted as "high-wage services" and "other services" following Okun's division [10, pp. 220-21]. Because of the small number of blacks in high-wage services, however, this category and finance [category (7)] were consolidated into a single industry category. REGION is categorized according to the following Census regional designations: West, North East, and South. Finally, ΔINDUS and ΔSTATE take the value one if a respondent changes industry or state, respectively, over the time interval examined; and the value zero otherwise.

IV. Empirical Results for Young Men

The empirical evidence produced to test Hypotheses 1 and 2 is obtained for a linear approximation of equation (1) that is additive in all explanatory variables, except that interaction between INDUS(65) and ΔINDUS is allowed. The interaction terms are included because the effect of an industry shift on occupational advancement is expected to depend on the occupational structure of the industry moved from. The effect of each categorical explanatory variable is represented by a shift in the estimated reference group relationship between ΔOCCUP

and OCCUP(65), where the modal category of each explanatory variable is selected to serve as the reference group category. Reference group characteristics include twelve years of schooling, no vocational training, 1965 employment in durable goods manufacturing, 1965 residence in the South, being married with spouse present, no change in industry between 1965 and 1970, and no change in state of residence between 1965 and 1970.[6]

Two specifications of the dependent variable ΔOCCUP are considered. The first treats ΔOCCUP as a continuous variable measuring the numerical difference between 1970 occupational standing and 1965 occupational standing. Thus ΔOCCUP may be positive or negative with a range of possible values. The second specification redefines ΔOCCUP as a dichotomous variable taking the value one if occupational upgrading occurred between 1965 and 1970 (that is, ΔOCCUP > 0); and the value zero otherwise. This specification converts equation (1) into a linear probability model so that the coefficient estimates are interpreted as the impacts of particular explanatory variables on the conditional probability of upgrading (see [7, pp. 296-97]). The strategy in this and the following section is to present the Census results for the age category under consideration followed by the results for the comparable NLS sample.

Census Sample

For men under age 35 in the Census sample,[7] coefficient estimates obtained for 1965 industry categories are generally significantly different from zero for both racial groups, as are a majority of the interaction terms between ΔINDUS and INDUS(65).[8] Using these coefficients together with estimated intercepts and OCCUP(65) coefficients, estimates

of occupational change and condition probability of upgrading can be calculated by 1965 industry, industry-change status, and race (see Table 1). Reference group categories of the remaining explanatory variables are assumed, including no change in state of residence, and OCCUP(65) is evaluated at sample means by race (means are 74.7 and 61.2, respectively, for whites and blacks). Black and white means are used in the calculations to take into account the considerably lower occupational level of blacks than whites--a difference that is consistent with the dualist presumption that racial minorities tend to be concentrated in secondary-sector jobs.[9] The last four lines of Table 1 show for each racial group (1) the fraction of the membership of each industry that shifted out of the industry between 1965 and 1970 and (2) the number of respondents in each industry in 1965. Racial differences in the distributions by 1965 industry tend to be small, with blacks slightly overrepresented relative to whites in agriculture/forestry, nondurable manufacturing, and professional services, and underrepresented in trade and finance.

To get a clearer impression of what the estimates in Table 1 mean, consider the entry in the first line and first column of the table. The number 14.2 is interpreted as predicting that, on average, a young white with reference group characteristics who moved from agriculture/forestry between 1965 and 1970 will be a member of a 1970 occupation in which 1969 median earnings are about $1400 higher than 1969 median earnings in his 1965 occupation. The upgrading probability estimate for the same young white is .61, meaning that a move from agriculture/forestry is accompanied by a 61 percent chance of being in a 1970 occupation in which 1969 median earnings are higher than the 1969 median earnings in the occupation left.

