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ABSTRACT

Black male earnings have gradually increased relative to white male earnings since 1940, with the rise during the 196^'s and early 1970's larger than that observed earlier. Five possible explanations account for this narrowing of racial wage differences: (1) a convergence in black and white income producing characteristics; (2) enhancement in the perceived quality of these income producing characteristics, e.g., schooling quality; (3) effects of migration; (4) effects of government affirmative action and reduction in labor market discrimination; and (5) business cycle variation. Extensive statistical analysis based on the Current Population Survey for 1968 through 1975 supports these explanations. Tables of data and a bibliography are included in this document. (PR)

RACE DIFFERENCES IN EARNINGS: A SURVEY AND NEW EVIDENCE

PREPARED UNDER A GRANT FROM THE NATIONAL SCIENCE FOUNDATION

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PREFACE

This study was supported by a grant from the National Science Foundation. It is part of a larger project dealing with income comparisons by race. The authors would like to thank Eric Hanushek, David Lyon, and Peter Mieszkowski for their helpful comments. Jon Duringer, Iva Maclennan and Dan Shapiro provided excellent research assistance.

SUMMARY

Black male earnings have gradually increased relative to white male earnings since 1940, with the rise during the 1960s and early 1970s larger than that observed earlier. This study explores five possible explanations for the narrowing racial wage differences.

1. A convergence in black and white income-producing characteristics. As blacks and whites become increasingly alike in such attributes as education, increases in black-white ratios should follow.
2. A cohort or "vintage" improvement among blacks--i.e., enhancement in the perceived quality of these income-producing characteristics. According to this viewpoint, recent black cohorts begin their job experiences with larger initial stocks of human capital than previous cohorts or blacks already in the market. Because schooling is an important determinant of earnings, and changes in schooling quality are more easily indexed, this report concentrates on schooling quality.
3. The effects of migration. Geographical distribution differs significantly by race, and there is substantial between-region dispersion in black-white wage ratios. Historically, migration of blacks from the South to the North was the primary factor; but recently, increasing urbanization of the black South has assumed an important role.
4. The effects of government affirmative action and reduction in labor market discrimination. Since 1970, a series of court cases imposed severe financial penalties on firms for noncompliance with affirmative action goals and added sharp teeth to government policies.

5. Business cycle variation can account for short-run changes in blacks' relative economic status. Traditionally, blacks have suffered more than whites during business contractions; observed changes in wages may, at least over short periods, be attributable to business cycles.

The principal explanation given here for the improved economic status of blacks is that successive cohorts of blacks and whites are simply becoming more alike in those attributes producing higher wages. In 1930, the typical black male began a work career with 3.7 fewer years of formal schooling than his white counterpart. As successive cohorts entered the labor force, the competitive disadvantage of blacks continuously dissipated. By 1970, 1.2 years of schooling separated black and white males at the time of their initial labor force experience. Even as current education levels by race converge, the weight of the past will depress relative wages of blacks, but in time this generational improvement will contribute to convergence. Blacks not only have higher education levels; they also have parents with more education relative to whites than their parents had.

Data on schooling quality reinforce the story conveyed by nominal years of schooling. The data on nominal characteristics of schools clearly show the improving relative quality of black schools. In 1920, black youths attended school only two-thirds as many days as white students, but by 1954 there were no real black-white differences. Similarly, in 1920 teachers of black students had one and three-fourths as many pupils as the average teacher in the country. By 1954, this difference had been substantially reduced. The extraordinarily high ratio of first- to second-graders suggests that on average a black student took about two years to complete the first grade in the 1930s. Retention rates that average 100 percent indicate low-quality education coupled with inflexible standards. Between 1940 and 1954, implicit retention rates in southern Negro schools moved toward the national norm. It is difficult to link

attributes of schools to measures of school achievement. Indeed, some of the measures offered may have had little effect on achievement, but the consistent picture of simultaneous convergence in all these dimensions makes the case for improving quality of black schools plausible.

This report is based on a statistical analysis of eight Current Population Surveys for 1968 through 1975. Each data set contains approximately 40,000 people. Separate samples were extracted for black and white males between the ages 14 and 65 in each year. The dependent variable for the regression analysis was the (ln) weekly wage. The explanatory variables fall into five classes: schooling, regional residence, market experience, direct and indirect government employment, and a set of estimated probabilities controlling for non-full-time work--the probability of zero earnings, part-time work, and full-time part-year work. These regressions were used to determine the factors that were most responsible for the rise in black male incomes between 1968 and 1975.

Almost half the rise in the ratio of black-white male wages is explained by converging nominal characteristics. As new cohorts of black workers enter the market, the distinction between races in income-producing attributes erodes, narrowing the wage gap. Education plays the dominant role, explaining 47 percent of the relative growth in black male wages due to greater characteristics similarity. Migration accounts for only a small positive amount of the relative wage growth of black men.

Recent trends in the income benefits from schooling for black and white men are examined. For elementary and secondary schools, lower income benefits from schooling are estimated for black males. If school systems are not an effective mechanism for increasing black male income, the problem is concentrated at the elementary and secondary levels. The marginal income returns to college are actually higher for black males, particularly in the early years of

market experience, perhaps because of increasing black attendance at racially mixed Northern colleges. Although white college income returns declined between 1968 and 1975, the returns to college for black males have remained stable.

The South dominated regional comparisons of wage ratios changes, accounting for a significant part of the rise in black male wages. Although migration flows had a small favorable effect on blacks, convergence toward the national norm in black-white Southern wage ratios was far more important. Relative black-white wage ratios have risen rapidly in the South, especially among the young. For males with less than ten years of experience, relative black wages increased 10 percent more than in the rest of the country. For older workers, the male wage ratio rose 5 percent more in the South. In addition to the general improvement for Southern blacks, black-white wage inequality among Southern states and between urban and non-urban areas was reduced, particularly among more recent cohorts. The quality of new younger workers is improving more rapidly in the South and affects all Southerners, but this improvement is larger among blacks. New black Southern workers apparently will enjoy career prospects significantly better than those of their predecessors.

Perhaps the most common explanation for the recent rise in black-white wage ratios is the alleged positive effects of government pressures popularly known as "affirmative action." Title VII of the 1964 Civil Rights Act forbids both employment and wage discrimination on the basis of race.

Direct and indirect employment by the government was used to test for the effects of affirmative action programs. Indirect government employment is in industries regulated by either federal or state and local governments, and the employment measure considers the fraction of an industry's sales that go to either the federal or state and local governments. If affirmative action has an effect, it should be strongest on the employment and wage trends in industries that are most susceptible to the government's influence. However,

the rise in black-white wage ratios has not occurred primarily in those industries. The effect of government on the aggregate black-white wage ratios is apparently quite small, and the popular notion that government pressures have driven these recent changes has little empirical support.

Since 1969, the economy has generally been characterized by a business cycle contraction and rising unemployment rates. Black wages historically decline relative to white wages during cyclic downswings, so that stable business conditions could have produced a more rapid increase in black-white wage ratios than was observed over this period. Business cycle conditions partly depressed the rise in relative black male earnings for 1948-1975. If business cycle conditions improve over the remainder of the decade, black-white male wage ratios should rise more rapidly for the rest of the 1970s than they did in the last five years, easily matching the large advances experienced during the 1960s.

The increased quantity and quality of schooling have made black males less vulnerable to cyclic vagaries than was historically the case. As blacks become more like whites in the characteristics that produce higher earnings, they will likewise more closely resemble whites in their reactions to business cycle fluctuations.

One feature common to all cross-sectional studies of black-white earnings differences is that younger blacks fare better compared with whites than their older counterparts. This is consistent with extreme life cycle or cohort views that have very different implications for the future course of black-white wage differentials. Early theories of labor market discrimination tended toward a life cycle explanation, holding that over-the-career black earnings increase less rapidly than comparable white earnings. These theories of "secondary" labor markets view the labor market as stratified, with some strata (those inhabited by blacks) being less upwardly mobile than others. In the cohort view, each individual in a cross-section is a member of a distinct cohort at one point in his life cycle path. More rapid black improvement in schooling quality or home environment over time could

have led to increases in the relative initial human capital stock of successive generations of black workers. In the cohort view, the observed cross-sectional decline in relative black-white wages with experience simply reflects the fact that less experienced workers are simultaneously members of newer cohorts. A single cross-section is incapable of separating the life cycle and cohort hypotheses. Comparing cross-sections at different times establishes the potential of distinguishing life cycle and cohort effects.

In this study eight successive cross-sections are used to distinguish cohort and life cycle effects. For any cohort in 1967, actual life cycle wage paths experienced through 1974 were contrasted with those that could have been predicted from a cross-section. The cross-sectional patterns uniformly predict declining black-white wage ratios with years of market experience. This decline gave credence to the secondary labor market view for blacks. But the within-cohort trends indicate that black-white wage ratios have increased over the life cycle, especially for better educated workers. The weight of evidence supports cohort improvement rather than the life cycle view.

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I. INTRODUCTION

Controversy has always surrounded the [illegible] trends in income differences by race. Some people say that reductions in racial discrimination induced partly by governmental pressures have been the prime mover in raising incomes of minorities. Others contend that the basic underlying causal factors rest in the convergence in income-producing characteristics of blacks and whites as reflected in the level and quality of schooling, regional location, and job experience. This report provides additional evidence on the subject, using eight large micro-data sets that span the time interval 1967-1974.

In an earlier study,[1] we analyzed changes in black-white male incomes between 1960 and 1970, using the decennial U.S. Census. We argued that this decade witnessed a significant improvement in the relative economic position of blacks. A primary objective in this report is to update our previous research to determine if the trends during the last decade have continued unabated into the middle 1970s. We use data from the 1968-1975 Current Population Surveys (CPS).

Our other objective is to examine regional characteristics and their relationship to the improved status of black males. In our earlier study based on Census data, geographical location had the greatest and most favorable effect of the factors we examined in explaining the convergence in male wages by race over the decade. The rising black-white wage ratios in the South and North Central regions were the key geographical variables, with the South by far the most important.

In Sec. II we present an overview of black-white wage differentials and summarize recent changes in these income ratios. In Sec. III we assess the more popular explanations for the narrowing of wage

[1] James P. Smith and Finis Welch, "Black-White Wage Ratios: 1960-1970," American Economic Review, Vol. 67, June 1977, pp. 323-338.

differences by race Section IV contains new evidence for recent changes in income ratios by race, an outline of the methodology employed in using the Current Population Surveys, and a detailed discussion of our empirical findings in explaining wage trends for the recent period. Section V is a brief summary of our conclusions. Appendix A contains tables of variable coefficients and standard errors for whites and blacks. Appendix B tabulates the predicted percentage increase in black-white weekly wages attributed to regional and to government variables from 1967 to 1974.

II. RECENT TRENDS IN BLACK-WHITE WAGE RATIOS

This section presents a historical overview of black-white wage ratios with emphasis on regional differences.

Table 1 lists wage ratios for selected years from 1947 to 1975 for all wage and salary workers and for those employed full time. Although the post-World War II era is characterized by a definite upward drift in the relative income of blacks, there were sharp cyclic swings. The picture is not of a smooth rise in relative black incomes but of a small positive trend factor imposed on an unstable cyclically sensitive series.

Table 1

RATIOS FOR MEDIAN MALE WAGE AND INCOME BY RACE FOR SELECTED YEARS, 1947-1975

Year	Wage and Salary Earnings[a]	
	All Workers	Full-time Workers
	Black Males[b] / White Males	Black Males / White Males
1947	.543	.640[c]
1951	.616	N/A
1955	.588	.635
1959	.580	.612
1963	.568	.654
1967	.639	.675
1969	.666	.694
1973	.695	.719
1974	.709	.736
1975	.734	.769

SOURCE: Current Population Reports.

[a]Data are for all individuals 14 years old and over.

[b]Black refers to Negro and other races.

[c]Data refer to 1946 Urban and Rural Non-Farm.

Black-white income ratios increased slightly in the late 1940s and early 1950s, continuing a process that apparently took place throughout the 1940s.[1] In the latter half of the 1950s, relative black male income began a decline which ended in the early sixties. The relative wage of blacks began to climb after 1963 and experienced a steady rise to 1970, an expansion that we analyzed in our previous work with the Censuses (Smith and Welch, 1977). The CPS data clearly indicate that this trend has continued into the mid-1970s.[2] Since this decade was characterized by a recession, during which wages of blacks and low-skill workers typically decline relative to the average, the published CPS data for the 1970s suggest that the factors at work raising black relative wages during the 1960s have continued uninterrupted. Comparisons among full-time earners are useful in that they provide partial control of business cycle fluctuations in employment at the expense of introducing potential censoring problems in this restricted sample. Full-time earnings ratios have risen more rapidly than that of all earners combined. In the last decade, racial earnings ratios for all workers and full-time workers have diverged, especially among the younger entrants. This suggests the possibility that income distributions among blacks are becoming more unequal.[3] Fully employed blacks are experiencing large gains, but this improvement is not filtering down to most economically disadvantaged blacks. Mean income ratios may suppress the fact that segments of the black community may not be sharing in these recent economic advances.

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[1] See Gwartney (1970) for an analysis of the 1940s using the 1940 and 1950 Census data.

[2] This is especially true when earnings rather than income ratios are examined. The trend is more dramatic for full-time workers than for all wage and salary workers.

