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EXPLAINING BLACK-WHITE WAGE CONVERGENCE, 1940-1950: THE ROLE OF THE GREAT COMPRESSION

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ABSTRACT

The "Great Compression" of the 1940s produced a substantial narrowing in wage differentials in the United States. This paper examines the role of the Great Compression in fostering black-white wage convergence in the 1940s. Using data from the 1940 and 1950 census public use samples, I show that between half and two-thirds of black white wage convergence at the sample means can be attributed to shifts in wage structure associated with the Great Compression. I also demonstrate that , by (temporarily) boosting the incomes of black parents, the Great Compression led to greater increases in schooling levels among black teens between 1940 and 1950 than would have occurred otherwise.

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Between 1940 and 1980 the ratio of weekly wages of black males relative to white males increased by 29 percentage points (Smith and Welch 1989, p. 522). Recent work by Donohue and Heckman (1991) indicates that black-white wage convergence did not occur at a continuous pace between 1940 and 1980, but rather was concentrated in two episodes: the 1940s, and 1964 to 1975. Post-1964 wage convergence has been attributed to racial convergence in the quantity and quality of schooling, and to the impact of federal anti-discrimination legislation enacted as a result of the Civil Rights Movement, while studies of wage convergence in the 1940s have emphasized black migration from the South, where wages were far below the national average (Smith and Welch 1989; Margo 1990; Donohue and Heckman 1991; Card and Krueger 1992). Wage convergence in the 1940s, however, may also have been aided by a set of forces unique to the decade that produced a marked erosion of wage diferentials between skilled and unskilled labor -- the so-called "Great Compression" (Goldin and Margo 1992). Because black workers were, on average, less skilled than white workers in 1940, wage compression would have benefitted blacks disproportionately. Although previous studies have noted this possibility (Smith and Welch 1989, Table A.2, p. 564; Donohue and Heckman 1991, p. 1622) there has been no systematic attempt to quantitatively assess the effects of decade-specific shifts in the structure of wages on black-white wage convergence in the 1940s.

Using the decomposition technique invented by Juhn, Murphy, and Pierce (1991), I examine the sources of black-white wage convergence in the 1940s, based on samples drawn from the public use tapes of the 1940 and 1950 censuses. Wage compression contributed to racial convergence throughout the wage distribution, with a slightly greater impact observed in the upper tail among blacks. Computed at the sample means, between half and two-thirds of black-white wage convergence

can be attributed to the general changes in wage structure induced by the Great Compression.

I. The Great Compression: Weekly Wages, 1940-1950

The Great Compression of the 1940s produced a substantial narrowing in wage differentials in the United States. I present here a brief discussion of the quantitative dimensions of this economic phenomenon and the factors causing it. Readers desiring additional evidence and a fuller treatment should consult the paper by Goldin and Margo (1992).

Selected features of the Great Compression are displayed in Table 1. Compression took place at both tails of the wage distribution. The gap between the median wage and the 90th percentile fell by -0.15 in logs, and the gap between the 10th percentile and the median decreased by -0.12 in logs. Consistent with these patterns, the average earnings of less-skilled and less-educated workers increased relative to the average earnings of skilled and educated workers, as indicated by the decline in the ratio of average weekly wages of college and high school graduates and in the earnings of white-collar workers relative to the non-farm average. The Great Compression, however, was not solely a narrowing of mean wage differentials <u>between</u> education or occupation groups; wage compression (not shown in the table) also occurred within groups (see Goldin and Margo 1992, p. 11).

Although their relative significance is a matter of debate, the factors behind the Great Compression are not difficult to identify. Some portion of the compression occurred early in the decade in response to wartime shifts in labor demand and of government regulation of the wartime economy.[1] As the war

progressed, however, firms could not simply bid up the relative wages of workers in short supply, because of wage and price controls. The National War Labor Board (NWLB), established in 1942, was responsible for approving all wage increases. Given the volume of cases under its purview, the NWLB reached decisions using various rules-of-thumb, several of which compressed the wage structure at its left tail.[2]

Analysis of case studies performed by the Bureau of Labor Statistics before, during, and after World War Two reveals that, with a few exceptions, the NWLB did indeed compress the wage structure at its left tail (Goldin and Margo 1992, pp. 25-28). The data also demonstrate, however, that compression took place in the right tail of the wage distribution during the war and, most importantly, continued immediately after the war. Postwar compression was aided by a rising federal minimum wage, strong unions, and an unexpectedly large increase in the relative supply of educated workers fueled by the GI Bill of Rights, which subsidized college attendance by veterans.[3] Despite these forces, a shift in labor demand towards better-educated workers had become evident in the early 1950s, and by 1960 the effects of Great Compression were partly reversed (Goldin and Margo 1992, p. 29).