TABLE 1

Estimates of Occupational Change and Upgrading Probability for Males Under 35 in the Census Sample, by Industry-Change Status, Race, and 1965 Industry

Industry-Change Status		Ag./ Forestry	Con-struction	Durable Mfg.	Nondur. Mfg.	Pub. Util.	Trade	Finance	Bus. Serv.	Prof. Serv.	Pub. Admin.
					Occupational Change						
Movers:	Whites	14.2	2.3	6.3	5.3	5.4	12.9	6.5	6.2	10.6	2.3
	Blacks	19.6	5.1	0.9	5.2	6.8	11.3	-4.0	12.0	9.0	4.7
Stayers:	Whites	-6.0	6.8	7.6	7.3	7.0	3.2	9.6	3.0	1.3	6.6
	Blacks	-8.1	5.7	7.0	2.0	5.1	3.5	8.1	1.3	-1.4	7.9
					Upgrading Probability						
Movers:	Whites	.61	.49	.59	.59	.55	.61	.54	.56	.53	.50
	Blacks	.71	.59	.52	.51	.56	.59	.48	.53	.56	.44
Stayers:	Whites	.03	.24	.36	.35	.27	.32	.32	.19	.24	.22
	Blacks	(-)	.17	.32	.12	.18	.19	.22	.06	.00	.23
Fraction indus. movers:											
	Whites	.47	.31	.28	.43	.34	.40	.29	.43	.26	.31
	Blacks	.42	.33	.25	.41	.25	.36	.17	.47	.49	.44
N:	Whites	309	811	1612	1051	621	1630	326	455	721	326
	Blacks	55	67	142	113	48	136	12	43	76	32

Note: Estimates are calculated assuming reference group characteristics and evaluating OCCUP(65) at sample means by race.

Several conclusions may be drawn from Table 1. First, a shift between industries is seen to increase the probability of upgrading across industries relative to the upgrading probabilities estimated for industry stayers. On the other hand, the effect of industry shifts on occupational change depends more closely on the industry moved from since industry changes entail greater vulnerability to downgrading as well as greater opportunity for upgrading. That is, industry movers from an industry in which jobs are predominantly low in occupational status, such as agriculture/forestry, enjoy both a high probability of upgrading and a large positive estimate of occupational change relative to estimates obtained for industry stayers, since the risk of downgrading is small. Conversely, moving from an industry in which the occupational distribution is relatively high (durable goods manufacturing, for example) involves a sizable risk of downgrading, so that the estimate of occupational change for movers may be close to or below the estimate for stayers even though the upgrading probability estimate is much larger for movers than for stayers.

Second, racial differences in the conditional probability estimates for industry movers are quite small across all ten industry categories. Somewhat greater racial variation in the estimates of occupational change appears by industry, but the advantage favors blacks in half the cases considered. A more complete analysis of interindustry mobility would involve a discussion of both the costs and returns to job change. However, the proportion of industry movers in a tight labor market should be related to the difference in occupational advancement for movers and stayers that could occur if individuals were to have reasonably good information on their opportunities in both the internal and external market. Assuming, moreover, that the intensity

of discrimination varies widely among employers, the occupational advancement of blacks may be particularly associated with interfirm mobility via the search for less prejudiced employers. Table 1 indicates that this relationship holds in general for young black men. For example, relatively large differences between estimates of black advancement opportunities for movers and stayers appear for the agriculture/forestry and the services sectors, and these industry categories suffered relatively large losses in membership. On the other hand, black upgrading opportunities are relatively good in durable manufacturing, and a low proportion of blacks moved from this industry. In terms of Hypothesis 1, the evidence for young men in the Census sample does not indicate any systematic racial differential in advancement opportunities, at least as measured by interindustry job shifts.[10]

Among industry stayers, finally, the estimates in Table 1 suggest that differences by race for given industries are less important than differences for both racial groups across industries. Nevertheless, the racial differentials that are observed tend almost invariably to favor whites.[11] The only industry in which the sign of the differential is reversed for both measures of advancement is public administration. These results provide limited support for Hypothesis 2 on the assumption that the occupational mobility of intraindustry employer shifters does not greatly differ from that of employer stayers. Since the estimated differentials are small, however, it is also possible that racial differences in unmeasured characteristics (school quality, for example) may account for the black-white differences.