[3] For some evidence that inequality among black earnings has increased compared to whites between 1960 and 1970, see Smith and Welch (forthcoming).

Table 2 lists non-white/white income ratios for the four Census regions.[1] Some care must be exercised in interpreting time series statistics of regional wage differentials. In addition to differential growth in real income across regions, these ratios may be altered substantially by migration. The characteristics of migrants relative to those in place of origin and destination can create the illusion of differential trends among regions. The historically large out-migration of blacks from the South into the other Census regions suggests that this problem may be serious in this context. Simple summary statistics of mean wages by region cannot discriminate between change caused by differential regional growth and changes that result primarily from between-region migration.

As shown in Table 2, the only regions that exhibit any uniform trend in black-white income ratios are those we identified in our Census work--the North Central and the South. The most dramatic changes have clearly occurred in the South, and the strong, persistent rise in income ratios there has resulted in a narrowing of racial wage differentials among regions. In spite of this rapid improvement, however, the Southern income ratio still remains substantially below that of other regions.[2]

Table 2

NON-WHITE/WHITE INCOME RATIOS BY REGION
FOR SELECTED YEARS, 1956-1974

Year	North-east	North Central	South	West	All Regions
1956	.730	.768	.423	.764	.523
1958	.735	.768	.391	.726	.498
1961	.732	.716	.376	.778	.517
1963	.716	.742	.427	.791	.521
1967	.745	.841	.495	.772	.588
1969	.762	.824	.539	.691	.590
1973	.769	.803	.560	.758	.629
1974	.719	.811	.546	.744	.634

[1] More than 90 percent of all "non-whites" are blacks.

[2] Among full-time earners, there is evidence of an increase for blacks in all four regions, although the South and North Central still have the largest increases.

Beginning with 1967 a more detailed analysis of wage differentials is possible using the CPS files on individuals. Table 3 shows black-white earnings ratios stratified by age and region for all workers. Once again, the patterns are consistent with those observed between 1960 and 1970: black-white earnings ratios have risen more rapidly among younger, more recent entrants into the labor market.[1] When the sample is stratified into region and age groups, the small black sample sizes make it difficult to determine interregional differences with certainty. But the two regions that most clearly show a continuous rise during this period are the South and North Central, which also exhibited the largest black gains during the 1960s.

Black males are at least equal participants with whites in the recent economic resurgence in the South. These wage gains in the South exist in all age groups, with the greatest improvement registered among the younger workers. There is little evidence of any change in the structure of racial wages in the West for any of the age groups considered.

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[1] If income ratios are used instead of earnings ratios, the patterns are similar except that the rate of improvement for blacks is smaller. Over this period, black-white income ratios increased by .055 compared to a .076 percentage point increase in earnings ratios.

Table 3

BLACK/WHITE EARNINGS RATIOS BY AGE
AND REGION (ALL WORKERS)
FOR SELECTED YEARS, 1967-1974

Age	1967	1970	1972	1974
All Regions				
21-30	.715	.715	.765	.760
31-40	.584	.631	.654	.688
41-50	.558	.580	.622	.628
51-60	.528	.583	.593	.606
21-60	.591	.626	.658	.667
Northeast				
21-30	.819	.774	.789	.793
31-40	.671	.697	.707	.749
41-50	.616	.680	.606	.706
51-60	.602	.618	.635	.745
21-60	.667	.690	.681	.742
North Central				
21-30	.834	.855	.806	.738
31-40	.732	.707	.732	.765
41-50	.676	.685	.723	.765
51-60	.627	.764	.744	.734
21-60	.713	.748	.755	.795
South				
21-30	.637	.631	.729	.688
31-40	.486	.572	.633	.622
41-50	.490	.505	.561	.554
51-60	.481	.512	.530	.511
21-60	.519	.555	.614	.593
West				
21-30	.781	.830	.906	.783
31-40	.685	.760	.610	.772
41-50	.765	.690	.735	.675
51-60	.678	.730	.619	.630
21-60	.711	.756	.727	.733

SOURCE: Current Population Surveys, 1968-1975.

III. EXPLANATIONS FOR IMPROVED ECONOMIC STATUS OF BLACKS

This section reviews the principal competing hypotheses that have emerged to explain the partial elimination of race differences in wages. In lieu of providing an exhaustive survey of the literature, we have selected a few studies that have made significant contributions and have also highlighted the central controversies. We also rely fairly heavily on our own past research.

The major explanations for the narrowing racial wage differences can be placed in five general categories.

The first emphasizes convergence in black and white income-producing characteristics. As blacks and whites become increasingly congruent in attributes such as education, increases in black-white wage ratios should follow.

The second but related hypothesis involves relative cohort or "vintage" improvement among blacks, i.e., enhancement in the perceived quality of these income-producing characteristics. The central idea is that relative to whites, more recent black cohorts begin their job experiences with larger initial stocks of human capital than previous cohorts of blacks already in the market. Skill levels or distributions are seen as relatively constant within cohorts, and convergence is accomplished as increasingly more racially similar cohorts enter labor markets while other less similar ones exit (retire). Because schooling is an important determinant of earnings and because changes in schooling quality are more easily indexed, most research on this subject has concentrated on schooling quality. However, other less easily measured dimensions may be equally important.

The third category involves the impact of migration. The geographical distribution of people differs significantly by race, and there is substantial between-region dispersion in black-white wage ratios. Historically, migration of blacks from the South to the

North was the primary factor, but more recently increasing urbanization of the black South has become important.

The fourth category involves the effects of government affirmative action and reductions in labor market discrimination.

Finally, business cycle variation can account for short-run changes in the relative economic status of blacks. Traditionally, blacks have suffered relative to whites during business contractions, and observed changes in wages may--at least over short periods of time--be attributable to business cycles.

CONVERGING CHARACTERISTICS AND THE ROLE OF EDUCATION

The most straightforward explanation for the improved economic status of black males is that in terms of characteristics producing higher wages, blacks and whites are simply becoming more alike. While this increased similarity is reflected in many characteristics, the economic literature gives special attention to education. In addition to making comparisons of education levels between races, research has dealt with comparisons of the monetary rewards of schooling.

The remarkable convergence in income-producing characteristics of black and white males is documented effectively in Table 4, which lists years of schooling completed by years of labor market entry from 1930 to 1970. Comparisons between races at point of entry into the labor market are used because they are more sensitive indicators of cohort changes than comparisons of education distributions of all workers. In 1930, the average black new labor force entrant had credentials quite different than his white competitor. The typical black male began his work career with 3.7 fewer years of formal schooling. Almost 80 percent of these blacks had a grade school diploma or less, and only 3 percent had any post-secondary schooling.

As successive cohorts entered the labor force over the past forty years, the competitive disadvantage of blacks has continuously narrowed. By 1970, 1.2 years of schooling separated black and white males at the time of their initial labor force experience. Furthermore, only 10 percent of these new black workers had less than nine

years of schooling and almost a fifth of them had some post-secondary education. In terms of measurable nominal characteristics associated with earnings, black and white males are becoming increasingly congruent. It should not be surprising that they also appear increasingly similar in monetary rewards offered by the market.

Table 4

YEARS OF SCHOOL COMPLETED AT ESTIMATED TIME OF LABOR MARKET ENTRY, SELECTED YEARS, 1930-1970

Item	Year of Labor Market Entry				
	1930	1940	1950	1960	1970
Mean schooling of blacks	5.9	8.0	9.9	11.1	11.4
Mean schooling of whites	9.6	11.1	12.0	12.6	12.6
Proportion of blacks with less than 9 years of school	.78	.58	.31	.15	.11
Proportion of whites with less than 9 years of school	.42	.22	.15	.10	.07
Proportion of blacks with more than 12 years of school	.03	.07	.13	.19	.19
Proportion of whites with more than 12 years of school	.08	.20	.32	.37	.38

In our work using the 1960 and 1970 Census (Smith and Welch, 1977), we tested for black-white differences in the return to education, as well as for the presence of structural shifts over the decade. Initial studies based on the 1960 Census by Hanoch (1965), Thurow (1969), and others consistently showed low returns to schooling for blacks. Later work based principally on the Survey of Economic Opportunity (see Weiss and Williamson, 1972, or Welch, 1973) estimated black education coefficients that were as large or even larger than those obtained for whites in 1960. This raised the possibility of a strong structural shift during the decade in the effectiveness of black schooling. Because we had pooled estimates based on both the 1960 and 1970 Census, we were able to directly test for black-white

differences in the return to schooling and the existence of structural shifts. Our estimates are reported in Table 5.

For grade school, the returns were lower for blacks than for whites. In contrast, the marginal returns to post-secondary schooling were actually higher for blacks than for whites. If school systems were not an effective means of increasing black incomes, it is clear that the problem was at the elementary and secondary levels. There was no trend in the returns to grade school for either race between 1960 and 1970, but higher wage returns to college in 1970. There is some evidence also that the college coefficient rose more during the decade for blacks than for whites. This may reflect the switching of blacks from southern Negro colleges to the presumably higher quality northern colleges.

Table 5

ESTIMATED SCHOOLING COEFFICIENTS, 1960 AND 1970[a]

Years of Experience	1970		1960	
	White	Black	White	Black
Elementary and Secondary Schooling				
1-5	.138	.092	.149	.099
6-10	.108	.093	.096	.070
11-15	.067	.053	.062	.044
16-20	.061	.045	.064	.043
21-30	.058	.030	.059	.032
31-40	.047	.028	.053	.023
College				
1-5	.123	.162	.098	.132
6-10	.088	.010	.080	.084
11-15	.090	.097	.079	.075
16-20	.088	.088	.068	.055
21-30	.076	.085	.072	.060
31-40	.074	.075	.049	.048

SOURCE: Smith and Welch (1977).

[a]The schooling coefficients can be read as the fractional increase in income associated with an extra year of schooling.

The converging educational distributions by race plus evidence that at least among new workers the income benefits from schools for blacks are comparable to those received by whites indicate that education has been historically important in raising relative incomes of blacks. Despite this past record, there is a question of how much longer schooling will continue to achieve wage improvement for blacks in the future. In Sec. IV, we present new estimates of the returns to schooling by race for each year between 1967 and 1974.

COHORT IMPROVEMENT

Finis Welch (1973, 1974) is the chief proponent of the "vintage" hypothesis that converging income ratios reflect relative improvement of more recent black cohorts. The bulk of his evidence for the improving quality of new generations of black workers concerns schooling quality. He provides two types of data supporting his contention of increases in the quality of schools attended by blacks. One type rests on his interpretation of cross-sectional returns to education for blacks and whites. In a cross-section, estimated returns to schooling for blacks exhibit a more rapid decline with age or experience than those for whites. This cross-sectional behavior is consistent with at least two hypotheses: (1) The cross-sectional patterns reflect a life cycle phenomenon, i.e., that the effects of market discrimination may accumulate over a worker's career. In this view, discrimination serves more as an impediment to job advancement than to finding a job in the first place. This, of course, is the well-known "secondary labor market" hypothesis. (2) Compared to whites the quality of black schooling has been improving over the twentieth century. Black members of more recent cohorts could have attended better schools, and the higher returns to schooling among younger workers in the cross-section may mirror the enhanced character of their educational experience.

A single cross-section obviously cannot distinguish between these two hypotheses. By comparing successive cross-sections, Welch attempts to separate out the life cycle and cohort components. Welch

(1973) reports that his within-cohort comparisons indicate that the black schooling returns were relatively stable over the life cycle. The cross-sectional decline appears then to be a consequence of higher returns to schooling among more recent cohorts of blacks.

The more direct and convincing evidence accumulated by Welch refers to measures of changing attributes of black schools over this century. The current and, in many cases valid, criticism of the quality of contemporary black education tends to make us forget that the situation historically was much worse. In terms of nominal characteristics of schools, Welch (1974) collected data that tell a clear story of improving relative quality of black schools. A sample of his supporting data is reported in Table 6. The change that may have been of greatest importance in terms of learning acquired is the convergence in length of school term between blacks and whites. In 1920, black youths attended school three-fourths of a year less than white students. By 1954, the year of the Supreme Court desegregation decision, there were no real black-white differences in days attended. Similar differences emerge in pupils enrolled per classroom teacher. In 1920, Negro teachers had one and three-fourths as many pupils as the average teacher in the country. By 1954, this difference had been substantially reduced. The most striking dimension cited by Welch is the extraordinary high ratio of first- to second-graders in black schools.[1] Welch contends that on average a Negro student took about two years to complete the first grade between 1920 and 1940. Retention rates that average 100 percent would hardly seem to indicate high quality education; they rather suggest low quality coupled with inflexible standards. But note in Table 6 that between 1940 and 1954 the implicit retention rates in

[1] If all students complete at least the second grade, and if there is no growth in total enrollment (southern Negro school enrollment has grown at annual rates of less than 1 percent each decade this century), then the ratio of enrollment of first- to second-graders is the time required to complete the first grade relative to the time required to complete the second.

southern Negro schools converged toward the national norm. It has always been difficult to link attributes of schools to measures of school achievement. It is indeed possible that some of the measures offered--days attended, pupil-teacher ratios, retention rates, schooling expenditures per student, teacher quality--have had little impact on achievement. However, the consistent picture of simultaneous convergence in all these dimensions makes the case for improving quality of black schools plausible.

