

RACIAL DISCRIMINATION - A HUMAN CAPITAL PERSPECTIVE*

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At its core, the human capital approach to race is quite simple. It is a skill based theory that asserts that if you want to understand the racial wage gap and the way it is changing, you must understand why the races differ in marketable skills and how skill differences move over time. In part, allegiance to theories determine research emphasis and dictate where one decides to devote scarce research energies and resources. Those of us with a human capital emphasis spend much of our research time worrying about how to more accurately measure skills and how markets translate those skills into earnings. Economists with different perspectives are betting that exploring the reasons for the lack of mobility between sectors or the constraints imposed by institutions represent the key to further progress on the economics of race. In essence, the human capital approach is a belief that skills matter. To make that belief less trite, it is a conviction that it is mostly skills that matter.

Theories that attract interest don't claim to be able to successfully resolve all puzzles and answer all questions. The human capital approach to race is certainly no exception. Its current explanatory scope is incomplete; it also confronts major empirical regularities that appear contradictory to its main themes. The importance of the issues and a sense that the challenges may be amenable to resolution through continued research are what attracts us to this topic. And it is the occasional successes that sustains continued effort.

In this paper, we will claim that skill based theories have made significant recent advances in resolving two long standing challenges to its validity. These challenges are (1) its ability to explain long term historical trends in black-white income differences and (2) its reliance on schooling as its primary empirical weapon.

This paper can probably best be described as an autobiographical survey. We rely almost exclusively on our own past and current research to make our points and document our claims. This reliance should be taken as evidence of ease of access and not as a slight on the considerable volume of valuable work done by others. We also consciously try to demonstrate the value on the human capital approach solely on its own merits; we ignore the ability or failure of other theories to account for similar phenomena.

The remainder of this paper is divided into four sections. The first presents a brief summary of existing literature relating to the three challenges listed above. Next, we present some new evidence of time series trends in racial income disparities derived from the 1940-1980 Census micro data files. The final two sections deal with the two challenges confronting a human capital approach to race.

BACKGROUND

Two basic problems with the human capital approach to race have surfaced. The first, and perhaps more fundamental, is that the long term relative income and relative skill series seemed inconsistent. Until the acceleration in black incomes during the mid-1960s, it was argued that, at best, black incomes barely kept pace with those of whites. In contrast to this stability in relative racial incomes, there has been a steady long term convergence in skills. This skill convergence is especially apparent if we use education to proxy human capital. A number of studies consistently showed a continuous narrowing of racial education differences throughout the 20th century. This apparent contradiction between the relative skill and income series cast serious doubt on the historical applicability of the human capital perspective applied to race.

The other problem disputed the empirical importance and relevance for blacks of human capital's two empirical constructs--education and on-the-job-training. Early empirical studies consistently showed an almost miniscule effect of schooling on black earnings.[1] This pessimism was deepened later by the work of Coleman, Jencks, and others, suggesting that manipulating school attributes had little impact on student performance. If schools had little economic payoff for blacks, the situation was far worse when attention shifted to job investments. Here, there was no dispute. All empirical studies indicated that black male incomes increased with age at a significantly less rapid rate than

[1]It is worth mentioning that the most often cited of these studies were University of Chicago dissertations, hardly an unsympathetic source (see Zeman (1955), Hanoach, (1965)).

white incomes.[2] In summary, the minor historical relevance of human capital seem consistent with contemporary data indicating that investments in skill--either in school or on the job--were not a reliable vehicle for black economic mobility.

The historical problem with contemporary human capital studies of race was first pointed out by Ashenfelter

"Where does this leave us? In my view, it leaves us with a considerable puzzle. Attributing the steady increase in relative earnings to the gradual increase in their skills (as measured, say, by schooling) requires an explanation of why the gradual increase in skills of black men had so little effect on their relative earnings before the mid 1960s." (Ashenfelter, pg. 297 (1974)).