In sum, wage inequality between and within groups diminished considerably during the 1940s. Because black workers were concentrated in the left tails of wage distributions (overall and within-groups) in 1940, the Great Compression, by itself, would have reduced racial differences in wages, independently of other factors (Donohue and Heckman 1991, p. 1622). This hypothesis is assessed quantitatively in the next section of the paper.

II. Data and Results

My empirical analysis derives from samples of black and white adult males from the public use micro-data samples (PUMS) of the 1940 and 1950 censuses (U.S. Bureau of the Census 1983a, 1983b).[4] Both public use samples are large random samples of the population in their respective census years. To be included in the analysis, an individual had to be between the ages of 25 and 64, and a wage or salary earner who worked at least 40 weeks in the year prior to the census and who earned at least one-half of the federal minimum wage on a weekly basis.[5] Following Goldin and Margo (1992), the earnings of individuals whose reported wage and salary income exceeded the highest census earnings level (so-called "top-coded" individuals) were estimated by multiplying their reported earnings by 1.4.[6]

The limitations of the above sampling criteria should be noted. In particular, the restriction to wage and salary workers eliminates the vast majority of persons in agriculture, relatively more of whom were black than white in 1940. Unfortunately, the restriction to wage and salary workers cannot be relaxed, because the 1940 census did not report sources of income other than wages and salaries.

Wage and salary income in 1940 was reported in dollar amounts, while earnings in 1950 were reported in $100.00 brackets (for example, $2,000.00-2,099.00). Earnings in 1950 were estimated by assigning to each individual the midpoint of the relevant bracket. Since the maximum reported earnings in 1950 was $10,000.00, there are one hundred brackets (centiles) in the 1950 PUMS. The maximum reported earnings in 1940 was $5,000; to assure comparability, therefore, the 1940 earnings data were also divided into one hundred brackets -- each of $50

in length -- and individuals were again assigned earnings equal to the midpoint of the relevant bracket.[7]

The extent of racial wage convergence in the samples is shown in Panel A of Table 2, which gives the racial gap in log wages computed at various locations in the wage distribution. At the 10th percentile the racial gap in log wages actually widened over the decade. At all other percentiles, however, the gap fell, with the greatest convergence observed in the upper tail of the black wage distribution (50th-90th percentiles).

The discussion in Section I suggests that the Great Compression contributed to racial wage convergence between 1940 and 1950. To investigate this possibility, Panel B of Table 2 presents race-specific calculations of interdecile ranges. The effects of the Great Compression are clearly evident among whites, particularly in the lower tail of the wage distribution; the gap in wages between the 10th and 50th percentiles fell by 0.236 in log terms between 1940 and 1950 while the gap in log wages between the 50th and 90th percentiles fell somewhat less, by 0.097. Wage compression also occurred among blacks, but only in the upper tail of the black wage distribution. The gap in black wages between the 10th percentile and the median was larger in 1950 and 1940, so much so that the spread between the 10th and 90th percentiles was only slightly smaller (0.029 in logs) in 1950 than in 1940.

Based on the findings in Panel B, a <u>prima facie</u> argument that wage compression was a factor behind racial wage convergence could be made <u>if</u> the upper tail (50th-90th percentiles) of the black wage distribution overlapped with the lower tail (10th-50th percentiles) of the white wage distribution. Accordingly, Panel C of Table 2 locates the race-specific percentiles, measured in terms of the number of standard deviations (σ) from the median white wage (σ

refers to the year-specific standard deviation of white wages). In 1940 the median black wage fell 1.282 standard deviations below the median white wage--almost exactly the distance in standard deviations between the 10th and 50th quintiles of the white wage distribution -- while the black wage at the 90th percentile fell -0.193 standard deviations behind the white median. In 1950 the upper tail of the black wage distribution continued to overlap the lower tail of the white wage distribution, except at the 90th percentile where the black wage exceeded the median white wage by a small amount (0.037 standard deviations).

Although the evidence in Panels B and C is consistent with the hypothesis that wage compression served to reduce the wage gap between white and black workers, it does not measure the quantitative impact per se of shifts in the structure of wages. To measure this impact, I employ the decomposition technique developed for this purpose by Juhn, Murphy and Pierce (1991; see also Blau and Kahn 1992).