Table 6

COMPARISON OF TRENDS IN CHARACTERISTICS AMONG SEGREGATED NEGRO SCHOOLS, SOUTHERN WHITE SCHOOLS, AND ALL U.S. SCHOOLS, 1899-1954

Year	Average Days Attended Per Pupil Enrolled		Pupils Enrolled Per Classroom Teacher		Ratio of First to Second Grade Enrollment	
	Negro Schools	All Schools	Negro Schools	All Schools	Negro Schools	All Schools
1899-00	57	69[a]	56.7	42.5[a]	1.37	1.14[a]
1908-09	71	88	56.4	39.9[a]	1.45	1.49[a]
1919-20	80	121	56.0	31.8	1.96	1.64
1929-30	97	143	43.7	30.0	2.35	1.48
1939-40	126	152	45.3	29.0	2.03	1.29
1949-50	148	158	33.6	27.5	1.62	1.20
1953-54	151	159	32.9	27.9	1.45	1.25

[a]Southern white schools only.

Although the bulk of the evidence on vintage concerns schooling quality, other dimensions may be equally important. The evidence previously cited on trends in black education levels is particularly relevant. This story of increasing relative black education in the twentieth century is augmented by the nineteenth century experience. By 1835, every Southern state had a law prohibiting schooling of

slaves. Thus, emancipation came at a time when no slave under 30 years old could legally have been schooled. This dismal record will have an impact across black generations. In 1960, the average black working male was 47 years old and was born in 1912. Assuming a 25-year generation span, his father was born in 1887, and his grandfather in 1862. The persistent effects of past education levels affect the market performance of present generations through family background. Even as current education levels by race converge, the weight of the past will be a factor depressing relative wages of blacks. However, in terms of tracking changes over time, the history of generational improvement will contribute to the convergence between races. Blacks not only have higher education levels relative to whites than their fathers had, but they also have parents with more education relative to whites than their parents had. In Sec. IV, we use the CPS data to provide additional evidence for vintage and life cycle hypotheses.

MIGRATION

The third factor contributing to the rising relative economic position of blacks relates to the changing geographical distribution by race. Table 7 lists the distribution of blacks and whites living in the four Census regions from 1900 to 1970, and the proportion of individuals located in urban areas. The salient migratory event is, of course, the large exodus of blacks from the South. In 1900, almost 90 percent of blacks were located in the South. In a process beginning in 1910 and accelerating after World War II, blacks have left the South and relocated in the urban North. By 1970, the proportion of blacks in the South declined to approximately one-half.

The earliest black migration was to the Northeastern and North Central regions, but more recently, blacks as well as whites have moved into the Western region. An equally striking development is the increasing urbanization of the black South.[1] While practically

[1] This is partly due to the accelerating urbanization of the South in general, as well as to the movement of black and white Southerners from rural to urban areas.

all Northern blacks are in urban areas, blacks traditionally resided in rural sections of the South. In 1900, less than 20 percent of black Southerners lived in urban areas, while by 1970 the proportion rose to almost 70 percent. The chapter in American history during which one could correctly employ the dichotomy of the Northern black as urban and the Southern black as rural is rapidly coming to a close. The Southern rural-to-urban Northern migration of blacks has partly been superseded by Southern blacks moving to the economically vibrant and growing Southern cities.

Table 7

REGIONAL DISTRIBUTION OF BLACKS AND WHITES FOR SELECTED YEARS, 1900-1970

Year	Northeast		North Central		South		West	
	Whites	Blacks	Whites	Blacks	Whites	Blacks	Whites	Blacks
	Distribution by Race Within Region							
1970	.249	.192	.291	.202	.284	.530	.177	.075
1960	.261	.160	.302	.183	.274	.599	.163	.058
1950	.277	.134	.312	.148	.273	.680	.138	.038
1940	.292	.106	.329	.110	.268	.770	.113	.013
1930	.305	.096	.341	.106	.254	.787	.099	.010
1920	.305	.065	.350	.076	.255	.852	.090	.008
1910	.310	.049	.358	.055	.251	.890	.080	.005
1900	.311	.044	.386	.056	.247	.897	.058	.003
	Proportion Urban by Race by Region							
1970	.787	.966	.693	.955	.639	.673	.826	.861
1960	.791	.952	.668	.939	.586	.582	.776	.788
1950	.787	.936	.626	.912	.489	.476	.697	.716
1940	.761	.897	.573	.850	.368	.363	.508	.518
1930	.771	.887	.569	.834	.347	.325	.596	.504
1920	.757	.862	.516	.787	.292	.251	.530	.426
1910	.722	.809	.447	.662	.232	.211	.492	.395
1900	.669	.705	.382	.582	.185	.171	.412	.321

SOURCE: U.S. Census.

The short eight-year period covered by CPS data for individuals limits the extent of migration trends that we can trace.[1] The most important recent development is the continuing black urbanization in the South. Between 1968 and 1975, the fraction of black Southerners living in SMSAs increased from .524 to .606 (see Table 8). Among white Southerners, a similar but less pronounced shift occurred as the proportion living in SMSAs rose from .549 to .591. The distinction between the races lies in the tendency for urban blacks to live in central cities of SMSAs (over 70 percent) while approximately 45 percent of white Southerners in SMSAs are in central cities. Within the South, the proportion of whites in central cities declined slightly from 1967, while the corresponding proportion of blacks increased from .399 to .443.

Although it is standard practice in analyzing black-white wage differentials to rely on broad distinctions between regions such as North and South, the South may well be the least homogeneous region of the country. In a paper examining earnings inequality within races, we show that one of the prime determinants of the large earnings inequality among blacks has been the substantial within-region dispersion in the South.[2] With this in mind, we divided the South into its three subregions to obtain a more detailed picture of trends in this critical area. The disparity within this region exists both in wage differentials and population movements.[3] Half of the 2 percentage point increase in the fraction of whites in the South between 1968 and 1975 took place in the West South Central region. Yet this was the only Southern subregion that exhibited a lower representation of blacks. The growth region for blacks was

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[1] Since the coverage of the CPS data refers to males aged 14-65, the proportions are not directly comparable to the Census data presented in Table 7 that includes all individuals.

[2] See Smith and Welch (forthcoming).

[3] Evidence on wage differentials is presented in Sec. IV.

Table 8

SELECTED MIGRATION STATISTICS,
1968 AND 1975

Region or Urban Types	Whites		Blacks	
	1968	1975	1968	1975
Proportion living in:				
Northeast	.272	.246	.186	.171
North Central	.292	.288	.216	.201
South Atlantic	.132	.136	.294	.310
East South Central	.053	.059	.096	.102
West South Central	.081	.091	.134	.123
Total South	.266	.286	.524	.535
West	.171	.181	.073	.092
Proportion of Southerners living in:				
SMSAs	.549	.591	.524	.606
Central Cities	.244	.238	.399	.448
Proportion of Northerners living in:				
SMSAs	.723	.742	.922	.942
Central Cities	.286	.261	.744	.720

the South Atlantic, where the proportion of black residents rose by 1.5 percentage points. The trends observed in the non-Southern regions were consistent with patterns observed during the last two decades. Both whites and blacks have continued their movement into the West and out of the Northeast. The white population was relatively stable in the North Central region, where the relative black population has decreased.

In light of the considerable between-region dispersion in racial income ratios (Tables 2 and 3), the substantial redistribution of

population by race over the twentieth century suggests that location variables had the potential to explain a significant part of the more rapid rise in black wages. Area of residence can account for an improvement in the relative economic status of blacks for two reasons. The direct effect of relocation results from black migration from regions (the South) with low relative black-white wages into regions where the black wage disadvantage is smaller (the North). Since racial wage ratios have risen more rapidly in the South where blacks are more heavily represented, the second flows from converging racial income differences between regions.

The existing empirical evidence indicates that location has, in fact, been the most consistent cause of rising black-white wage ratios up to 1970. James Gwartney (1970) reports that migration was the principal reason for the rise in racial income ratios between 1940 and 1960. This was a consequence of the black migration from the South to the North, and more importantly, the more rapid increases in relative wages in the South. Between 1940 and 1960, Gwartney estimates that relative wages rose in the South by 21.7 percent and by 16.2 percent in the North and the West. Furthermore, the change in the regional composition of people during this time span increased the non-white/white income ratio by 3.1 percent.

In our work with Census data, we measured the effect of location between 1960 and 1970. Geographical residence had the largest and most favorable effect of all the factors we examined in that research. The locational effects were dominated by changed earnings ratios within regions, with migration per se of secondary importance. Even after adjusting for education, experience, and government employment, we found that regional differences in black-white earnings persisted.[1] In the South, white male wages were 8 to 13 percent below those in the Northeast, while black wages in the South were from 15 to 30 percent lower than those in the Northeast. Southern residence

[1] In this study, the Northeast was taken as a base, and growth in earnings ratios in the South and North Central regions are relative to the Northeast.

is associated with black-white wage ratios in 1970; these are from 3 to 13 percent below the Northeast. This differential increases with experience and mainly reflected different racial wage structures by experience rather than residence patterns.

The net effect of location is small in those with 10 years of experience or less. In the 11+ experience groups, black wages ranged from 4 to 9 percent lower because of their locational distribution in 1970. The detrimental effect of predominantly Southern residence is simply much more pronounced for older workers.

In spite of the historical importance of migration in accounting for rising relative black wages, the potential for migration movements to explain more recent changes in black-white wage ratios is an open question.

GOVERNMENT INFLUENCE

Perhaps the most common explanation for the recent rise in black-white wage ratios rests on the alleged positive effects of government pressures commonly known as "affirmative action." Title VII of the 1964 Civil Rights Act forbids both employment and wage discrimination on the basis of race. Two government agencies have had primary responsibility for enforcing affirmative action. The 1964 Civil Rights Act created the Equal Employment Opportunity Commission (EEOC) to monitor firm compliance with the provisions of the act. Although the initial powers of the EEOC were apparently limited, since 1972 the EEOC has had the power to initiate litigation. The Office of Federal Contract Compliance (OFCC) was established in 1965 to administer an executive order forbidding discrimination by government contractors. The existing empirical evidence on the effects of this legislation has produced conflicting and mixed results. These studies have taken a variety of forms. The most numerous have been individual or case studies of firms affected by either EEOC or OFCC. A second group is based on time series analysis of trends in black-white wage ratios. Finally, cross-sectional studies usually embedded in a larger context have attempted to test for the impact of affirmative action. The

vast number of studies preclude any extensive survey so we will content ourselves with a broad-brush approach.[1]

EEOC and OFCC Case Studies

Because they do not deal with economy-wide effects, the case studies of EEOC and OFCC are the least useful in determining aggregate effects on black-white wage ratios. In their survey of existing research, Butler and Heckman (1977) cite the work of Andrea Beller (1974) as the most sophisticated of the micro-studies of EEOC. She concluded that the enforcement of the wage and employment provisions of the 1964 Civil Rights Act appear to have a slight negative economy-wide impact on relative employment and no (or possibly a negative) impact on relative wages. The OFCC studies are of questionable use because they deal only with relative employment effects and contain no information on relative wage effects. Butler and Heckman conclude that the evidence suggests small but positive short- and long-run effects on employment, but possible negative effects on relative occupational position.[2]

Time Series Analyses

The most influential of the time-series studies was conducted by Richard Freeman (1973). With time-series data from 1947-1971, Freeman regressed the black-white income ratios on a time trend, deviations from GNP as a proxy for cyclic variation, relative education of blacks, and a variable measuring cumulative EEOC expenditures. The latter variable was used as an index of federal

[1] For two excellent reviews of this literature on affirmative action that go well beyond our simple survey, see Butler and Heckman (1977) and Flanagan (1976).

[2] Another class of studies has concentrated on studying the actual mechanics of enforcement by the two agencies. The mechanics include funding and staffing levels, and length of time of litigation. The hard and anecdotal evidence makes one very skeptical that these agencies have had much impact. See Wallace (1975).

antidiscrimination programs and had a statistically significant positive coefficient. On the basis of this evidence, Freeman concluded that affirmative action pressures had shifted the time-series pattern of relative wages toward blacks. His work is consistent with that of Vroman, and together they comprise the principal evidence in support of strong positive effects of affirmative action. In fact, Vroman only showed that the timing of relative wage growth was consistent with that of the government's affirmative action emphasis, and Freeman's work is open to a number of criticisms.

The ability of limited time-series data to detect the effect of affirmative action and more importantly to discriminate among alternative hypotheses is questionable. There was a dramatic increase between 1965 and 1966 in black-white wage ratios, which is often used as evidence that the civil rights laws that just preceded this increase were a factor in accounting for the recent improvement in the earnings of blacks. Variables that also change rapidly during this same period--such as Freeman's cumulative EEOC expenditure series--will undoubtedly capture the sharp break at this time in the time series pattern. However, year-to-year changes in this series are often quite irregular. For example, there are two other points (1951-1952 and 1958-1959) where the increase in the black-white ratio is almost as large as the 1965-1966 change. In these years there was, of course, no comparable legislation.

In their excellent critique of the Freeman study, Butler and Heckman cast serious doubts on his conclusions. They argue that one cause of the recent rise in relative black wages results from a supply-side phenomenon--the declining labor-force participation rates of prime-aged black males. This decline in participation rates they attribute to the expansion of the welfare system, which has increased non-market opportunities for low-income individuals and blacks, in particular. Since it is reasonable to suppose that the lowest-wage blacks will exit the market first, Butler and Heckman contend that some of this recent rise is merely a statistical artifact: censoring out low-wage blacks results in a reported rise in the black-white wage ratios of remaining participants.