To supplement the results displayed in Table 1, the occupational mobility of relatively low-wage workers is also examined.[12] This analysis is motivated by recent studies focusing attention on the working poor (see [13], for example). Restricting the sample to members of blue-collar and service occupations in 1965, the number of whites and blacks in the under-35 cohort falls by about 38 percent and 17 percent, respectively. (Respondents employed in the industry category finance were also eliminated.) More importantly, the omission of white-collar workers and farmers nearly halves the racial differential in mean values of initial occupational level. Given the negatively-sloped relationship between ΔOCCUP and OCCUP(65), the relatively large decrease in the white mean of OCCUP(65) results in estimates of occupational advancement calculated for the restricted sample increasing more for whites than blacks relative to those in Table 1. Among industry stayers, this has the result of strengthening the racial differential suggested in the table. For industry movers, the upgrading probability estimates again show no evidence of a systematic racial differential across industries, but the occupational change estimates indicate the possibility of there existing an advantage in favor of whites. The occupational advancement of young blacks, however, is still observed to be more closely related to a change in industries than is that of comparable whites.

NLS Sample

The degree of occupational mobility exhibited in both NLS samples is considerably greater than that observed for similar age categories

in the Census sample. This difference is expected on the basis of the earlier discussion of the way occupational change is measured in the NLS and Census samples. A second distinguishing feature is the relatively heavy concentration of NLS respondents in the blue-collar and service occupations. For example, the mean of OCCUP(66) for the Young Men NLS sample is about the same as the mean of OCCUP(65) for blue-collar and service workers in the under-35 Census cohort.[13] As is the case for the Census sample, there is a sizable black-white difference in initial occupational levels for both NLS cohorts.

In attempting to replicate the Census results displayed in Table 1, essentially the same specification of equation (1) is applied to the NLS sample. The one difference is the substitution of a dummy variable (ΔRESID), representing change in SMSA or county, in place of ΔSTATE. In addition, information on the employer changes of NLS respondents allows a direct examination of the relationship between occupational advancement and interfirm shifts.

Preliminary cross-tabulations between occupational mobility and industry-change status for the younger NLS cohort indicated a distinct racial differential in the occupational advancement of industry stayers. Standardizing for the effects of the explanatory variables, however, raises the reference group estimate of ΔOCCUP for blacks relative to that estimated for whites.[14] As a consequence, the occupational change and upgrading probability estimates shown in Table 2 for industry stayers suggest a white advantage in advancement only for the industry categories agriculture/forestry, trade, finance/high-wage services, and other services. For these industries, it is worth noting that expected occupational change is greater for black movers than for black

TABLE 2

Estimates of Occupational Change and Upgrading Probability for the Young Men NLS Sample, by Industry-Change Status, Race, and 1966 Industry

Industry-Change Status		Ag./ Forestry	Con- struction	Durable Mfg.	Nondur. Mfg.	Pub. Util.	Trade	Finance/ HWS	Other Serv.	Pub. Admin.
					Occupational Change					
Movers:	Whites	10.5	10.7	4.6	8.8	9.5	7.6	8.2	2.8	21.8
	Blacks	15.3	-1.8	8.4	6.9	5.4	6.3	12.5	9.5	2.8
Stayers:	Whites	-5.5	5.9	6.8	9.6	6.9	10.6	12.4	3.8	9.1
	Blacks	-10.7	7.8	10.4	10.2	7.8	5.5	7.1	0.0	9.7
					Upgrading Probability					
Movers:	Whites	.58	.61	.49	.55	.61	.50	.46	.45	.96
	Blacks	.66	.47	.57	.48	.61	.54	.92	.62	.28
Stayers:	Whites	.07	.33	.42	.37	.37	.40	.41	.27	.42
	Blacks	(-)	.37	.48	.48	.37	.39	.36	.34	.45
Fraction indus. movers:										
	Whites	.38	.25	.25	.30	.33	.35	.29	.37	.19
	Blacks	.48	.36	.24	.30	.57	.36	.50	.49	.33
N:	Whites	121	146	441	186	90	293	65	117	54
	Blacks	66	53	135	71	37	106	12	76	18

Note: Estimates are calculated assuming reference group characteristics and evaluating OCCUP(66) at sample means by race.

stayers and that the proportions of blacks moving from the industries are relatively large. As is the case for young men in the Census sample, no evidence of a systematic racial differential among industry shifters is indicated. Similar findings were obtained for a subsample restricted to young men not in school in 1966.