The first step in the Juhn-Murphy-Pierce procedure is to estimate a standard log wage regression for white workers:

$$y_t = X_t\beta_t + \sigma_t\epsilon_t \qquad [1]$$

where y_t = log of weekly wages for person i in year t (the subscript i is suppressed), X_t = characteristics of person i in year t included in the regression, β_t = "prices" (i.e. regression coefficients) of the characteristics X, ϵ_t = "standardized" residual and σ_t = standard deviation of the (unstandardized) residuals.[8] Also, let a "d" in front of a variable -- for example, dy_t -- indicate the difference between blacks and whites, computed at some location in the wage distribution or at the sample means.

Suppose that equation [1] has been estimated for both 1940 and 1950. I compute the following predicted wage for each individual, black and white, in 1950, y_1:

$$y_1 = X_{50}\beta_{40} + \sigma_{40}\epsilon_{50} \qquad [2]$$

The difference between y_1 and y_40 is made up of two terms

$$y_1 - y_{40} = (X_{50} - X_{40})\beta_{40} + \sigma_{40}(\epsilon_{50} - \epsilon_{40}) \qquad [3]$$

The first term on the right hand side measures the effect of changes in "observable" quantities (the X's). The second term measures the effect of movement up ($\epsilon_{50}-\epsilon_{40}>0$) or down ($\epsilon_{50}-\epsilon_{40}<0$) the residual distribution, valued (in log wage terms) in the base year (σ_{40}). Therefore, the difference between blacks and whites

$$dy_1 - dy_{40} = (dX_{50} - dX_{40})\beta_{40} + \sigma_{40}(d\epsilon_{50} - d\epsilon_{40}) \qquad [4]$$

measures the impact of racial convergence (or divergence) in observable quantities and relative (compared with whites) movement by blacks in the residual wage distribution. Following Juhn, Murphy, and Pierce (1991), I label the first term on the right hand side of [4], "X's" and the second term, "Gap".

Next, I compute a second predicted wage, y_2

$$y_2 = X_{50}\beta_{50} + \sigma_{40}\epsilon_{50} \qquad [5]$$

The difference between y_2 and y_1 (= $X_{50}(\beta_{50}-\beta_{40})$ measures the impact of changes in observable prices (the regression coefficients) on wages. Hence dy_2 - dy_1 measures the impact of changes in observable prices on racial wage differentials. I label this term, "Prices", in the decomposition.

The difference between y_{50} and y_2

$$y_{50} - y_2 = \epsilon_{50}(\sigma_{50} - \sigma_{40}) \qquad [6]$$

measures the impact of compression ($\sigma_{50}-\sigma_{40}<0$) or widening ($\sigma_{50}-\sigma_{40}>0$) in the residual distribution. Thus, the final term in the decomposition, which is labelled "Residuals", is dy_{50} - dy_2; it measures the effect on the wage gap of a change in the residual wage distribution among whites, holding fixed the relative quintile positions of black workers. By convention, the Prices and Residual terms are what is meant by shifts in wage structure (Juhn, Murphy, and Pierce 1991; Blau and Kahn 1992).[9]

The results of the Juhn-Murphy-Pierce decomposition, computed at the sample means and at five percentiles in the wage distribution, are shown in Panel A of Table 3. The independent variables in the wage regressions are: a linear spline in years of schooling, with spline points at eight, twelve, and sixteen years; dummy variables for five-year age groups, southern birth, foreign birth, marital status, urban residence, and four census regions; interaction terms between the schooling variables and southern residence and between the age dummies and southern birth; and nine dummy variables for (one-digit) occupations.[10] Since the decomposition requires choosing a base year (in the above exposition, 1940) and the base year is arbitrary, I report calculations for both years.

Although the numerical magnitudes are somewhat sensitive, the substantive

findings are unaffected by the choice of a base year.[11] The effects of changes in wage structure -- the prices and residual terms -- are evident throughout the wage distribution; indeed, had only the wage structure changes occurred, the black-white wage gap at the 10th percentile would have fallen, rather than increased. Although the relative impact varied somewhat through the distribution, compression in observed prices (the regression coefficients) was three or four times as important as compression in the residuals. Overall, at the sample means, wage compression accounted for 52 to 62 percent of black-white wage convergence between 1940 and 1950, depending on the base year.

Because the numerical effect of wage structure changes was similar throughout the wage distribution, variation in wage convergence across percentiles was due primarily to observable quantities (X's) and by movement by blacks up the residual white wage distribution (the Gap term). At the 10th percentiles the impact of observable quantities served to widen the racial wage gap; at the median and upper quartile, blacks succeeded in narrowing the gap with whites in observable quantities, thereby causing substantial wage convergence. At the sample means, however, the impact of changes in observable quantities was more modest, accounting for 22 to 30 percent of the narrowing in the racial wage gap.