Butler and Heckman replicated Freeman's time-series analysis and also included a variable measuring the predicted relative labor force participation rates of black males. Not only does their new variable have the expected negative effect, but alongside it Freeman's accumulative EEOC expenditure variable is now statistically insignificant. The Butler-Heckman study and our general skepticism concerning the usefulness of time-series data convince us that Freeman's inference about strong affirmative action effects is not warranted on the basis of this evidence alone.[1]

Cross-Sectional Studies

Many cross-sectional studies (Link; Weiss and Williamson; Haworth; Gwartney and Haworth) have also assigned a major part of the

[1]The Butler-Heckman point should not be overstated. It is unlikely that recent changes in relative wages of blacks are due exclusively to censoring phenomena. As a crude check on this source of bias, we present income ratios for all workers and for nonrecipients of welfare and unemployment benefits. The following table illustrates the significant expansion in the fraction of men receiving either welfare or unemployment during the last decade, although the increase appears as large among whites as that observed for blacks. Yet, for all income recipients and for those not receiving welfare and unemployment, income ratios are not very different. We view this as circumstantial evidence that not all these recent gains flow from the expansion in the welfare system.

	Income Ratios		Earnings Ratios		Proportions Receiving Welfare and Unemployment	
Year	All	Nonrecipients of Welfare and Unemployment	All	Nonrecipients of Welfare and Unemployment	Black	White
1967	.571	.567	.574	.575	.114	.097
1968	.611	.617	.614	.632	.134	.108
1969	.591	.597	.594	.610	.143	.121
1970	.595	.594	.596	.606	.168	.157
1971	.602	.604	.605	.616	.167	.164
1972	.620	.619	.622	.631	.161	.155
1973	.615	.615	.617	.626	.159	.136
1974	.626	.626	.623	.638	.199	.174

improvement in relative black-white income to the effects of government antidiscriminatory legislation. Unfortunately, the standard empirical practice was to deduce the impact of the government as a component of the residual--all changes in black-white wage ratios not accounted for by other explanatory variables. Since these residuals measure aggregate ignorance and could proxy any neglected factor, more direct tests of affirmative action are required before any confidence can be placed in this conclusion.

In our research based on the 1960 and 1970 Censuses (Smith and Welch, 1977), we attempted to test the influence of government in the rise in black-white wage ratios over this period. We argued there that the implied threat of pressures on government contractors for affirmative action gave us our best chance to observe the effects of this legislation. Our method with Census was an indirect one--to focus on workers most susceptible to government influence. We identified workers by the degree of their contact with the government--direct government employees, workers in industries regulated by the government, and those in industries that sell a large part of their product to the government. If affirmative action was an important causal factor, its impact should have been strongest on employment and wage trends in these industries. Our empirical research indicated, however, that the largest gains in black-white wage ratios between 1960 and 1970 occurred in those industries least vulnerable to federal or local government influence--i.e., the private sector. We concluded on the basis of our Census study that the effects of affirmative action during the 1960s was probably small.

Whatever the causes of the racial trends before 1970, it is conceivable that more weight must be assigned to government influence in recent changes. There is evidence of budget increases in government agencies responsible for enforcing antidiscrimination legislation. And court cases imposing severe financial penalties on firms for noncompliance with affirmative action goals have added sharp teeth to

government policies. In Sec. IV, we update our earlier analysis to evaluate the possibility of more recent affirmative action effects.

IMPACT OF BUSINESS CYCLES

The years since 1969 have generally been characterized by a business cycle contraction and rising unemployment rates. Wages of blacks historically decline relative to whites during cyclic downswings; thus more stable business conditions could have produced a more rapid increase in black-white wage ratios than was observed over this period. To investigate the influence of cyclic conditions on racial earnings ratios, we regressed, for 1948-1969, the log of the black-white earnings ratio on a quadratic time trend and the unemployment rate of prime-aged males. This regression (Table 9) was used to predict racial earnings ratios for the 1970-1974 period under two assumptions. The first, graphed as the broken line in Fig. 1, uses the actual unemployment rates for these years. The second (the dotted line in Fig. 1) assumes that the unemployment rate remained at its 1969 level. Comparing these predicted ratios to the actual trend indicates that business cycle conditions did partly depress the increase in black-white relative wages.

Table 9

INDEPENDENT VARIABLES

Time Period Covered	Time	Time Squared	Unemployment Rate	Unempl. Rate x Time	Constant	R^2
1948-1969	-.0087 (-1.450)	.0005 (-1.95)	-.0308 (-3.960)	----- -----	-.4972 (-14.871)	.733
1948-1974	-.0155 (3.25)	.0007 (5.39)	-.0403 (3.23)	.0011 (1.22)	-.4536 (8.96)	.863

Using the 1969 unemployment rate, the predicted earnings ratio increased by .058 percentage points while the actual ratio rose by .043. If business cycle conditions improve over the remainder of

this decade, black-white male wage ratios should rise more rapidly for the rest of the 1970s than they did from 1970 to 1975. This rise could easily match the large advances experienced during the 1960s.

Figure 1 also shows that the actual earnings ratio was not as depressed by recent business cycle conditions as our regressions predict using the actual unemployment rates for this recent period. We hypothesize that the type of factors leading to the secular increase in black wages (increased quantity and quality of schooling) have probably made black males less vulnerable to cyclic vagaries than was historically the case. As blacks become more like whites in the characteristics that produce higher earnings, it is reasonable to suppose that they will likewise resemble whites more closely in their reactions to business cycle fluctuations.

As a simple test of this hypothesis, Table 9 lists a second regression on the black-white earnings ratio that includes a time interaction with the unemployment rate. Although this interactive variable is only marginally significant, our results indicate that as indexed by unemployment rates, the negative effect of business cycles on relative black earnings may be becoming less severe.

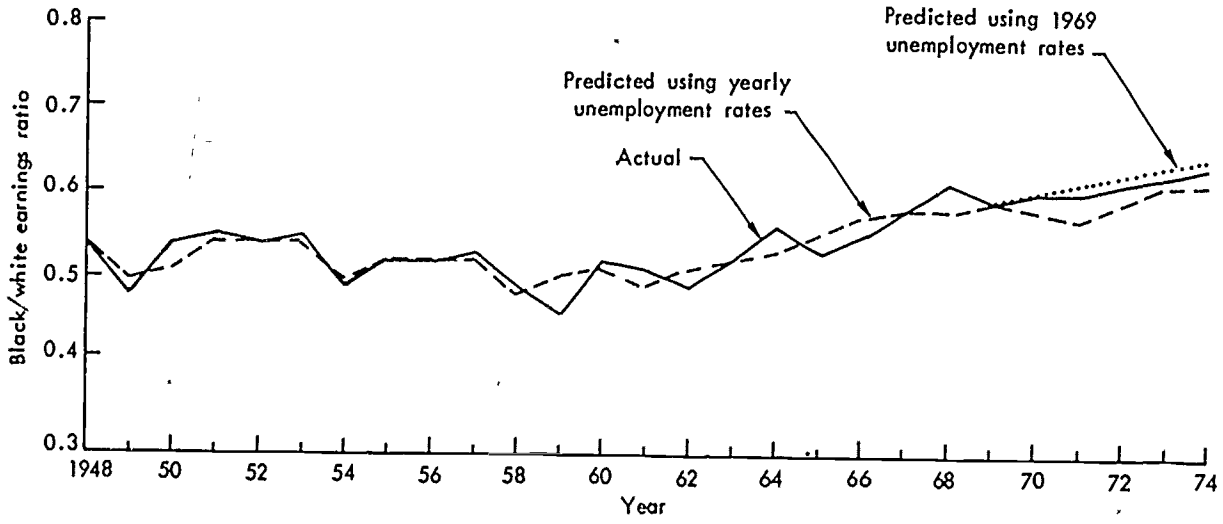

Fig. 1--Predicted and actual black/white earnings ratios

IV. ANALYSIS OF CURRENT POPULATION SURVEY FILES

FRAMEWORK FOR ANALYSIS

Our description of the methodology employed for investigating recent trends in black-white male wage ratios includes two important problems facing the analyst: the exact operational definition of variables and the process involved in selecting the regression specification used for final analysis. We begin with a brief description of variables, followed by a justification of the constraints imposed by our final specification.

Our samples are derived from eight Current Population Surveys for the years 1968-1975 inclusive. The income data refer to the year prior to each survey and thus cover the period 1967-1974. In each year, separate samples were extracted for black and white males between the ages of 14 and 65.[1] The dependent variable is the (ln) weekly wage computed by dividing earnings by weeks worked. The explanatory variables fall into five classes: schooling, regional residence, market experience, direct and indirect government employment, and a set of estimated probabilities controlling for non-full-time work. These variables were interacted in a number of ways that are described below.

There are two variables for years of schooling completed. The first ranges from 0-12 and indicates years of elementary and secondary schooling. The second measures years of post-secondary schooling. If a person reports a positive number of years of college, the grade school variable is set equal to 12. This "spline" function is linearly segmented to permit slope coefficients to differ between the first 12 years of schooling and succeeding years, but the segments

[1] Sample sizes range from 2281 to 2700 for blacks and 24,449 to 26,888 for whites. The following restrictions were imposed for sample eligibility: positive earnings and weeks worked, computed weekly wages in excess of $10, civilians who were not self-employed or working without pay, and part-year workers who were not in school or retired.

are constrained to join at 12 years. Because the returns to schooling are characterized in cross-sectional data sets by a significant interaction with labor market experience, we interacted both schooling variables with a linearly segmented experience measure--the first ten years of market experience and experience defined as post-ten-year market experience.

Geographic location includes binary variables indicating residence for the North Central and West regions and for three subregions in the South--the South Atlantic, East South Central, and West South Central. The omitted (base) class is the Northeastern region. Residence in each region was interacted with market experience to determine whether experience profiles of earnings differed among regions. Dummy variables are included if the individual resides in a standard metropolitan statistical area (SMSA) or if the residence is within a central city of the SMSA so that the omitted class refers to residents of nonmetropolitan areas. In order to capture differences between the South and the rest of the United States more finely, the SMSA dummy was interacted with region of residence in the South and Non-South, and the Southern SMSA was interacted with labor market experience.

A number of variables are added indicating whether the individual is an employee of the federal government or a state and local government, and whether he works in an industry that is regulated by the federal government or by a state government. For those who neither work for the government nor work in industries regulated by the government, two additional variables are added. One represents purchases by the federal government as a fraction of value added originating in the industry. The other is similarly defined for purchases of state and local governments. With these variables we attempt to identify wage effects of government attempts to enforce antidiscriminatory legislation. If black relative wages are affected by either working for or being regulated by the federal government, or are correlated with the government's share of industry product, an argument that this legislation had an effect would seem stronger. Our presumption is that the federal government can have the most

immediate and direct influence on those firms most dependent on it. Because discrimination is allegedly more intense in the South and government pressure to combat it has been more vigorous there, we have interacted the set of government variables with residence in the South and the Non-South.

Most cross-sectional data sets, including the Current Population Surveys and the Census, do not contain direct measures of labor market experience. The definition of experience we employed in previous research was

$$Exp = Age - EAge,$$

where EAge is age at entry into the labor force, supplied from a table (Hanoch, 1965) that is a function of schooling.[1] This definition of market experience has a number of defects. Since it is constructed from a rigid link between schooling and age, separate parameters for accumulated market experience and cohort effects of either year of labor market entry or year of birth cannot be estimated. Even if this measure were based on an accurate estimate of the mean age of labor market entry for each schooling class, there exists a distribution of entry ages about that expected mean. For younger, more recent entrants into the labor force, the expected age of entry should be computed as the expected value of the entry age distribution truncated at the current age of the worker. For example, for a 20-year-old high school graduate who is working, the expected entry age is clearly less than the mean for all high school graduates (20) since he was (relative to his peers) an early participant in the labor force.[2]

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[1] Schooling level....0-7 | 8 | 9-11 | 12 | 13-15 | 16 | 17+
EAge.....14 | 16 | 18 | 20 | 23 | 25 | 28

[2] For older workers, this is not a serious problem. Because their current age typically exceeds the highest entry age in the distribution, there is no issue of truncation.

Our problem, therefore, was to construct a complete distribution of entry ages for school completion levels and cohorts. In an unpublished paper, Gould and Welch (1976) used data from the 1940, 1950, 1960, and 1970 Census of the Population to estimate densities of school age completion by schooling level and birth cohort.[1] Because it is relatively common for individuals to begin their work careers before final completion of schooling, these schooling completion densities represent only the first stage in estimating entry age distributions.

The Coleman-Rossi data of 2089 males 30-40 years old in 1969 provide retrospective life histories of respondents, including information on age at first full-time job and age at school completion. These data were used to obtain a functional relationship between entry age and school completion age in order to map the schooling age distributions into entry age distribution.[2] Thus, for age,

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[1] Gould and Welch describe the technique used to compute these densities, which were constructed for 6 educational levels (1-7, 8, 9-11, 12, 13-15, 16+ years of schooling) and three cohorts (1942-1946, 1937-1941, 1930-1936) and two races (blacks and whites). Education completion tables for the four Census years were linearly interpolated to yield the fraction of persons age j who had completed exactly i years of schooling in year k. Going across age, holding years of schooling constant, and by dividing by the fraction of a cohort who completed exactly i years of schooling produces the required cumulative density function for each cohort.