The basic issue raised by Ashenfelter is simple. With each successive birth cohort, racial differences in education levels narrowed in this century, until a 3.5 year gap for those born between 1907-1916 had been reduced to only a 1.1 year advantage for whites for men born between 1947-1951. Using education as the index, the human capital disadvantage for blacks has continuously narrowed. But Ashenfelter argued that before 1960, there was little change in relative incomes by race. The documentation of the income side of the argument is fuzzy. But post World War II data does show little appreciable rise in relative male incomes of black men until the mid 1960s. The evidence before 1948 was largely circumstantial. But the scanty evidence that did exist, and certainly a reading of the masterworks, indicated long term stagnation in black economic status.

[2]The issue of job investments is addressed in Smith (1984).

To quote two prominent scholars, Fogel and Engerman state at the end of Time on the Cross

"It appears that the life expectations of blacks declined by 10 percent between the last quarter century of the antebellum era and the last two decades of the nineteenth century. The diet of blacks deteriorated. Studies of the diet of black sharecroppers in the mid-1980s indicate that they were protein- and vitamin-starved. The health of blacks deteriorated. Sickness rates in the 1890s were 20 percent higher than on slave plantations. The skill composition of the black labor force deteriorated. Blacks were squeezed out of some crafts in which they had been heavily represented during the slave era and were prevented from entering the new crafts that arose with the changing technology of the last half of the nineteenth century and the first half of the twentieth. The gap between wage payments to blacks and whites in comparable occupations increased steadily from the immediate post-Civil War decades down to the eve of World War II. It was only with World War II that this trend reversed itself. And it is only during the last fifteen years that the reduction in the differential has accelerated to an extent that equality in wage payments for blacks and whites in comparable occupations seems once again in sight." Time on the Cross, 1974, pg. 261.

In a similar vein, after summarizing the post Civil War history of blacks, Myrdal concluded

"The picture of the economic situation of the Negro people is dark. The prospects for the future--as far as we have been able to analyze the trends until now--are discouraging." The American Dilemma, 1944, pg. 380.

The earliest cross-sectional attempts at a human capital explanation for racial income differences were also not encouraging. Morton Zeman's 1955 dissertation, a detailed and careful analysis of the 1940 Census, served as the standard empirical reference until the micro-level 1960 Census tapes became available. Whether the added skill involved an extra year in school or another on the job, Zeman reported that black-white income ratios declined by one-third of 1 percent for every 1 percent rise in white income. The elimination of racial differences in schooling or age would have reduced the Southern racial income gap by less than one-quarter and that in the North by about 5 percent. Essentially, Zeman's work implied that giving blacks the same amount of schooling as whites would do little to alter racial income disparities. The problem, rather, was different pay for the same skill and differential racial payoffs to acquiring more skill.

Throughout the 1950s, events appeared to confirm Zeman's research. Studies based on the 1950 and 1960 Censuses, indicated that, if anything, there may have been a deterioration in the relative economic position of blacks. The initial micro-level studies based on the 1960 Census by Hanoch (1965), Thurow (1969), and others did little to amend this view. Their work once again painted a consistent picture of low returns to schooling for blacks as well as a sharp deterioration in relative black economic potential over job careers. In light of these findings, the emphasis in the economic literature concentrated on reasons for racial differences in the value of skill. On the schooling dimension, market discrimination against black skilled labor was advanced to explain declining black-white income ratios with schooling.

On the job investment side, discrimination-based theories dominated, either using the language of denying blacks access to jobs with human capital growth (for human capital advocates) or simply confining blacks to secondary labor markets.

The human capital perspective had a partial resurgence during the late 1960s and early 1970s. Micro analysis based on the 1967 and 1970 Census indicated that rates of return to education, especially at upper schooling levels, appeared as high for blacks as for whites. In addition, reanalysis of the 1960 Census revealed that first-generation studies had significantly understated rates of return to education for blacks.[3] On the issue of job-related investments, Welch pointed out that cross-sectional data showing declining black-white income ratios with age may not reflect life-cycle factors at all if changes across birth cohorts are larger for blacks than whites. Welch (1974) and Smith-Welch (1977) provided evidence that over recent years, black male incomes did not fall behind those of comparable whites as their careers evolved, lending some support to a cohort interpretation of the cross-section deterioration of relative black incomes with age.