Perhaps more striking than the incidence of interindustry mobility is the substantial movement between employers displayed by young NLS respondents. Only 34 percent of whites and 28 percent of blacks failed to change employers at least once over the 1967–1969 period. The high rate of turnover among youth in both racial groups is consistent with the dual hypothesis. At issue is whether or not the observed employer shifts result in substantially greater upgrading for whites than for blacks. A racial differential is anticipated, to the extent that young blacks tend to be disproportionately confined to secondary-sector jobs.

To test for a black-white differential in the impact of interfirm shifts on occupational advancement, a variable (JOBS) was defined that measures the number of employer changes between 1967 and 1969. JOBS is treated as a categorical variable with the categories indicated in Table 3. The coefficients on JOBS shown in the table indicate an interesting nonlinear pattern for black men. The size of the estimated impact on both occupational change and upgrading probability peaks at two employer changes and becomes negative only for four or more changes. For whites, on the other hand, the relationship between advancement and number of employer shifts is strictly negative. Although several of the individual coefficients are not statistically significant, evidence that the differential impact of JOBS may be something more than a statistical fluke is supplied by Kohen and Parnes [6, pp. 85-87].

TABLE 3

Regression Coefficients Obtained for Number of Employer Changes, Young Men NLS Sample

Dependent Variable	Number of Employer Changes, 1967-1969			
	1	2	3	4+
Occupational change				
Whites	-1.84	-2.78	-5.81	-7.06
	(-1.41)	(-1.86)	(-3.49)	(-3.77)
Blacks	0.74	3.34	0.04	-5.84
	(0.37)	(1.70)	(0.02)	(-2.40)
Upgrading probability				
Whites	.027	.005	-.065	-.081
	(0.92)	(0.14)	(-1.71)	(-1.87)
Blacks	.057	.158	.041	-.002
	(1.08)	(3.05)	(0.67)	(-0.04)
Mean of JOBS				
Whites	.26	.17	.13	.10
Blacks	.22	.24	.14	.12

Note: t statistics are in parentheses. Other explanatory variables include ED, TRAIN, MARRY, INDUS(66), and ΔRESID.

Measuring in terms of change in average wages between 1966 and 1968, they find a similar advantage to young blacks relative to young whites from interfirm shifts. A possible interpretation of this finding is that through experience with different employers, blacks acquire labor market information of the type whites tend to possess prior to labor market entry on a full-time basis.[15] Contrary to Hypothesis 1, the results for JOBS suggest that turnover plays a more important role in the job upgrading process for blacks than for whties.[16]

V. Empirical Results for Older Men

For both the Census and NLS samples, the incidence of occupational mobility for older men is considerably less than that for young men in the same sample, and observed upgrading is more nearly offset by downgrading. Among the sizable minority of older men who do change occupational title, nevertheless, the distance of occupational movement frequently indicates a major change in occupational status.

Census Sample

The 35-44 Census cohort includes approximately 7200 whites and 590 blacks, while the 45-64 cohort consists of over 12,000 whites and 945 blacks. Estimation of equation (1) for the oldest age category yields estimates of occupational advancement that are typically small relative to those shown in Table 1, but that exhibit a pattern consistent with the results reported there for young men. More specifically, no evidence of a systematic racial differential in occupational advancement is evident for the approximately 12 percent of both blacks and whites who shifted industry categories. Among industry stayers, small but persistent racial differentials in advancement appear across industries.

In contrast to the other two Census cohorts, the occupational upgrading observed for blacks aged 35-44 exceeds that of comparable whites. Distinguishing stayers from movers, black industry movers in this cohort fare considerably better than white movers, while no systematic racial differential appears among stayers. Consistent with the advantage indicated for black movers, about 22 percent of 35-year-old to 44-year-old black men changed industry affiliation as opposed to about 17 percent of whites of that age.[17]

NLS Sample

The Mature Men NLS sample consists of 2125 whites and 930 blacks between the ages of 48 and 62 in 1969. Two specifications of equation (1) are investigated using this sample. The first allows interaction between industry-change and initial-industry categories as before, where ΔINDUS in this case is defined as an employer shift accompanied by interindustry mobility. The second specification interacts 1966 industry categories with a dichotomous variable representing one or more employer changes between 1966 and 1969.[18] About 18 percent of whites in the sample changed employer, while about 8 percent changed employer and industry. The corresponding percentages calculated for blacks are 16 percent and 10 percent, respectively.