Except at the extreme left tail, the Gap terms are positive: blacks moved up the percentiles of the distribution of residual wages among whites. Regardless of the base year, the magnitude of such movement was greater above, than below, the median. At the sample means, the Gap term accounts for approximately 17 percent of wage convergence, regardless of the base year.

Studies of racial wage convergence in recent decades have emphasized the importance of racial differences in the school characteristics, such as the

length of the school year, teacher-pupil ratios, or per pupil expenditures (Smith and Welch 1989; Card and Krueger 1992). According to one such study, racial convergence in school characteristics can explain between 15 and 25 percent of racial convergence in wages between 1960 and 1980 (Card and Krueger 1992, p. 193).

On an apriori basis, it seems unlikely that changing racial differences in school characteristics could have played a similar quantitative role prior to 1950 because the pre-1950 pattern of change was not one of monotonic convergence. In particular, racial differences in school characteristics actually widened for blacks born in the South between 1886 and 1910 (Smith 1984; Margo 1990, ch. 2).[12] Racial differences in school characteristics did decline somewhat among cohorts born in the South after 1910, but a substantial narrowing was not apparent (among labor market participants) until after 1960 (Smith 1984; Card and Krueger 1992). Still, it is possible that changes in school characteristics could account for a portion of the Gap term even in the 1940s, if for no other reason that the numerical representation of the 1886-1910 southern cohorts in the black sample fell from 64 percent in 1940 to 44 percent in 1950.

Although replicating Card and Krueger's study for the 1940s is beyond the scope of this paper, a defensible estimate of the effects of school characteristics can be made by redefining black educational attainment downward relative to white educational attainment, and re-computing the decomposition.[13] In particular, I shall assume that, for blacks born in the South before 1910 completing more than five years of schooling, the appropriate reduction is four years; for five years or less, the appropriate reduction is to one year of schooling. Thus, for example, a black man with eight years of schooling is assumed to have received an education functionally equivalent to that of a

southern white with four years of schooling. For blacks born in the South after 1910, I assume that the corresponding reduction is three years.[14] As a result of this adjustment, racial convergence in school quality will occur as older black cohorts are replaced by younger cohorts. No adjustment for school quality is made for northern-born blacks or for whites, regardless of region.

The results are shown in Panel B of Table 3. At the sample means, the adjustment for school quality can explain about three-quarters of the Gap term; the explanatory power is somewehat less at the median or 75th percentile, but still substantial. Adjusting for school quality also increases the quantitative significance of the wage structure terms (the sum the prices and residual terms) but the magnitude of the increases is small.

Based on the results in Panel B, I conclude that adjusting for school quality can account for the majority of the Gap term, except perhaps at the median. Put another way, virtually all of the narrowing in the racial wage gap at the sample means can be explained by a narrowing of racial differences in observable quantities (including school quality), prices, and within-group residual inequality (the residual terms). The remainder of the gap term is presumably due to changes in (unobserved) quantities other than school quality and possibly to a decline in racial wage discrimination over the decade.[15]

III. Wage Compression and Schooling Levels Among Black Teenagers, 1940-50

Section II demonstrated that the Great Compression increased the relative wages of adult black males in the short run (i.e the 1940s). The compression may also have helped in the long run. Recent research indicates that the educational achievement of black children during the first half of the twentieth century was

a positive function of their parents' economic status (Margo 1990, ch. 5). By (temporarily) boosting the economic status of black parents, the Great Compression may have increased the schooling levels of black teenagers beyond what would have occurred otherwise in the 1940s.[16] If so, these generations would have been better equipped to take advantage of government anti-discrimination efforts that enhanced the demand for educated black labor in the 1960s (Donohue and Heckman 1991).

To investigate the relationship between schooling levels of black teens and parental earnings, I estimate equation [7], using data from the 1940 PUMS:

$$\ln (S/S^*) = X\delta + \epsilon \qquad [7]$$

where S = schooling level (highest grade completed); S^* = "expected" schooling level for a person of age t; X = determinants of schooling, including weekly wages of fathers; δ = regression coefficients, and ϵ = random error. The expected schooling level is the modern reference standard: individuals enter the first grade at age six and complete each grade in a year's time.[17] Negative values of $\ln (S/S^*)$, therefore, indicate (in log terms) age-in-grade retardation (for those still in school) or dropouts.