[2] Gould and Welch (1976) estimated the following regressions separately by race of entry age on a quadratic in completion age, education, and a completion age-education interaction. We then extrapolated these entry age distributions within each age, race, schooling cell to cover a total of 14 cohorts (by 5-year age intervals covering the period 1895-1966). In our extrapolation method, we first computed forward and backward growth rates for the three cohorts obtained by Gould and Welch. The extrapolation method was

$$\text{Forward growth rate} = \frac{\text{EAge 37-41} - \text{EAge 42-46}}{5}$$

for forward extrapolation, and

$$\text{Backward growth rate} = \frac{\text{EAge 30-36} - \text{EAge 37-41}}{6}$$

for backward extrapolation. For extrapolation to early cohorts, we used a 2/3 weight for the backward growth rates and 1/3 for forward

schooling, and cohort class, we can compute expected age of entry conditional upon current work. For a person with characteristics X observed to be working at any age α, his expected entry age is

$$E(EAge \mid EAge < \alpha;\ X) = \frac{\int_0^{\alpha} y f_x(y)\,dy}{\int_0^{\alpha} f_x(y)\,dy}.$$

Our estimated entry ages have some desirable properties. First, they allow for vintage effects since entry age varies with cohort. There is evidence that age at school completion has declined secularly so that for any schooling level more recent cohorts have entered the labor market earlier than older cohorts. To illustrate, we estimate that a typical high school graduate of the mid-1960s completed his education two years younger than a high school graduate at the turn of the century. Second, we have not imposed an identical entry age distribution on black and white males. Welch (1974) has reported that retardation rates in the early decades of the twentieth century were considerably higher among blacks, with many black children spending more than one year to complete a grade. Therefore, among similarly aged and schooled blacks and whites, black men would have less labor market experience. Our estimated entry age distributions reflect this racial difference, with blacks having higher entry ages than whites among older cohorts. Black-white entry ages have converged recently so that among young cohorts there is no evidence of any racial differences.[1]

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rates. We did the reverse for extrapolation to later cohorts. These entry ages were then smoothed so that within a given race, education, or cohort group, the entry ages increased with curren. ages.

[1] To illustrate, we estimate for the 1897 cohort of high school completers, the entry age was 20.47 for whites and 22.35 for blacks. For the 1970 cohort, we estimate an identical entry age of 18.50 for black and white males.

One problem encountered in using successive cross-sectional data sets is that sample characteristics may vary across the years. As business conditions deteriorated over the 1967-1974 period, the proportion of people with zero earnings and the fraction involved in part-time work increased. The lowest wage individuals are likely to leave the market first, so that the observed mean wage rates of the remaining participants depend in part on the extent of market withdrawal as well as their mean wage relative to those who left. Since we have confined our analysis to individuals with positive earnings, our black-white comparisons could be contaminated by differential censoring across these years. To control for this source of bias, we estimated a set of probabilities relating to non-full-time work--the probability of zero earnings; the probability of part-year, part-time work; the probability of full-year, part-time work; and the probability of part-year, full-time work.[1] For each individual in our sample, we computed the probability of being in each of these four categories and included these predicted probabilities as regressors.

The original number of parameters to be estimated for each race was 352 (44 parameters in each of eight years). Since some coefficients were insignificant in all years or remained stable over time, this completely free form of allowing the full set of 352 parameters was clearly too general. The strategy we followed was an iterative one. We initially estimated for each race the 44 parameters in each year.[2] Based on these estimates, we imposed a number of constraints--deleting variables that were insignificant in each year,[3] and

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[1] Part-year means working less than 40 weeks per year; part-time is defined as working less than 35 hours per week.

[2] Even at this level, we engaged in some experimentation of the functional form to be specified. For example, we tried alternative forms of the schooling experience and regional experience interactions.

[3] The deleted variables were the experience and regional experience interaction in the West and North Central regions.

combining variables that did not differ significantly.[1] Finally, for coefficients that were stable over the years, we constrained the parameter to be the same in all years.[2] We then reestimated the model, separating by race with all eight years of data pooled. By imposing these constraints we reduced the number of parameters to be estimated to 183. While this process of sequential hypothesis testing has its obvious pitfalls, it seemed preferable to us in obtaining more efficient estimates for the remaining variables. Estimates and standard errors of the separate regressions for white and black males appear in Tables A.1 and A.2. In the following subsection, we present our empirical findings under the heading of three variables--schooling, geographical residence, and government.

EMPIRICAL RESULTS WITH CPS DATA

Schooling

In Table 10, the schooling coefficients for white males are evaluated at selected years of market experience.[3] For each segment of the schooling spline, two sets of coefficients are presented.

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[1] We combined the South Atlantic and West South Central regions, and the estimated probability of part-time, part-year, and part-time, full-year work.

[2] The following variables were constrained to have the same parameters in each year: North Central, North and South Central City, Northern SMSA, Southern and Northern state and local employment, regulated by state and local government in the South, percent of value added to federal government in South. For the following variables, we constrained adjacent years to have identical parameters: Southern and Northern federal government employment, South and North regulated industries by federal government, Northern regulated by state and local government, percent of product sold to federal government in North, Northern and Southern percent of product sold to state and local government, and the probability of part-time work and full-time, part-year work.

[3] We have deliberately avoided interacting our education variables with region of residence. While one may be tempted to do so to measure regional differences in quality of schooling, this interaction would confound two distinct effects--schooling quality and the market for skilled labor. Since skilled labor is relatively scarce in the South, the premium to skill (education) may be higher there, even though schools are of lower quality. In our research with the Census, we

In Part A of the table, coefficients refer to a regression that does not include the three variables predicting the probability of part-time work and zero earnings. Part B lists schooling coefficients when these probabilities are included as regressors.[1] These variables measure the probability of obtaining full-time jobs and also serve as a partial control for business cycles. The schooling coefficients are obviously sensitive to these controls for part-time work. The standard skill specificity models of Oi (1962) and Rosen (1968) demonstrate that the brunt of business cycle adjustments will take place in hours rather than employment as firms endeavor to retain commitments from their previous investments in skilled labor. This substitution of hours for employment variation in adapting to cyclic downturns should be more important for skilled labor, and it is evident from Table 10 that the college segment of the education spline is most sensitive to the inclusion of these variables.

As shown in Part A of Table 10, the percentage increase in earnings from college at point of entry into the labor market is quite high, but declines quickly over the first ten years of market experience. After this point, however, the wage premiums to college are relatively stable for the remainder of the life cycle. In contrast, the elementary school coefficients rise rapidly during the

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attempted to separate these two effects by interacting years of schooling with dummy variables for Southern residence and Southern birth--the former to capture regional differences in the returns to skill and the latter to measure regional differences in the quality of schooling. According to our estimates, the South is characterized by a larger return to skill for both races, as indicated by a significant positive coefficient of the Southern residence-education interaction. However, Southern birth (presumably attendance at Southern schools) lowered the return to schooling. The lack of any information in the CPS files on state of birth precluded any additional tests in this study separating these two underlying determinants of regional differences in schooling coefficients.

[1] The three probabilities are the probability of (1) full-time, part-year work, (2) part-time work, and (3) zero earnings.

Table 10

SCHOOLING COEFFICIENTS FOR WHITE MALES, 1967-1974

Part A[a]

Year	Years of Market Experience					Years of Market Experience				
	0	10	20	30	40	0	10	20	30	40
	Elementary and High School					College				
1967	.019	.098	.079	.059	.040	.141	.064	.064	.064	.065
1968	.021	.105	.082	.059	.036	.148	.056	.058	.059	.061
1969	.023	.111	.085	.060	.035	.164	.051	.059	.066	.074
1970	.026	.107	.082	.057	.032	.151	.061	.063	.066	.069
1971	.039	.113	.085	.057	.028	.153	.060	.063	.066	.069
1972	.044	.111	.083	.056	.028	.120	.064	.063	.063	.062
1973	.062	.122	.091	.060	.030	.118	.060	.058	.057	.055
1974	.069	.126	.094	.062	.029	.115	.054	.057	.059	.062

Part B[b]

1967	.035	.073	.064	.056	.047	.044	.086	.083	.079	.076
1968	.038	.079	.067	.056	.045	.050	.079	.076	.073	.070
1969	.045	.081	.069	.056	.044	.046	.078	.078	.078	.078
1970	.042	.077	.064	.052	.039	.043	.087	.083	.080	.076
1971	.046	.080	.064	.048	.032	.057	.083	.081	.078	.076
1972	.054	.083	.067	.050	.034	.033	.084	.079	.074	.069
1973	.066	.094	.074	.053	.032	.044	.078	.072	.067	.061
1974	.065	.095	.074	.053	.031	.045	.071	.071	.071	.070

[a]The regression results when the probabilities of part-time work and zero earnings are not included.

[b]The schooling coefficients with these probabilities included as regressors.

initial ten years in the labor force and then fall significantly over the rest of the work career. When the probability of part-time work (Part B) is controlled for, the life cycle patterns for the elementary and secondary school segment maintain the same general shape, although both the initial rise and ensuing fall in coefficients over the life cycle are less acute. However, this control for hours worked results in a reversal in the initial decline in the college coefficients which now parallel the rising trend exhibited in the elementary and high school segment.[1]

To understand these patterns, it is important to distinguish between the two segments of the experience variable and the separation of the wage and hours effects illustrated in Parts A and B. The purpose of segmenting the experience variable at ten years was to capture the difference between two distinct stages of the work career.[2] The first stage, which we identify with the first ten years in the labor force, represents a period of considerable investment on the job; during the second stage such investment behavior is less important. The difference between Parts A and B represents that part of the return to schooling that can be attributed to higher hours worked and more stable jobs.[3]

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[1]After ten years of experience, the college coefficients are once again quite stable.

[2]One could obviously quarrel with breaking the experience variable at ten years of experience. The world is certainly more continuous than this type of specification permits. For example, some job investment occurs much later in the life cycle. However, in experimenting with alternative breakpoints in the experience variable, the specification we chose seemed to work reasonably well.

[3]Neither the coefficients listed in Part A nor those in Part B are the "true" returns to schooling. Part B, which in part fixes working hours, is an underestimate of the true return because it does not allow individuals to adjust to a more preferred position involving more hours and earnings. However, the coefficients in Part A are an overestimate of the returns, because they do not net out the value of the leisure forgone with higher working hours. For an analysis of this problem, see Lindsay (1971).

For post-ten-year market experience, we interpret the declining coefficients for elementary and high school, and the stable pattern for college as evidence that the skills of low skill labor are more vulnerable to obsolescence over time than those of skilled labor.[1] During the first ten years in the labor market, a large component of the gains from college attendance results from the more rapid acquisition of full-time jobs with longer working hours. This is clearly concentrated at the beginning of the work career as the differences among schooling groups due to longer working hours are quickly evaporated. This differential achievement of full-time jobs by education level partly explains the rapid decline in the college coefficients over the first ten years of experience in Part A of Table 10. In Part B, where this characteristic of the job is held constant, the college and elementary and secondary school coefficients rise during the early part of a worker's life cycle. This divergence in wage experience profiles for all schooling classes in Part B is consistent with complementarity between schooling and job investments. If there exists such complementarity, more schooled workers will initially have proportionately lower observed earnings as they finance their human capital investment with forgone earnings. As they recoup the returns on their investment, the experience profiles of earnings by schooling levels will diverge and produce rising schooling coefficients.

The following trends emerge. There appears to be an upward shift in the wages of high school graduates relative to those with less education. In Part A of Table 10, the college coefficients peak in 1969 and drift slowly downward thereafter. This decline in the additional income received from college completion has received much attention recently, especially in the work of Freeman (1975). He argues that two factors have resulted in a severe drop in income

[1] In our work with the Census, we also found this difference between the two levels of schooling.

gains from college since 1969. On the demand side, there was a relative decline in demand for skilled labor resulting from low secular growth rates for skilled intensive industries (i.e., government, research and development, and education). On the supply side, this period witnessed the entry into the labor market of the relatively highly skilled postwar baby boom cohorts. While the trend for college graduates in Part A appears consistent with Freeman's view, a number of other patterns in this table cast doubt on his interpretation. The smaller coefficients after 1969 are almost completely concentrated at the beginning of the work career. There is almost no time series trend for those with more than ten years of experience. If Freeman's argument based on a permanent structural change is valid, we would expect that some of these deleterious effects would have filtered into older cohorts and more experienced workers. While the substitution between skilled labor arrayed by years of labor market experience is not perfect, we would be surprised if the effects of a permanent alteration in the demand and supply structure for skilled versus unskilled labor would be completely absorbed by new entrants.

Another argument against Freeman's interpretation lies in the expected impact of business cycle conditions on the demand for skilled labor. Coincident with the entry of the baby boom cohorts, the economy entered a recessionary period. While conventional economic analysis indicates that unskilled labor will suffer relative to skilled labor during recessions, it is important to distinguish between skilled labor already working in the firm and new skilled entrants into the labor market. During recessions, firms have an incentive to hoard their existing stock of skilled labor. While firms are in the process of hoarding skilled labor, it follows that they will not be simultaneously hiring new highly skilled entrants. Thus when the probabilities of full-time employment are held constant, there seems to be little secular pattern to the college coefficients. Most college graduates have increased difficulty obtaining full-time jobs with long working hours after they leave college. This is precisely what one would expect from purely business cycle phenomena.