These studies were not completely persuasive to all. Their major limitation is that they were confined to the 1960s and 1970s, a period that many regarded as very unique in terms of sustained improvement in black incomes. This recent human capital work left unresolved the apparent long-time contradiction between the skill and income series. But even on its own terms, many remained unconvinced. Plausible alternative explanations, unique to the last two decades, were put

[3]Apparently, due to the use of group data or an age control rather than experience [See Smith-Welch (1977)].

forward. Regarding education, it was argued that the pro-skill bias of affirmative action pressures might account for the rise in black schooling coefficients. Similarly, affirmative action pressures to promote blacks in a nondiscriminating fashion may indicate that the race neutral career wage growth of the last two decades was unique to this time period.

New Evidence on the Racial Wage Gap

There is increasing recognition that the resolution of the really essential debates about the sources of black-white income differences lie not with the release of more current waves of contemporary data. Instead, data from earlier periods of American history have far more scientific promise. To illustrate, two prominent explanations for the narrowing of the racial income gap--affirmative action (Freeman, 1973) and the labor market withdrawal of low income blacks (Butler-Heckman, 1977)--both rely on events unique to the 1960s and 1970s.

Monitoring the long term evolution of racial income disparities makes events unique to our own day less seductive as explanations. Moreover, data that span half a century or more allow us to better evaluate theories in terms of their relative historical importance. For the first time, the recent release of the micro data files from the 1940 and 1950 Census makes such an effort possible, while still maintaining labor economists' insistence on high-quality-nationally-representative data. In this section, we summarize some of our recent work based on the micro-data files of the 1940-1980 U.S. Censuses.

Table 1 depicts our estimates of black-white male weekly wage ratios from each of the decennial Census tapes.[4] The final row in

[4]Our numbers are ratios of arithmetic means of weekly wages. Income is defined as the sum of wages and salary and self-employment income. Weekly wages are calculated as income divided by weeks worked.

this table contains relative wages aggregated across all experience classes. In addition, ratios are listed for 5 year intervals of years of work experience.[5]

Table 1 points to a very impressive rise in the relative economic status of black men over this forty year time span. Between these forty years, black male wages increased 52 percent faster than those of whites. In 1940, the average wage of black men was only 43 percent of the average for whites. By 1980, it was 73 percent.

The pace at which blacks have been able to narrow the wage gap is far from uniform. The largest improvement occurred during the 1940s, a decade that witnessed a 24 percent expansion in the relative wages of black men.[6] These advances slowed considerably during the 1950s, when

Our sample consists of men 16-64 years old who are U.S. citizens and who did not live in group quarters. A number of additional sample restrictions were imposed. We excluded men (1) who worked less than 50 weeks in the previous year and are now attending school; (2) who worked 26 weeks or less in the previous year; (3) who were in the military; (4) those who were self-employed or working without pay if they were not employed in agriculture; (5) men whose weekly wages put them below the following values 1940 = \$1.50, 1950 = \$3.25, 1960 = \$6.25, 1970 = \$10.00, 1980 = \$19.80; (6) those whose computed weekly wages put them above the following values 1940 = \$125, 1950 = \$250, 1960 = \$625, 1970 = \$1250, 1980 = \$1875; (7) men in the open-ended upper income interval who did work at least 40 weeks last year. In addition, in the 1950 Census only sample line people (who were asked income questions) were included.

[5]Years of market experience is defined as current age--assumed age at leaving school. The mapping from years of schooling completed and school leaving age is as follows: ed 0-11 = age 17, ed 12 = age 18, ed 13-15 = age 20, ed 16 or more = age 23.