The sample consists of black teens, ages 14 to 19, whose fathers were wage and salary workers who also satisfied the sampling criteria in Section II and whose mothers were present in the household. In addition to the father's weekly earnings, the independent variables include the mother's schooling level and dummy variables for: the age and gender of the teenager; whether the father was unemployed at the time of the census; the state of residence; and urban-rural (farm, nonfarm) status. The dummy variables for the state and urban-rural status

are meant to capture geographical variation in school characteristics or the returns to schooling, which previous research suggests was a significant determinant of black schooling levels (Margo 1990, ch. 5; Margo and Finegan 1993).

Mean values of the dependent and independent variables, along with the regression coefficients, are displayed in Table 4. The mean value of ln (S/S*) was -0.331, indicating that, on average, educational attainment fell 28 percent [=(1-exp(-0.331) x 100] short of the level had all black teens in the sample followed the modern reference standard. The regression results confirm a positive and statistically significant association between child schooling and adult earnings: the elasticity between $\ln(S/S^*)$ and the father's weekly wages is about 0.1. Consistent with previous findings (see Margo 1990, ch.5; and Margo and Finegan 1993), farm teens show greater educational retardation than urban or nonfarm rural teens, while females had higher school levels, as did children whose mothers were better-educated.

I use the coefficient on father's earnings to predict how much larger the average schooling level would have been in 1940, had the increased in adult earnings associated with the Great Compression (the sum of the Prices and Residual terms in Table 3) occurred in that year. For this purpose, it is appropriate to use the 1940 base year decomposition; since the earnings gain are virtually the same whether or not an adjustment is made for school quality, I use the unadjusted gain for the calculation (0.114; see Table 3). The predicted increase in $\ln(S/S^*)$ is 0.011 [= 0.114 x 0.098].

Compared with the mean schooling level among black teens in 1940 (-0.331), the impact of the Great Compression was very small. Compared with the increase in schooling levels over the decade, however, the impact would have been larger.

Unfortunately, because of a peculiarity of the 1950 PUMS it is impossible to create a matched sample of black teens (whose fathers were full-time wage and salary workers and whose mothers were present) in both years.[18] For all black teens ages 14 to 19, the value of ln(S/S*) rose by 0.11 between 1940 and 1950 (computed from U.S. Bureau of the Census 1953, pp. 225, 226, 229). Using this figure as a base, the Great Compression can explain 10 percent [=0.011/10] of the growth in black schooling levels between 1940 and 1950.[19]

IV. Conclusion

Between 1975 and 1989 there was marked slowdown in black-white wage convergence, compared with the 1963-1975 period (Juhn, Murphy, and Pierce 1991; Rodgers 1992). A substantial portion of the slowdown can be attributed to recent changes in wage structure (Juhn, Murphy, Pierce, Table 4-6, p. 133). In the 1980s earnings differentials have increased between less-experienced and less-educated and more-experienced and better-educated workers, as well as within education and experience groups (Katz and Murphy 1992). Because black workers in the 1980s were still concentrated in the left tail of the wage distribution (compared with white workers), the recent widening of wage inequality has exacerbated racial differences in earnings, thereby slowing down the rate of wage convergence produced by other factors (for example, narrowing racial differences in years of schooling).

Like the post-1975 period, the experience of the 1940s illustrates the sensitivity of black-white earnings differences to shifts in the overall structure of wages. In the 1940s, however, shifts in wage structure served to narrow racial differences in earnings. By narrowing wage differences between

skilled and unskilled workers, and by compressing wages within occupations and other labor market groups, the Great Compression led to greater racial wage convergence between 1940 and 1950 among adults than would have occurred otherwise. By indirectly raising the schooling levels of black teens, the Great Compression also contributed to racial wage convergence in subsequent decades, although its effects here were more modest.

The results of this paper could be extended. In particular, census data cannot determine the exact timing (within the 1940s) of the changes documented in the paper, nor can census data reveal the precise institutional mechanisms at work (for example, the NWLB vs. the minimum wage vs. unions). Further analysis of wage studies performed by the Bureau of Labor Statistics (see Goldin and Margo 1992), specifically of industries that employed large numbers of blacks, may shed light on both issues.

Notes

1. Very little of the compression appears to have been a continuation of trends established in the 1930s; see Goldin and Margo (1992, pp. 17-23).

2. For example, employers could raise wages to 40 cents per hour without NWLB approval; occupational wage "brackets" were established in each census region, and wages could be increased to the lower end of the bracket. Exceptions to wage controls were granted if the NWLB judged that the employer in question was previously paying "substandard" wages (see Goldin and Margo 1992, p. 24).