The schooling coefficients for black males are listed in Table 11 in a format identical to that used for white males. Because of the smaller black sample sizes, there is more instability in their estimated schooling parameters. Individual year exceptions to regularity make us less confident in formulating hypotheses concerning the impact of schooling on the future income prospects for blacks. Because many patterns in Table 11 are similar to those reported for whites, we do not discuss them in detail. In particular, the black elementary and high school segment has the inverted V life cycle shape observed among whites. Apparently, a large part of the initial gains from college for blacks is also a consequence of longer working hours and more stable jobs. This part of the rewards from college completion once again dissipates rapidly over the first ten years of market experience. Finally, for the post-ten-year segment of the experience variable, the black college coefficients are relatively stable, while those estimated for elementary and secondary schooling decline throughout.

Although these similarities exist between black and white males, there are some significant differences. For elementary and secondary schools, Parts A and B of Table 11 show lower schooling coefficients for black males. The disparity by race increases over the first experience segment and remains at 3 to 5 percentage points (depending on the control for hours worked) for the rest of the life cycle. If school systems are not an effective mechanism for increasing black incomes, it is clear that the problem lies at the elementary and secondary levels.[1] On a more optimistic note, there may be some evidence based on the CPS files that this black-white difference may be decreasing over time. Unfortunately, the small time span covered by our data, combined with the instability in black schooling coefficients, makes this a tentative finding at best.

[1] We made a similar argument in our research using the 1960-1970 Census. A comparison of schooling coefficients in those data sets also showed a significantly lower black coefficient on the elementary and high school segment of the schooling spline.

Table 11

SCHOOLING COEFFICIENTS FOR BLACK MALES, 1967-1974

Part A[a]

Year	Years of Market Experience					Years of Market Experience				
	0	10	20	30	40	0	10	20	30	40
	Elementary and High School					College				
1967	.039	.067	.049	.031	.013	.071	.072	.069	.067	.064
1968	.012	.064	.045	.026	.006	.115	.093	.081	.069	.056
1969	.021	.066	.049	.032	.015	.136	.059	.063	.066	.070
1970	.016	.064	.047	.029	.012	.243	.060	.064	.068	.072
1971	.030	.085	.055	.025	-.004	.233	.029	.050	.071	.093
1972	.058	.098	.068	.037	.006	.179	.072	.059	.046	.032
1973	.082	.101	.067	.033	.000	.108	.076	.064	.053	.041
1974	.029	.090	.058	.026	-.005	.124	.085	.057	.029	.002

Part B[b]

1967	.039	.048	.037	.026	.015	.010	.099	.092	.084	.077
1968	.016	.044	.032	.019	.007	.057	.111	.096	.081	.066
1969	.023	.042	.034	.027	.019	.045	.080	.080	.079	.079
1970	.017	.042	.033	.024	.015	.164	.080	.077	.075	.073
1971	.034	.060	.040	.021	.001	.146	.053	.068	.082	.096
1972	.051	.072	.053	.034	.014	.122	.085	.070	.054	.038
1973	.069	.083	.056	.028	.001	.074	.089	.074	.059	.044
1974	.034	.078	.051	.025	-.001	.074	.105	.072	.039	.005

[a]The regression results when the probabilities of part-time work and zero earnings are not included.

[b]The schooling coefficients with these probabilities included as regressors.

In contrast to these results for lower schooling levels, the marginal returns to post-secondary schooling are actually higher for blacks than for white males, particularly in the early years of market experience. For more experienced workers, the white college coefficients are as large and may even exceed those of blacks. We suspect that two factors explain these racial differences at the college level. First, since the end of the second World War, blacks have been increasingly attending racially mixed Northern colleges. If these colleges are of higher quality than the Southern black colleges that traditionally gave blacks their higher education, this could explain the more rapid cross-sectional decline in black college coefficients. The second argument relates to the likely impact of strong affirmative action pressures of government. If this pressure is strongest where blacks have traditionally been scarce (skilled jobs), firms may well pay a premium to attract new black college graduates. Table 11 indicates that there was a strong shift upward in the returns to college for blacks that was most acute at the initial point of labor market entry and highest at the turn of the decade. Also note that, in contrast to the white trends, the evidence is that black college coefficients rose (although not uniformly) over this period.[1] Although on average economic conditions have improved for blacks relative to white males, the largest gains have been achieved by blacks at the higher schooling levels.

Geographical Residence

After controlling for education, job experience, and degree of government employment, we estimate large wage differentials among regions. Identifying the underlying cause of these wage differentials is a complex empirical problem that does not lie within the scope of this report. Some of these wage differentials simply reflect cost-of-living differences between regions, or compensating payments for the

[1] We also found a shift upward in the returns to college for blacks between 1960 and 1970.

relative attractiveness or undesirability of locational attributes (i.e., climate, crime, and density.)[1] Given the magnitude of the differential we estimate, it is more likely that they proxy unobserved indices of skill.[2] We have not undertaken the task of decomposing these regional wage differentials into their component parts.

Our less ambitious goal is to measure how much of the change in black-white wages over time can be attributed to the different racial regional structure of wages and population densities. As wages between regions change over time--whatever the underlying cause--we can measure the impact of such changes on the aggregate black-white wage ratio. Even for this much simpler problem the results must be interpreted with caution. Calculations based on redistributing population between areas without compensating adjustments in average wages between regions are at best crude indicators. Historically, it is doubtful whether migrants have been representative either of region of origin or of destination.

Regional differences in wages are small between the Northeast, North Central, and West relative to those between the South and the rest of the country (see Table 12). White males' wages are 4.9 percent higher in the North Central than the base Northeast region, while North Central black males earn 9.6 percent more than blacks living in the Northeast. The wage differential is even smaller in the West, with whites receiving at most 2 to 4 percent higher wages than Northeastern whites, and blacks 4 to 6 percent higher wages than Northeastern blacks.[3] The small wage differential enjoyed by

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[1] For an analysis attempting to price these attributes, see Rosen (1977).

[2] To the extent that local labor markets are distinct, they also capture short- and long-run wage differentials among markets.

[3] For both races, the experience interaction with either North Central or Western residence was statistically insignificant in all eight-year samples. Since the experience-earnings profiles seem identical between the Northeast, North Central, and West, variables interacting experience with North Central and West are excluded when the samples are pooled across years.

whites and blacks in 1967 had essentially evaporated by 1974. This is consistent with our earlier study results showing that wages in the West declined between 1960 and 1970. Finally, for Northern residents of SMSAs, we estimate a 16 percent wage differential for whites and a 13 percent differential for blacks. These differentials should be increased by 7.5 percent and 6.1 percent for whites and blacks who live in the central cities of these urban areas.[1]

Table 12

NON-SOUTHERN REGIONAL VARIABLES

Region	White Males	Black Males
North Central	.0489	.0956
West 1967	.0351	.0653
West 1968	.0167*	.0667
West 1969	.0250*	.0637*
West 1970	.0125*	-.0023*
West 1971	.0080*	.0535*
West 1972	-.0059*	-.0334*
West 1973	-.0128*	.0461
West 1974	-.0080	-.0756
Northern SMSA	.1586	.1280
Northern Central City	-.0752	-.0605

*Coefficient not significantly different from zero.

In Table 13, the Southern wage coefficients are evaluated at selected years of labor market experience.[2] The South Atlantic and West South Central regions were combined because their coefficients did not differ significantly in preliminary tests. Wages for urban

[1]Since these wage differentials for urban Northern residence did not vary over our sample, we constrained the coefficients to be the same for all years.

[2]These wage coefficients are relative to the wage level of the Northeast at the relevant level of labor market experience. Since we estimate a standard concave experience wage growth in the Northeast, wages also increase with job experience in the South but at a less rapid rate than in the Northeast. One difficulty with our specification is that there are linear experience interactions with these Southern regions while the base region has a quadratic experience effect.

and non-urban residents in the South differed, however, and Table 13 lists separately the wage reductions (relative to the Northeast) for nonresidents and residents of Southern SMSAs.

For young white male workers, wages in both Southern regions are comparable to those received in the rest of the United States. The economic resurgence in the South has presumably caused a secular rise in wages of young Southern whites since 1967; by the end of the period, market opportunities for whites actually exceeded those available elsewhere. Because wages increase with market experience at a somewhat slower rate in the South, white males with thirty years of labor force experience receive wages 10 to 18 percent below their Northern counterparts. This rise in wages of young blacks suggests the strong vintage effects existing in that region. Young black Southern males appear to be quite different in terms of marketable skills than their predecessors.

In contrast to these relatively small white wage differentials, we estimate large wage differences for black males within the South and between the South and the North. In addition to the general improvement for blacks in the South, wage inequality within the South has decreased, at least among the new cohorts of black workers. In 1967, black wages were approximately 15 percent lower in the East South Central region than in the combined South Atlantic and West South Central regions. By 1974, however, this differential for young workers had declined to about 8 percent. The interregional wage trends for blacks are even larger. Wage differentials in 1967 were 20 to 30 percent lower than those for whites in the non-urban South Atlantic and West South Central, and over 35 percent lower in the non-urban East South Central. They are considerably lower in the urban areas of the South, with black-white wage differentials of approximately 15 to 25 percent.

A comparison of wage experience profiles for blacks also illustrates important urban-rural differences in the South. The jobs with little career growth possibilities for blacks are located in the rural sections of the South. Estimated wage-experience profiles

Table 13

SOUTHERN REGIONAL-EXPERIENCE INTERACTION
FOR SELECTED YEARS, 1967-1974

Part A. Whites

Region	Year	Years of Market Experience				Years of Market Experience			
		0	10	20	30	0	10	20	30
		Non-SMSA				SMSA[a]			
South Atlantic and West South Central	1967	.034	-.013	-.060	-.107	.109	.115	.120	.125
	1970	.048	-.006	-.060	-.114	.128	.124	.120	.116
	1972	.013	-.024	-.061	-.098	.133	.126	.120	.113
	1974	.071	.010	-.050	-.110	.136	.121	.106	.090
East South Central	1967	-.004	-.066	-.128	-.190	.071	.062	.052	.043
	1970	-.002	-.063	-.124	-.186	.079	.067	.056	.045
	1972	.046	-.028	-.101	-.175	.166	.122	.079	.036
	1974	.079	.017	-.046	-.108	.145	.128	.110	.092

Part B. Blacks

South Atlantic and West South Central	1967	-.274	-.308	-.343	-.378	-.063	-.094	-.126	-.157
	1970	-.090	-.203	-.317	-.431	-.029	-.063	-.097	-.131
	1972	-.018	-.129	-.240	-.351	-.013	-.034	-.055	-.070
	1974	-.047	-.159	-.271	-.382	.002	-.044	-.090	-.131
East South Central	1967	-.425	-.439	-.454	-.469	-.214	-.225	-.237	-.248
	1970	-.210	-.293	-.326	-.459	-.150	-.153	-.156	-.158
	1972	-.213	-.275	-.337	-.399	-.208	-.180	-.152	-.125
	1974	-.155	-.251	-.348	-.445	-.104	-.136	-.168	-.199

[a]For Central City residents in the SMSA, a constant differential of -.056 percentage points should be subtracted from these numbers in this table.

in the urban South are the same as in the rest of the country, but for most years wages in the rural South increase much less than the national average with experience. The most dramatic change over this period is the decline of 20 to 30 percent in the wage coefficient for young black Southern workers. For workers with thirty years of market experience, there is no evidence of any secular change. New black Southern workers differ significantly from their predecessors and apparently will face wage and career prospects that differ significantly from previous experience in the South.

The results of this accounting for the regional variables are summarized in Table B.1. Our estimates indicate that on net these locational variables predict a 3.2 percent rise in black-white wages--a gain dominated by changes in the South. The combined Northern variables would have decreased black-white wages by approximately .5 of a percent. The improvement for blacks in the South is due principally to changes in the South Atlantic and West South Central areas, which produced a 4.5 percent increase in relative black wages; the East South Central region accounted for approximately .3 of a percent. The negative effect of the experience interactions in the two Southern regions reflects the strong vintage effects in the South. Because younger black workers have gained the most over this period, cross-sectional experience wage profiles became less steep in the South by 1974. Somewhat surprisingly, the urban South variables were relatively unimportant, reflecting the fact that the major black gains occurred in the non-urban South. The predictions are dominated by changing geographical location and especially by convergence in racial wage differentials between 1967 and 1974. Converging black-white wage ratios within the South are about twice as important as the relocation of blacks across regions. The total impact of geographical relocation accounted for approximately one-third of the predicted wage increase. This is due in large part to the movement of blacks into SMSAs and the South Atlantic region. The convergence in black-white Southern wages raised relative wages by 2.11 percent, with the South Atlantic and West South Central playing the major role.

Government and Affirmative Action

The difficult empirical problem in assessing the effect of affirmative action involves obtaining direct tests of the probable impact of discrimination and the success of government efforts to combat it. The method we have selected is admittedly indirect;[1] we have included variables measuring wage premiums paid in some industries that at least at first blush would seem most susceptible to pressures from government. The most direct, of course, is employment in the government itself. We have divided government employment into employees of the federal government and employees of the state and local governments. The second level measures employment in industries regulated by either the federal or state and local government. The final set of variables indicates the fraction of an industry's sales that go to either the federal or state and local government. An examination of the employment patterns by race and trends in wages and employment in these industries can be used to detect past discriminatory practices in hiring and to track recent changes in such behavior.