[6]Throughout this paper, the 1940 statistics include only wage income. In the 1940 Census, individuals were asked only the amount of their wage and salary incomes. In addition, we know whether they had fifty dollars or more of other income, but not the amount. Those men without any wage income are not included in our 1940 sample. As a result, the 1940 sample is not strictly comparable to the other Census years. However, the trends we describe in the text are not affected to any large degree by this limitation. For example, if we similarly restrict the 1950 sample to men with positive wages and base the wage ratio only on wage income, our aggregate wage ratio in 1950 would be 59.0. This is even a larger wage improvement for blacks than we measure in table 2.

Table 1

BLACK MALE WAGES AS A PERCENT OF WHITE MALES 1940-1980

Census Years

Years of Market Experience	1940	1950	1960	1970	1980
1-5	46.7	61.8	60.2	75.1	84.2
6-10	47.5	61.0	59.1	70.1	76.6
11-15	44.4	58.3	59.4	66.2	73.5
16-20	44.4	56.6	58.4	62.8	71.2
21-25	42.3	54.1	57.6	62.7	67.8
26-30	41.7	53.2	56.2	60.6	66.9
31-35	40.2	50.3	53.8	60.0	66.5
36-40	39.8	46.9	55.9	60.3	68.5
All	43.3	55.2	57.5	64.4	72.6

SOURCE: Public Use Tapes of the decennial Censuses
1940-1980

the narrowing of racial wage disparities was quite modest. The years after 1960 signalled a return to more rapid wage growth among black men. During both the 1960s and 1970s, the rise in black wages was more than 10 percent higher than for whites.

To this point, we have contrasted the average black and white worker. But such comparisons do not address the question of whether all segments of the black community shared in this economic resurgence. While average white incomes are well in excess of those achieved by the average black, income distributions of the black and white populations have always overlapped. Table 2 summarizes the extent of this overlap. The left hand side of the table measures the proportion of black men with income exceeding three critical values in the white income distribution--the bottom quartile, the median, and the top quartile. To illustrate, twenty nine percent of black men had incomes larger than the

average (median) white man in 1980. The right hand side of table 2 has a parallel set of numbers indicating the fraction of white men with incomes that exceed the same critical values within the black income distribution.