3. Goldin and Margo (1992, p. 29) demonstrate that, compared with every decade from the 1950s to the 1970s, the relative demand for less-educated workers was strongest during the 1940s. The impact of the GI Bill of Rights is suggested by a sharp spike in the number of college graduates per 100 persons aged 23 in 1948, and by the fact that virtually all of the increase in college enrollment between 1939 and 1947 can be explained by attendance of veterans under the provisions of the act; see Goldin and Margo (1992, p. 31). The federal minimum wage was increased from 30 cents per hour in October of 1939 to 40 cents per hour in October of 1945 and to 75 cents per hour in January of 1950. This last change, however, does not affect any of the 1950 wage data analyzed in this paper because these pertain to earnings in 1949.

4. The 1940 and 1950 PUMS are 1/100 samples; my analysis is based on 20 percent random samples from both tapes. Studies of recent changes in wage structure use Current Population Survey (CPS) data rather than census public use samples (eg. Katz and Murphy 1992). CPS microdata files, however, are not available before 1963.

5. One-half of the federal minimum wage on a weekly basis was $6 in 1940 and $8 in 1950; see Goldin and Margo (1992, ftn. 5, p. 5). The restriction to full-time workers (40 weeks or more) is suggested by the nature of the weeks worked variable in 1940, which pertains to "full-time" equivalent weeks. That is, if a person worked 20 hours per week for 50 weeks, and the prevailing length of the workweek was 40 hours, weeks worked would be reported as 25 weeks. Weeks worked in 1950, however, were actual weeks, unadjusted for hours worked. By restricting attention to full-time workers, any bias introduced by the change in the definition in weeks worked between the censuses should be mitigated.

6. The number of topcoded observations is very small. The race-specific proportions are: in 1940, 2.0 percent for whites and 0.1 percent for blacks; in 1950, 1.4 percent for whites, and 0.1 percent for blacks.

7. The substantive findings are unaffected, however, if the 1940 data are grouped into fifty $100 brackets, and individuals are assigned earnings equal to the midpoint of the relevant bracket.

8. The standardized residual is the conventional OLS residual divided by the standard deviation.

9. As Juhn, Murphy, and Pierce (1991, p. 128) point out, this convention is arbitrary for two reasons. First, the degree of wage discrimination can be thought of as part of the wage structure, broadly defined; also, the level of discrimination affects the value of the fourth term of the decomposition; intuitively, a high level of discrimination enhances the impact of any change in residual wage inequality among whites. If residual wage inequality falls, the wage penalty for being black will fall, on average, as long as the average black wage is initially below the average white wage (see Juhn, Murphy, and Pierce 1991, p. 128).

10. The regression specification is similar to that used in other recent studies of wage structure (Juhn, Murphy, and Pierce 1991; Goldin and Margo 1992). The dummy variable for southern birth is included as a proxy for regional variations in the quality of schooling; measured in terms of resources per pupil, southern schools (black and white) were generally poorer in quality than nonsouthern schools (Margo 1990). The interaction terms between age and southern birth allow for change over time in the quality of Southern (white) schooling. The interaction terms between schooling and southern residence are included because previous studies suggest that wage differentials by skill (proxied here by the returns to education) were higher in the South during the period under study (Wright 1986). The dummy variables for occupations are included because, as noted in section I, the Great Compression produced shifts in wage differentials between (and within) occupations as well as between and within schooling levels (Goldin and Margo 1992). Blacks in 1940 were disproportionately concentrated in unskilled and service occupations, even among those with considerable educational attainment. Tight labor markets, in conjunction with President Roosevelt's 1943 executive order outlawing job discrimination in defense industries, led to an increase of blacks in semi-skilled and skilled occupations during the war, but under-representation was still the norm in 1950 (Vatter 1985, pp. 132-135).

11. The substantive conclusions are also unaffected if imputed labor market experience (age-schooling-6) is substituted for age; or if the interaction terms between schooling and southern residence, and age and southern birth are excluded.

12. Margo (1986) argues that black schooling levels in the South in the late 19th and early twentieth century as reported in the 1940 census were systematically biased upwards relative to white schooling levels because the vast majority of southern blacks were educated in ungraded schools; for such individuals the 1940

census measured educational attainment by counting the number of years spent in school instead of highest grade completed, which was sytematically lower (see Smith 1986 for a contrary view). As the century progressed, ungraded schools were replaced by graded schools; hence, the upward bias is smaller for post-1910 cohorts -- which, in effect, is equivalent to a narrowing of racial differences in school quality.

13. Juhn, Murphy, and Pierce (1991, pp. 132-134) use similar logic in adjusting for school quality effects in their study of post-1975 racial wage convergence, as does Margo (1990, ch. 6) in his econometric analysis of racial differences in occupational status in the South before 1950.