One controversial issue relates to the relative historical role of the private and public sectors in discriminatory hiring. In particular, we are interested in regional differences between the North and South (where discrimination is allegedly more intense) in public and private sector behavior. Employment by race in these industries is reported in Table 14. For direct government employment, strong differences exist between the North and the South. In the North, the federal government is relatively intensive in hiring black workers: relative to their population sizes, two black workers are hired as Northern federal employees for every white worker hired. In the South, however, approximately .8 of a black worker is employed for every white worker. While state and local governments in either

[1] We first employed this method in Smith and Welch (1977).

Table 14

RELATIVE BLACK-WHITE EMPLOYMENT INTENSITY IN DIRECT AND INDIRECT GOVERNMENT EMPLOYMENT, 1967 AND 1974

	Direct Employment			Indirect Employment	
Type	1967	1974	Type	1967	1974
Northern federal employees	2.14	2.29	Northern % of product sold to federal government	.827	.903
Southern federal employees	.748	1.01	Southern % of product sold to federal government	.738	.925
Northern state and local employees	.892	1.26	Northern % of product sold to state and local government	.835	.880
Southern state and local employees	.444	.475	Southern % of product sold to state and local government	1.10	.936
			Northern regulated by federal government	.714	.727
			Southern regulated by federal government	.586	.696

region are less likely than the federal government to hire blacks, the racial difference between the North and South is similar to that observed for federal government employment.

Table 14 cannot, of course, be viewed as conclusive evidence of a history of discriminatory practices in Southern public sector employment. Skill distributions of blacks and whites differ between regions, and the basic question involves hiring practices relative to skill requirements.[1]

The wage coefficients estimated for direct and indirect government employment are listed in Tables A.1 and A.2. The racial wage differentials in these industries are large and typically favor blacks. While this is what one would expect from affirmative action, black-white wage ratios in these sectors have generally declined over this period. The wages of federal government employees have increased since 1967, but at a more rapid rate for whites. These wage differentials combined with the employment patterns can be used to predict the effect of these government variables on the recent trend in black-white wage ratios. Table B.2 indicates that these government variables would have predicted a decrease in the black-white wage ratio between 1967 and 1974 of .75 of a percent. The direct effect of employment changes--the increased relative representation of blacks in direct and indirect government sectors--was favorable toward blacks, but the magnitude of this change was quite small (approximately .14 hundredths of a percent). This employment trend was more than offset by the increase in wages of whites relative to blacks in these industries over the period.

Thus, the rise in black-white wage ratios has occurred primarily in the more private sectors of the private economy, and not in those industries most susceptible to affirmative action pressure.[2] Our test

[1] There is an apparent upward trend in the probability of blacks being employed by the federal government in the South, so that we may be witnessing a break with the past.

[2] This finding confirms results Smith and Welch (1977) reported for the period 1960-1970.

should not be interpreted as proof that affirmative action programs have had no effects. The hiring and wage practices of some individual firms and industries may have been radically altered by these programs. Our results do suggest, however, that the effect of government on the aggregate black-white wage ratio is quite small and that the popular notion that these recent changes are being driven by government pressure has little empirical support.

Cohort and Life Cycle Comparisons: Evidence for the Vintage Hypothesis

One feature common to all cross-sectional studies of black-white earnings differences is that younger blacks fare better in comparison to whites than their older counterparts. This is consistent with extreme life cycle or cohort views that have very different implications for the future course of black-white differentials. Early theories of labor market discrimination tended toward a life cycle explanation, holding that over-the-career black earnings increase less rapidly than for whites. These theories of "secondary" labor markets view labor markets as stratified, with some being less upwardly mobile than others. The extreme life cycle view offers no basis for predictions of future patterns of wage differentials.

The cohort view, on the other hand, does provide a basis for projection if the future course of differences among cohorts conforms to the past. In the cohort view, each individual in a cross-section is a member of a distinct cohort at one point in his life cycle. More rapid black improvement in schooling quality or home environment over time could have led to increases in the relative initial human capital stock of successive generations of black workers. In the cohort view, the observed cross-sectional decline in relative black-white wages with experience simply reflects the fact that less experienced workers are simultaneously members of newer cohorts. A single cross-section is incapable of separating the life cycle and cohort hypotheses. Comparisons of cross-sections at different times establishes the potential of distinguishing life cycle and cohort

effects. If vintage effects reflect secular change, either through rising relative quality of black labor or declining front-end discrimination, then younger more recent cohorts of blacks would fare better in comparison to whites than older cohorts.

Our ability to distinguish cohort and life cycle effects is enhanced in this study because we use eight successive cross-sections. Most previous studies that have compared cross-sections, including our own work, have used only two data sets. For any cohort in 1967 we can compare actual life cycle wage paths experienced through 1974 with paths we would have predicted from our cross-sectional data. Such a comparison is supplied in Table 15. For individuals with 1, 5, 10, or 15 years of market experience in 1967, we have tracked the predicted career profiles of wages of blacks relative to whites. Reading across a row in this table, we see the life cycle black-white wage ratios predicted from the individual cross-section for each schooling class. Reading down a column, we follow an individual cohort through its life cycle experience. The cross-sectional patterns uniformly predict declining black-white wage ratios with years of market experience. This cross-sectional decline gave credence to the secondary labor market view for blacks. But note that the within-cohort trends indicate that, if anything, black-white wage ratios have increased over the life cycle, especially for more schooled workers. Therefore, the weight of the evidence supports cohort improvement and not the life cycle view. Younger blacks fare better not because they are young, but because they are not similar to whites, and the evidence here is that whatever advantage they enjoy will not be diminished as they age.

Table 15

COMPARISONS OF CROSS-SECTIONAL
AND LIFE CYCLE BLACK-WHITE WAGE RATIOS, 1967-1974

Year	Experience	1	5	10	15
		Schooling = 16			
1967	X	.834	.806	.779	.760
1968	X+1	.885	.858	.829	.804
1969	X+2	.846	.807	.774	.758
1970	X+3	.908	.864	.818	.781
1971	X+4	.892	.843	.798	.769
1972	X+5	.984	.912	.842	.791
1973	X+6	.879	.855	.824	.792
1974	X+7	.880	.853	.810	.758
		Schooling = 12			
1967	X	.853	.817	.781	.755
1968	X+1	.779	.764	.747	.734
1969	X+2	.807	.772	.744	.731
1970	X+3	.768	.752	.738	.731
1971	X+4	.852	.809	.771	.746
1972	X+5	.865	.829	.799	.783
1973	X+6	.809	.799	.785	.769
1974	X+7	.765	.768	.763	.747
		Schooling = 8			
1967	X	.892	.860	.830	.808
1968	X+1	.863	.850	.837	.826
1969	X+2	.914	.870	.833	.814
1970	X+3	.859	.837	.817	.804
1971	X+4	.913	.871	.834	.812
1972	X+5	.876	.844	.819	.808
1973	X+6	.798	.799	.799	.797
1974	X+7	.794	.807	.813	.807

V. CONCLUSIONS

We have analyzed causes of the recent convergence in black-white earnings ratios. Between 1968 and 1975, black male wages have risen at a more rapid rate than those of whites, continuing a process that occurred during the 1960s. Our research was based on eight Current Population Surveys that spanned this time interval. We found in general that the variables that accounted for the rise observed between 1960 and 1970 were also the principal causal factors in explaining the more recent improvement in the economic status of black males. Increased congruency in black-white income-producing characteristics such as education and region of residence played the dominant role in explaining the recent trend. Black education levels have been converging relative to white throughout the twentieth century, and this process continued between 1968 and 1975. The main migration trends were the greater urbanization of the black South, as well as the movement of blacks from low-wage to high-wage areas within the South and to a lesser extent from the South to the North.

More important than migration per se was the narrowing of between-region racial wage differentials. Historically, the South was characterized by the lowest relative black wages. While this is still the case, black-white wage ratios have risen more rapidly in the South than elsewhere. Since black males are still more heavily represented in the Southern regions, they gain the most from wage increases in that area. Moreover, this improvement was concentrated among younger black Southern workers. This suggests that the prospects for job careers of blacks in the new South are likely to differ from the historical experience typical for black Southerners. As also shown in our research for the decade of the 1960s, government pressure through affirmative action programs was a relatively minor contributor to rising relative wages of blacks.

We also considered the validity of the vintage and life cycle views of the black labor market--a controversial question in the literature on racial wage differentials. The life cycle view is the basis of

the secondary labor market hypothesis that claims that blacks have been relegated to dead-end jobs with little career wage growth potential. The more optimistic vintage hypothesis is that newer cohorts of blacks relative to their white counterparts start their careers with higher initial stocks of marketable human capital than their black predecessors already in the labor market. The preponderance of evidence from our work rejects the secondary labor market view in favor of the vintage hypothesis.

Appendix A

VARIABLE COEFFICIENTS AND STANDARD ERRORS

Table A.1

VARIABLE COEFFICIENTS AND STANDARD ERRORS (WHITES), 1967-1974

1. Education

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Elementary and High School	.0350 (.0052)	.0384 (.0051)	.0446 (.0052)	.0415 (.0052)	.0459 (.0052)	.0540 (.0052)	.0655 (.0051)	.0645 (.0055)
College	.0436 (.0098)	.0500 (.0092)	.0457 (.0095)	.0434 (.0089)	.0574 (.0087)	.0333 (.0085)	.0439 (.0081)	.0450 (.0081)
Experience <10 yrs, schooling <12	.0038 (.0004)	.0040 (.0004)	.0037 (.0004)	.0035 (.0004)	.0038 (.0004)	.0029 (.0004)	.0029 (.0004)	.0031 (.0004)
Experience >10 yrs, schooling <12	-.0009 (.0001)	-.0011 (.0001)	-.0013 (.0001)	-.0012 (.0001)	-.0016 (.0001)	-.0016 (.0001)	-.0021 (.0001)	-.0021 (.0001)
Experience <10 yrs, schooling >12	.0043 (.0012)	.0029 (.0011)	.0032 (.0012)	.0043 (.0011)	.0025 (.0011)	.0051 (.0011)	.0034 (.0010)	.0026 (.0010)
Experience <10 yrs, schooling >12	-.0004 (.0003)	-.0003 (.0003)	-.0000 (.0003)	-.0004 (.0002)	-.0002 (.0002)	-.0005 (.0002)	-.0006 (.0002)	-.0000 (.0002)

2. Non-Southern Regional Variables

Variable	1967	1968	1969	1970	1971	1972	1973	1974
West	.0351 (.0095)	.0167 (.0093)	.0250 (.0096)	.0125 (.0093)	.0088 (.0092)	-.0059 (.0094)	-.0128 (.0097)	-.0080 (.0094)

1967-1974 (Constrained)

North Central	.0489 (.0030)
Northern SMSA	.1586 (.0032)
Northern Central City	-.0752 (.0031)

3. Southern Regional Variables

Variable	1967	1968	1969	1970	1971	1972	1973	1974
South Atlantic West South Central	.0344 (.0214)	-.0077 (.0213)	.0172 (.0215)	.0476 (.0208)	.0124 (.0217)	.0132 (.0212)	.0526 (.0205)	.0706 (.0204)
East South Central	-.0036 (.0300)	-.0508 (.0295)	-.0268 (.0299)	-.0016 (.0288)	.0034 (.0292)	.0462 (.0284)	-.0092 (.0278)	.0794 (.0273)
Southern SMSA	.0750 (.0244)	.0931 (.0239)	.0887 (.0242)	.0802 (.0234)	.1152 (.0237)	.1195 (.0230)	.0910 (.0223)	.0656 (.0223)
Experience South Atlantic and West South Central	-.0047 (.0008)	-.0039 (.0008)	-.0046 (.0008)	-.0054 (.0008)	-.0043 (.0008)	-.0037 (.0008)	-.0056 (.0008)	-.0060 (.0008)
Experience East South Central	-.0062 (.0012)	-.0042 (.0012)	-.0060 (.0012)	-.0061 (.0012)	-.0058 (.0011)	-.0074 (.0012)	-.0057 (.0011)	-.0062 (.0011)
Experience Southern SMSA	.0052 (.0010)	.0048 (.0010)	.0048 (.0010)	.0050 (.0010)	.0036 (.0010)	.0031 (.0010)	.0046 (.0010)	.0045 (.0010)

1967-1974 (Constrained)

Southern Central City	-.0559 (.0057)

4a. Government Variables (North)

Variable	1967-1968	1969-1970	1971-1972	1973-1974
Northern federal government	.0529 (.0144)	.0896 (.0148)	.1330 (.0156)	.1678 (.0181)
North regulated by federal government	.1559 (.0109)	.1762 (.0111)	.2259 (.0113)	.2276 .(.0015)
North regulated by state and local government	.0737 (.0177)	.0968 (.0187)	.0881 (.0191)	.0350 (.0194)
North % of products sold to federal government	.2882 (.0181)	.2649 (.0198)	.3098 (.0222)	.2958 (.0231)
North % of products sold to state and local government	.5353 (.0323)	.6974 (.0321)	.6236 (.0323)	.5763 (.0331)
1967-1974 (Constrained)				
Northern state and local employees	.0548 (.0074)			