The estimates of occupational change and upgrading probability for firm stayers are very similar to the corresponding estimates for industry stayers despite the fact that industry stayers include both firm stayers and intraindustry firm movers. This supports the assumption made earlier that the occupational mobility of intraindustry firm shifters does not differ greatly from that of firm stayers. Among

(firm and industry) stayers in this sample, both the occupational-change and upgrading-probability estimates for blacks exceed the corresponding estimates for whites in every industry category. As was the case for the younger NLS cohort, standardizing for the effects of the explanatory variables in equation (1) increases the black estimates relative to those obtained for whites. The primary impact of standardization for middle-aged respondents appears to occur via the relationship between ED and ΔOCCUP. The modal categories of schooling for whites and blacks are twelve years and less than eight years, respectively. A similar difference in endowments appears for the 45-64 Census age category, but, in contrast to the Census cohort, edcuation is found to have a strong, positive effect on the occupational advancement of both black and white NLS respondents. Since the unadjusted means are similar for blacks and whites, standardizing for the difference in endowments yields negative racial differences in the occupational-change and upgrading-probability estimates across industries. Thus, results calculated for firm and industry stayers in both NLS samples support the rejection of Hypothesis 2.

Among middle-aged NLS respondents who shifted employers, the occupational-change and upgrading-probability estimates are typically larger for blacks than for whites across industries. Comparable estimates calculated for industry movers tend to be larger and to exhibit more racial variation than the estimates for firm movers. Again, however, the estimates for black industry shifters generally exceed the corresponding estimates for white shifters.

VI. Conclusions

The empirical findings suggest several conclusions. First, the incidence of shifts between firms and industries is quite similar for blacks and whites in comparable age categories. Considerably more employment instability among blacks than among whites would be expected on the basis of the dual labor market hypothesis, in which labor turnover plays a key role in distinguishing the primary and secondary labor markets.[19] Second, the impact of interfirm and interindustry shifts on occupational advancement does not appear to be systematically larger for whites than for blacks for either young or middle-aged workers. This conclusion is inconsistent with Hypothesis 1, and the impact of both findings is to cast doubt on the value of literal interpretation of the dual hypothesis as a guide for explaining labor market processes--at least during periods of nearly full employment.

The evidence obtained for firm and industry stayers is somewhat more equivocal. Estimates of occupational advancement calculated for the youngest and oldest Census cohorts indicate a small but persistent differential in favor of whites among industry stayers. On the other hand, results for the 35-44 Census cohort and the NLS samples suggest that black firm stayers as well as industry stayers enjoyed occupational advancement equal to or greater than that of comparable whites. Considered in total, the evidence appears to call for the rejection of Hypothesis 2.

These results therefore indicate that black workers were typically able to make important gains in occupational status during the late 1960s--a finding consistent with other statements of black progress over

this period. Analysis specific to blue-collar and service workers, however, suggests caution in assessing the evidence. Although the estimates of occupational advancement control for racial differences in formal schooling and other personal characteristics, the inverse relationship between occupational change and initial occupational level implies that part of the impressive gains estimated for blacks must be attributed to their relatively low initial status. Given black and white men of similar personal characteristics and the same initial occupational level, a racial differential in advancement is predicted on the basis of this study. Consequently, the rejection of Hypothesis 2, in particular, should not be taken as evidence of the disappearance of racial differences in advancement opportunities during the 1960s.

NOTES

[1] Andrisani [2, pp. 59-76] also estimates the likelihood of a primary first job and of mobility between the secondary and primary sectors for whites and blacks. However, his sample is small and the results he reports are frequently inconclusive.

[2] See Doeringer and Piore [4, pp. 140-45] for a useful discussion of racially segregated progression lines.

[3] The assumption that ΔINDUS and ΔSTATE are determined prior to ΔOCCUP means that the disturbance u is uncorrelated with ΔINDUS and ΔSTATE so that unbiased parameter estimates can be obtained by ordinary least squares. This temporal argument breaks down if the disturbance represents unmeasured characteristics that make one individual more apt to shift to a preferred industry and advance up an occupational ladder than they would another otherwise identical individual. While this type of argument is commonly advanced, there is really no way to determine its validity a priori. For this reason, reduced-form estimates of equation (1) were also obtained. Reduced-form results for young men in the Census sample are discussed in [9], and results for both samples are presented in [8]. Complete regressions are reported in an appendix available on request from the author.