14. The basis for a three-year reduction for post-1910 black cohorts is a study by Bond (1934, pp. 339-44) reporting that black third and sixth graders in Alabama in the late 1920s scored three full years behind national norms, unadjusted for age. To the best of my knowledge, no comparable test scores exist for pre-1910 cohorts; hence there is no direct, factual evidence for a four-year (i.e as opposed to 3.5 year) adjustment for pre-1910 cohorts. The average length of the black school year, however, increased by one to two months between 1910 and 1935 in most southern states; cumulated over six to eight years, the additional time spent in school added almost a full year of schooling (see Margo 1990, pp. 14, 26).

15. See Margo (1990, ch. 4) for evidence that a decline in racial wage discrimination in the 1940s did take place for one occupation -- public school teachers in the South. Certain quantity changes could have mimicked the impact of a decline in racial wage discrimination. Migration from the South is a case in point. In 1940, the racial gap in wages was larger in the South than in other regions (see Smith and Welch 1989, p. 542). Because the rate at which blacks left

the South during the 1940s exceeded the rate for whites, proportionately fewer blacks in 1950 experienced the differential regional gap in wages, thereby contributing to racial wage convergence through an interaction effect (Donohue and Heckman 1991); in the context of the Juhn-Murphy-Pierce decomposition, such an interaction effect would show up in the Gap term.

16. One objection to this argument is that the decline in returns to schooling induced by the Great Compression may have offset the income effect described in the text (by lowering the incentive to remain in school). Among adult blacks, however, the decline in the returns to schooling was negligible. In a regression of log wages using the 1940 and 1950 black samples, the coefficient on years of schooling (adjusted for school quality, as described in the text; the other independent variables are dummy variables for age, marital status, urban residence, and region) fell by only 0.0004 between the two years. Indeed, it is precisely because the great majority of blacks, regardless of education, were concentrated in low-wage jobs in 1940 that wage compression accounts for such a large share of black-white wage convergence over the decade.

17. The use of a reference schooling standard is analogous to demographic analysis on censored, cross-sectional data on fertility, in which the number of children ever born to a woman of age t is scaled by a model fertility schedule. For a similar application of a reference schooling standard, see Deolalikar (1983).

18. Information on educational attainment, wages, and weeks worked in 1950 is only available for so-called "sample line individuals". Sample line individuals are those who filled out the "long" census form. Sample line data are necessary to measure $\ln(S/S^*)$ but, because there is only one sample line person per household, if educational attainment is reported for a black teen (because the

teen was the sample line person), weeks worked is not reported for his father (and vice versa).

19. It is likely that this figure is biased downwards. According to Smith and Welch's estimates (1989, p. 522), who use somewhat broader sampling criteria than those employed in this paper, black-white wage convergence between 1940 and 1950 was 0.243 in log terms. If half of the gain in relative earnings were attributed to the Great Compression, the increase in child schooling explained by the compression would be 11 percent [=(0.121 x 0.098)/0.11].

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Table 1

Selected Aspects of the Great Compression

	1940	1950
A. Interquintile ranges		
50-10	0.793	0.677
90-50	0.654	0.504
90-10	1.447	1.181
B. Ratios of weekly wages, by labor market experience group		
College graduates/High school graduates		
Years of experience		
1-5 years	1.742	1.357
6-10	1.728	1.369
11-15	1.777	1.461
16-20	1.652	1.421
High school graduates/eighth grade graduates		
Years of experience		
1-5 years	1.376	1.442
6-10	1.463	1.322
11-15	1.377	1.299
16-20	1.385	1.267
C. Ratio of weekly wages to all nonfarm weekly wages, by occupation		
Professional	1.474	1.254
Craft	1.039	1.023
Operatives	0.856	0.861
Laborers	0.630	0.750
Service	0.737	0.779

Note: Years of Experience = Age - Years of Schooling - 6
Source: Goldin and Margo (1992, Tables 1-3).