4b. Government Variables (South)

Variable	1967-1968	1969-1970	1971-1972	1973-1974
Southern federal government	.1802 (.0182)	.2482 (.0192)	.2732 (.0196)	.2709 (.0212)
South regulated by federal government	.1743 (.0177)	.1907 (.0175)	.2261 (.0181)	.2274 (.0181)
South % of products sold to state and local government	.2933 (.0494)	.3042 (.0480)	.3472 (.0469)	.3766 (.0455)
1967-1974 (Constrained)				
Southern state and local employees	-.0070 (.0122)			
South regulated by state and local government	.0765 (.0149)			
South % of products sold to federal government	.4020 (.0202)			

5. Experience

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Experience	0.0256 (.0028)	.0281 (.0027)	.0310 (.0028)	.0327 (.0029)	.0427 (.0029)	.0444 (.0030)	.0537 (.0029)	.0524 (.0030)
Experience^2	-.00028 (.00046)	-.00032 (.00004)	-.00036 (.00005)	-.00038 (.000047)	-.00050 (.000049)	-.00050 (.00005)	-.00059 (.000049)	-.00053 (.000052)

6. Predicted Probabilities

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Zero earnings	-.1730 (.1154)	.2280 (.1241)	.2882 (.1144)	.0788 (.1081)	-.0231 (.1048)	.0799 (.1037)	.0145 (.0921)	-.0844 (.1034)
	1967-1968		1969-1970		1971-1972		1973-1974	
Full-time part-year	.3920 (.0791)		.3551 (.0637)		.2095 (.0623)		.1868 (.0644)	
Part-time	-1.2382 (.0400)		-1.2952 (.0374)		-1.2207 (.0399)		-1.0581 (.0412)	

7. Constant

Item	1967	1968	1969	1970	1971	1972	1973	1974
Constant	---- ----	.0668 (.0715)	.1627 (.0883)	.2764 (.0906)	.2200 (.0898)	.2764 (.0907)	.2600 (.0906)	.3959 (.0928)

Table A.2

VARIABLE COEFFICIENTS AND STANDARD ERRORS (BLACKS), 1967-1974

1. Education

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Elementary and High School	.0387 (.0120)	.0155 (.0135)	.0226 (.0129)	.0174 (.0129)	.0342 (.0132)	.0509 (.0155)	.0689 (.0146)	.0341 (.0147)
College	.0102 (.0496)	.0571 (.0466)	.0450 (.0530)	.1645 (.0492)	.1462 (.0463)	.1216 (.0417)	.0736 (.0403)	.0736 (.0409)
Experience <10 yrs, schooling <12	.0010 (.0010)	.0028 (.0011)	.0019 (.0011)	.0025 (.0010)	.0026 (.0011)	.0022 (.0011)	.0015 (.0010)	.0044 (.0011)
Experience >10 yrs, schooling <12	-.0011 (.0003)	-.0012 (.0003)	-.0008 (.0004)	-.0009 (.0004)	-.0020 (.0004)	-.0020 (.0004)	-.0028 (.0004)	-.0026 (.0004)
Experience <10 yrs, schooling >12	.0089 (.0067)	.0054 (.0060)	.0035 (.0065)	-.0085 (.0062)	-.0093 (.0059)	-.0036 (.0053)	.0016 (.0055)	.0031 (.0055)
Experience >10 yrs, schooling >12	-.0007 (.0016)	-.0015 (.0014)	-.0001 (.0013)	-.0002 (.0015)	.0014 (.0013)	-.0016 (.0014)	-.0015 (.0015)	-.0033 (.0015)

2. Non-Southern Regional Variables

Variable	1967	1968	1969	1970	1971	1972	1973	1974
West	.0653 (.0428)	.0667 (.0430)	.0637 (.0487)	-.0023 (.0448)	.0535 (.0430)	-.0334 (.0422)	.0461 (.0423)	-.0756 (.0420)

1967-1974 (Constrained)

North Central	.0956 (.0120)
Northern SMSA	.1280 (.0264)
Northern Central City	-.0604 (.0139)

3. Southern Regional Variables

Variable	1967	1968	1969	1970	1971	1972	1973	1974
South Atlantic West South Central	-.2737 (.0637)	-.2445 (.0629)	-.1042 (.0615)	-.0895 (.0624)	-.0052 (.0646)	-.0184 (.0654)	-.0079 (.0624)	-.0474 (.0644)
East South Central	-.4248 (.0815)	-.4098 (.0910)	-.2679 (.0800)	-.2100 (.0796)	-.0849 (.0832)	-.2132 (.0879)	-.0853 (.0823)	-.1548 (.0840)
Southern SMSA	.2110 (.0580)	.1966 (.0615)	.1363 (.0570)	.0604 (.0581)	.0626 (.0581)	.0015 (.0597)	.0259 (.0568)	.0499 (.0573)
Experience South Atlantic & West South Central	-.0035 (.0022)	-.0062 (.0023)	-.0089 (.0023)	-.0114 (.0023)	-.0126 (.0023)	-.0111 (.0024)	-.0134 (.0023)	-.0112 (.0024)
Experience East South Central	-.0015 (.0029)	-.0005 (.0032)	-.0074 (.0030)	-.0083 (.0030)	-.0126 (.0031)	-.0062 (.0033)	-.0132 (.0037)	-.0097 (.0032)
Experience Southern SMSA	.0003 (.0022)	.0026 (.0023)	.0031 (.0022)	.0080 (.0023)	.0077 (.0023)	.0090 (.0025)	.0091 (.0023)	.0065 (.0023)

1967-1974 (Constrained)

Southern Central City	-.0040 (.0157)

4a. Government Variables (North)

Variable	1967-1968	1969-1970	1971-1972	1973-1974
Northern federal government	.1185 (.0429)	.1797 (.0455)	.2258 (.0487)	.2238 (.0494)
North regulated by federal government	.0807 (.0509)	.1653 (.0505)	.0655 (.0506)	.1487 (.0541)
North regulated by state and local government	.2411 (.0789)	.1535 (.0771)	.1623 (.0634)	.0299 (.0704)
North % of products sold to federal government	.4450 (.0941)	.3475 (.1043)	.2537 (.1155)	.3150 (.1138)
North % of products sold to state and local government	.3922 (.1452)	.2873 (.1457)	.8417 (.1559)	-.0387 (.1542)

1967-1974 (Constrained)

Northern state and local employees	.0811 (.0300)

4b. Government Variables (South)

Variable	1967-1968	1969-1970	1971-1972	1973-1974
Southern federal government	.4026 (.0490)	.3925 (.0491)	.3992 (.0550)	.3853 (.0555)
South regulated by federal government	.3368 (.0527)	.3177 (.0588)	.2627 (.0496)	.3643 (.0497)
South % of products sold to state and local government	.1235 (.1089)	-.0600 (.1070)	.2981 (.1231)	.2536 (.1182)

1967-1974 (Constrained)

Southern state and local employees	.1960 (.0426)
South regulated by state and local government	.0585 (.0387)
South % of products sold to federal government	.8831 (.0654)

5. Experience

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Experience	.2649 (.0074)	.2763 (.0080)	.0188 (.0081)	.0286 (.0081)	.0360 (.0083)	.0349 (.0099)	.0616 (.0087)	.0525 (.0091)
Experience^2	-.0003 (.0001)	-.0003 (.0001)	-.0001 (.0001)	-.0004 (.0001)	-.0003 (.0001)	-.0002 (.0002)	-.0007 (.0001)	-.0006 (.0002)

6. Predicted Probabilities

Variable	1967	1968	1969	1970	1971	1972	1973	1974
Zero earnings	-.3158 (.1990)	.1677 (.2508)	-.2038 (.2679)	.0474 (.1945)	.0038 (.2361)	-.1850 (.1959)	.1312 (.2287)	.4037 (.2092)
	1967-1968		1969-1970		1971-1972		1973-1974	
Full-time, part-year	.1915 (.1132)		.1076 (.1019)		.1362 (.1048)		.1052 (.1136)	
Part-time	-1.3787 (.1698)		-1.5252 (.1527)		-1.5336 (.1517)		-1.0288 (.1319)	

7. Constant

Item	1967	1968	1969	1970	1971	1972	1973	1974
Constant	---- ----	.1864 (.1786)	.4005 (.1915)	.4335 (.1983)	.2578 (.2051)	.2804 (.2286)	.0768 (.2149)	.4377 (.2167)

Appendix B

REGIONAL AND GOVERNMENT VARIABLES AND THEIR EFFECT ON BLACK-WHITE WAGES

Using our regression estimates, we can decompose the effects of the regional variables given in App. A to determine how much of the recent change in the aggregate black-white wage ratio they explain. The change in the ratio ($\bar{R}$) between the initial (1967) and terminal year (1974) of our samples may be written as[1]

$$\Delta \ln \bar{R} = [(x_1 - x_2)' - (x_3 - x_4)'] \beta_{w74} + (x_1 - x_3)' (\beta_{b74} - \beta_{w74})$$

$$- (x_3 - x_4)' (\beta_{w67} - \beta_{w75}) - x_3[\beta_{b68} - \beta_{w68}) - (\beta_{b74} - \beta_{w74})]$$

where the first subscript on the coefficient vector β refers to black (b) or white (w) and the second indexes the calendar year. The direct impact of changes in regional location patterns (evaluated at 1974 white parameter values) is measured by the first term and is summarized in the main effects column of Table B.1. The main effects measure that part of the growth in black-white wage ratios due to changes in black-white differences in regional location. If blacks are becoming more numerous relative to whites in regions that pay whites well, this will increase relative black wages. The other three terms capture the impact of differential wages within regions and over time. The second term $((x_1 - x_3)' (b_{b74} - b_{w74}))$ adjusts for race interaction and measures the impact of black-white regional wage differences (the race column in Table B.1). If blacks earn less than whites in any region, the ratio of black to white wages will decline if there is an increase in the proportion of blacks living in that region. The third term $(-(x_3 - x_4)'(\beta_{w67} - \beta_{w75}))$ is the year effect column and proxies premiums by year. If 1974 wages declined relative to the 1967 wage premium, the less dominant group in

[1] The subscripts for the characteristic vector x are: 1=blacks, 1974; 2=whites, 1974; 3=blacks, 1967; 4=whites, 1967.

that region will lose more from the lower "price." Finally, the race-year term is an index of any differential wages blacks received in 1967 relative to 1974 (above the white wage change over this period). If wage differences between blacks and whites narrowed over this period, the black-white wage ratio would increase.[1] The accounting device employed for regional variables is also used to measure the role of government variables in determining the recent trend in black-white wage ratios in Table B.2.

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[1]The relative weight given to characteristic and coefficient differences is somewhat arbitrary. Characteristic differences could just as easily have been weighted by black coefficients, if coefficient differences were weighted by white characteristics.

Table B.1

PREDICTED PERCENTAGE INCREASE IN BLACK-WHITE WEEKLY WAGES ATTRIBUTED TO REGIONAL VARIABLES, 1967-1974

Variable	Main Effects	Interaction Effects			
		Race	Year	Race-Year	Total
North Central	-0.05	-0.06	----	----	-.116
West	0.08	-0.13	0.42	-0.72	-.347
Non-South SMSA and Central City	-0.05	-0.02	----	----	-0.073
Total Non-South	-.02	-.21	.42	-.72	-.533
South Atlantic and West South Central	0.49	-0.05	0.78	8.15	9.373
South Atlantic and West South Central Experience	0.29	0.35	-0.61	-5.87	-5.852
Total South Atlantic & West South Central	.78	.30	.17	2.28	3.521
East South Central	-0.00	-0.16	0.36	1.79	1.988
East South Central Experience	0.07	0.03	-0.00	-1.81	-1.715
Total East South Central	.07	-.13	.36	-.02	.273
South SMSA	0.17	-0.08	-0.12	-4.17	-4.197
South SMSA Experience	0.20	0.12	-0.20	4.03	4.152
South Central City	-0.14	0.15	----	----	0.010
Total Urban South	.60	.23	-.32	-.14	-.080
Total South	1.09	.35	.20	2.11	3.757
TOTAL	1.07	0.14	0.62	1.39	3.224

Table B.2

PREDICTED PERCENTAGE INCREASE IN BLACK-WHITE WEEKLY WAGES ATTRIBUTED TO GOVERNMENT VARIABLES, 1967-1974

Variable	Main Effects	Interaction Effects			
		Race	Year	Race-Year	Total
Fed. South	-0.01	-0.03	0.01	-0.07	-0.093
Fed. Non-South	-0.01	-0.01	0.03	-0.01	-0.002
State and local South	0.00	0.05	----	----	0.047
State and local Non-South	-0.02	0.02	----	----	0.000
Reg. Fed. South	0.02	-0.01	-0.00	-0.01	-0.010
Reg.Fed. Non-South	0.01	-0.04	0.00	-0.00	-0.030
Reg.state and local South	0.00	-0.00	----	----	0.002
Reg.state and local Non-South	0.00	-0.00	0.00	-0.04	-0.034
% Fed. South	0.17	0.18	----	----	0.351
% Fed. Non-South	0.03	0.01	0.00	-0.12	-0.082
% State and local South	-0.05	0.13	0.01	-0.12	-0.040
% State and local Non-South	-0.02	-0.19	0.00	-0.22	-0.422
TOTAL	0.14	0.10	0.05	-0.60	-0.314

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