[4] Nearly 40 percent of both racial groups in the Young Men sample were enrolled in 1966.

[5] Of course, occupational mobility is sensitive to the level of occupational aggregation, so that less mobility is shown when occupations are measured at the two-digit level than at the three-digit level. On the other hand, instances of job advancement in skilled white-collar and blue-collar occupations may fail to be reflected by occupational change measured at even the three-digit level.

[6] Also included in the regressions for the Census sample is an urban-rural 1970 residence dummy. In preliminary regressions, a measure of health limitation was found not to have a significant effect for men under 35, and it was discarded in later specifications. A health dummy is included, however, in the regressions for the 45-64 cohort. Urban residence and no health limitation serve as reference group characteristics. For the middle-aged NLS sample, a health dummy and a continuous measure of firm-specific experience accumulated as of 1966 are included in the regressions in addition to the explanatory variables in equation (1).

[7] In an attempt to eliminate respondents who were students working part-time in 1965, preliminary results were obtained for the 25-34 age bracket. This restriction reduced the sample by about 20 percent

(Notes cont.)

for both whites and blacks, and the results were generally quite similar to those obtained for the entire under-35 age category. The number of blacks under age 25 in 1970 was judged to be too small to support separate analysis.

[8] In contrast, estimates of the reduced form of equation (1) indicate that 1965 industry categories have little independent effect on occupational advancement. In [9] it is suggested that there is sufficient movement between industries to make the impact of initial industry on subsequent advancement relatively unimportant.

[9] Note that a standard procedure in studies of discrimination is to substitute white means into black equations to predict the economic attainment blacks would enjoy if they had the same endowments as whites. In the present case, evaluating OCCUP(65) in the black equation at the white mean would result in estimates of occupational change substantially smaller than those shown in Table 1 since the relationship between ΔOCCUP and OCCUP(65) is strongly negative.

[10] About 10 percent of both blacks and whites in the under-35 cohort changed state of residence during the 1965-1970 period. The coefficients on ΔSTATE in the occupational-change and linear-probability models indicate a positive and significant relationship between interstate migration and occupational advancement for both racial groups. Indeed, the estimates for blacks are larger than those for whites by a factor of nearly three. Consequently, if a shift in employers involved both a change in major industry and a change in state of residence, the increase in occupational standing for a black man would be predicted to be considerably larger than that for a comparable white.

[11] The white estimate exceeds the corresponding black estimate in eight of ten cases for calculated occupational change and in nine of ten cases for the upgrading-probability estimates. At the .05 level, the sign test indicates that the null hypothesis of a nonpositive racial differential must be rejected for both sets of estimates.

[12] Tables comparable to Table 1 for blue-collar and service workers in the under-35 Census cohort and for older men in the Census and NLS samples are available from the author.

[13] In the attempt to obtain reliable information for blacks, households in predominantly black enumeration districts were sampled in the NLS samples at a rate approximately three times that for households in predominantly white enumeration districts.

[14] Standardization has a similar but less dramatic effect for young men in the Census sample.

(Notes cont.)

[15] Using the Young Men sample, Parnes and Kohen [12, p. 47] report higher scores for whites than for blacks on an occupational information test.

[16] For the approximately 20 percent of young blacks and young whites that changed SMSA or county during the 1967-1969 period, the ΔRESID estimates indicate that change in residence has no significant impact for either racial group.

[17] Results obtained for ΔSTATE indicate a stronger positive relationship for blacks than for whites in the 35-44 cohort, while the impact of interstate migration is negligible for both racial groups among men in the oldest Census category. Similar insignificant results for ΔRESID were obtained for the Mature Men NLS sample.

[18] Relative to the reference group category of no change in employer, the effects of voluntary employer change and involuntary employer change were estimated and found to be insignificant. Kohen [5] reports similar results. Hence, voluntary and involuntary employer shifts were not distinguished in the subsequent analysis reported in the text.

[19] It should be noted that the dual hypothesis also suggests that within-firm instability (absenteeism and tardiness, for example) is characteristic of secondary workers. This kind of instability is not examined here.

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