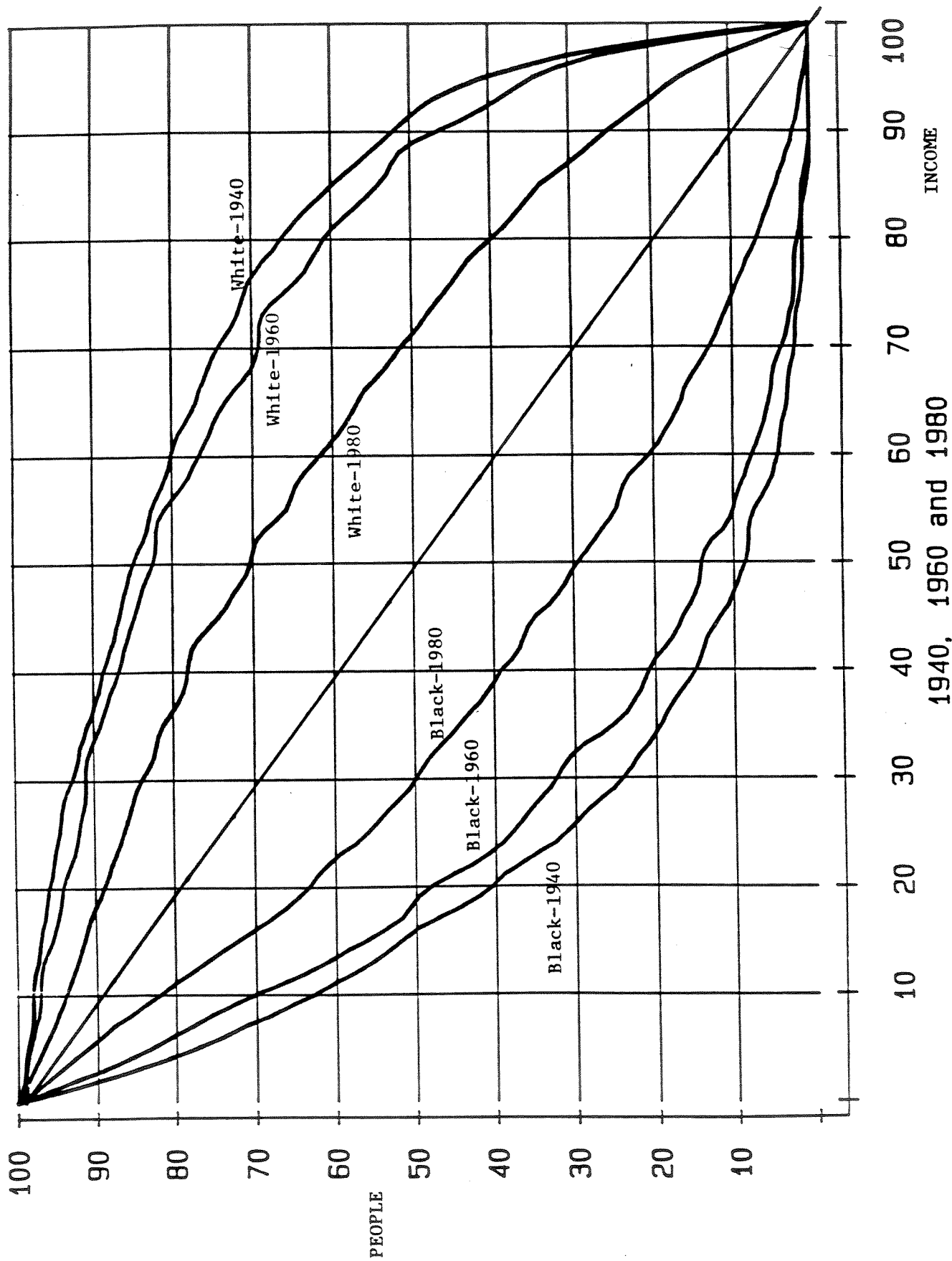
Table 2

Extent of Overlap Between Black and White Income Distributions

	% of black men whose income exceeds white income at the			% of white men whose income exceeds black income at the		
	bottom quarter	median	top quarter	bottom quarter	median	top quarter
1980	56	29	10	87	70	45
1970	45	22	5	90	78	57
1960	38	12	1	92	81	66
1950	36	12	2	92	82	66
1940	31	8	1	95	84	70

The complete set of overlap statistics are displayed graphically in Figure 1. Because they are a bit unusual, the graphs merit an explanation. They resemble and indeed are close analogs to Lorenz curves. Each line designates the fraction of one population (vertical axis) whose incomes exceed the indicated quantile (horizontal axis) of the population it is plotted against. For example, by extending a vertical line up from the 50th percentile, the first line shows that in 1940 only about eight percent of the black men had incomes that exceeded the white median. So the lines below the diagonal plot black people against white income. Conversely, the lines above the diagonal plot white people against black income quantiles. Extending the 50th

Figure 1--Income "Percentiles"



percentile line to it shows that in 1940 about 92 percent of the whites had earnings above the black median. We call line-pairs like those for 1940 dominance plots, cross-cumulatives or simply left-handed Lorenz's.

Notice that the 45° line implies coincident distributions. A cross-sectional that is everywhere below the 45° line shows that the distribution whose population is referenced by the vertical axis is inferior in the sense that the cumulative lies everywhere to the left of the corresponding distribution for the population whose quantiles are indexed on the horizontal axis.

There is unambiguous convergence toward equality only when the dominance plots shift inward toward the 45° line. Otherwise, if dominance plots for one period intersect those for another, indexes can disagree as to whether or not there has been movement toward equality.