Table 2

Black-White Wage Convergence, 1940-50

A. Racial difference in log weekly wages at 10th, 25th, 50th, 75th, and 90th and at sample means

	Black - White		
	1940	1950	Convergence
Percentile			
10	-0.530	-0.612	-0.082
25	-0.669	-0.536	0.133
50	-0.710	-0.421	0.289
75	-0.681	-0.407	0.274
90	-0.686	-0.463	0.223
Mean	-0.657	-0.472	0.185

Black - White: difference between black and white log wage at given percentile and/or sample means of the (race-specific) log wage distribution
Convergence: 1950 - 1940 (Column 2 - Column 1)

B. Interquintile Ranges

	1940	1950	Convergence
White			
10-50	-0.714	-0.478	0.236
50-90	-0.579	-0.482	0.097
10-90	-1.293	-0.960	0.333
Black			
10-50	-0.534	-0.670	-0.136
50-90	-0.603	-0.438	0.165
10-90	-1.137	-1.108	0.029

Figures are differences in log wages associate with percentiles of (race-specific) log wage distribution. For example, the difference between the log wage at the 10th and 50th percentiles of the white log wage distribution in 1940 is -0.714.

C. Location of Percentiles in White Log Wage Distribution

	Number of σ_w's from median white wage		
Percentile	1940	1950	Convergence
10th			
Black	-2.245	-2.362	-0.117
White	-1.288	-1.035	0.253
25th			
Black	-1.865	-1.603	0.262
White	-0.657	-0.442	0.215
50th			
Black	-1.282	-0.912	0.370
White	0	0	0
75th			
Black	-0.657	-0.362	0.295

Table 2 (continued)

White	0.572	0.519	-0.053
90th			
Black	-0.193	0.037	0.230
White	1.045	1.043	-0.002
σ_w	0.554	0.462	

σ_w: standard deviation of white log wage distribution
Convergence: 1950 - 1940 (Column 2 - Column 1)

Source: see Table 1

Table 3

Juhn-Murphy-Pierce Decompositions of Black-White Wage Convergence, 1940-1950

A. No Adjustment for School Quality

Percentile	10	25	50	75	90	Mean
Base Year=1940						
X's	-0.133	-0.008	0.118	0.097	0.019	0.040
Gap	-0.014	0.016	0.054	0.066	0.064	0.031
Prices	0.047	0.095	0.095	0.083	0.109	0.090
Residuals	0.019	0.030	0.022	0.028	0.031	0.024
Base Year=1950						
X's	-0.131	0.062	0.138	0.106	0.051	0.054
Gap	-0.016	0.017	0.059	0.072	0.069	0.034
Prices	0.037	0.066	0.061	0.079	0.076	0.076
Residuals	0.028	-0.012	0.031	0.017	0.027	0.021

B. Adjusted for School Quality

Percentile	10	25	50	75	90	Mean
Base Year=1940						
X's	-0.085	0.018	0.136	0.131	0.053	0.059
Gap	-0.063	-0.015	0.032	0.029	0.028	0.008
Prices	0.052	0.112	0.101	0.093	0.115	0.102
Residuals	0.014	0.018	0.020	0.021	0.027	0.016
Base Year=1950						
X's	-0.085	0.093	0.158	0.139	0.088	0.075
Gap	-0.068	-0.016	0.034	0.031	0.030	0.009
Prices	0.053	0.076	0.071	0.090	0.083	0.086
Residuals	0.018	-0.020	0.026	0.014	0.022	0.015
Convergence	-0.082	0.133	0.289	0.274	0.223	0.185

Convergence: change in black-white log wage differential between 1940 and 1950, at given percentile or sample means. The sum of the X's, Gap, Prices, and Residual terms down a column, within a base year, equals the convergence term. (For example, Panel A, at the sample means using 1950 as the base year, 0.054+0.034+0.076+0.021 = 0.185).

Source: see text

Table 4

Regression of Schooling Levels: Black Teenagers in 1940

	Mean	ß	t-stat
Constant		-1.124	-9.303
Age			
15	0.183	-0.013	-0.294
16	0.176	0.009	0.198
17	0.151	0.038	0.810
18	0.147	-0.155	-3.283
19	0.114	-0.154	-3.035
Female	0.522	0.089	3.116
Father:			
Ln weekly wage	2.704	0.098	2.509
Unemployed on census date	0.027	0.100	1.129
Mother:			
Years of schooling	6.306	0.019	3.773
Urban-Rural Status			
Rural non-farm	0.310	0.277	5.013
Urban	0.594	0.350	6.202
State Dummies		included	
Mean value of dep. var.	-0.331		
N	709		
R^2		0.254	

Dependent variable is $\ln(S/S^*)$ where S is years of schooling completed and S^* is reference standard years of schooling (see text). Sample is derived from the same 20 percent random sample underlying Tables 2 and 3 (see footnote 4). To be included in the sample, a black teen had to be: between the ages of 14 and 19, the father had to a wage and salary worker meeting the sampling criteria underlying Tables 2 and 3, and the mother had to be present. Observations from states in which there were fewer than ten observations in total in the sample were excluded.