The degree to which the two income distributions overlapped in 1940 was quite small. If income is the measuring rod, black and white men were indeed divided into two separate and unequal societies in 1940. In that year, only one in every twelve black men earned incomes larger than the average white. The view from the other side was equally stark. 70 percent of white men had incomes exceeding the top quarter of blacks.

While by no means identical, figure 1 indicates that racial income distributions have converged dramatically across these forty years. For example, on both sides of the diagonal, our relative Lorenz's shift sharply inward. By 1980, 29 percent of working black men had incomes above the median white, more than triple the proportion 40 years earlier and double that of 1960.

Figure 1 indicates that race has progressively become a less important determinant of earnings. Table 3 summarizes the extent to which blacks made economic progress at different segments of the complete income distribution. To produce this table, incomes of black men at each percentile of the black income distribution were calculated relative to the incomes of white men at the same percentile of the white income distribution. Virtually all parts of the black population, no matter what their original position in the income distribution, participated in the black economic resurgence over this forty year period. The principal exception relates to blacks within the bottom 10 percent. While even those black men gained relative to the lowest income whites, the size of the wage improvement is much smaller.[7]

Black-White Income Ratios Over the Long Term

Because of their preference for large micro data sets, labor economists concentrated their analysis of race to the post 1960 years. Until recently, economic historians specialized in the slavery period and on the turbulent transitions during post-bellum era. That left the eighty year span between 1880 and 1960 largely unexplored, even to the extent of knowing the basic facts of what was happening to the relative economic status of racial groups. These eighty years not only constitute three quarters of entire post slavery black history; they

[7]A word of caution is necessary. Our conclusions are confined to working men. As such, our statistics are a good barometer of economic changes in the workplace. A more pessimistic conclusion would emerge, especially about the black poor in the last decade, if we had examined the distribution of family income or the withdrawal of many low income blacks from the labor market. We limit our attention to male incomes because family incomes changes confound changing labor market realities with the increasing problems in maintaining the black family.

Table 3

PERCENTAGE INCREASE IN BLACK-WHITE ANNUAL INCOME
AT SELECTED PERCENTILES: 1940-1980

Percentile	Percent Increase	Percentile	Percent Increase
2	4.8	60	54.9
4	8.4	70	57.4
6	30.7	80	49.0
8	36.9	90	46.2
10	48.1	92	50.6
20	48.2	94	48.1
30	50.2	96	51.6
40	45.2	98	54.7
50	45.5		

also represents the key to discriminating among alternative explanations for long term changes in black economic status.

The relative income series presented in the previous section covering the forty years between 1940 and 1980 already goes a long way towards ending reliance on post 1960 trends. That series demonstrated that the idea that the improvement in black relative economy was purely a post 1960 trend is a false one. Between 1940 and 1960, black male incomes increased 28 percent faster than those of whites. The relative income ratio of 58 percent in 1960 is far in excess of the 44 percent in 1940. The notion of pre 1960 black stagnation is simply not valid.

While valuable, adding the twenty years between 1940 and 1960 does not come close to describing the full post slavery era. The primary data problem in tracing out a long term relative income series is that income questions were first asked in the 1940 Census. Nationally representative income data of reasonable quality simply does not exist

before 1940. Of necessity, we must then rely on more indirect methods to trace out the full series. In the remainder of this section, we summarize recent estimates in Smith (1984).[8]

Smith's estimates were derived from the Census published occupational distributions of the work force. These distributions were available by race, sex, and age for all decennial Censuses from 1890 onward. Occupations were first aggregated into a consistent set of 133 categories. Each occupation was then assigned a race, sex, and age-specific average income based on mean incomes derived from the 1970 Census. Smith's occupation based income series is presented in Table 4.

Put aside for now the cohort and age-specific detail available in Table 4. Focus instead on time-series swings in the average racial income ratio (over all age groups) in each census year described in the final two rows of Table 4. According to this occupation based index, the relative income status of black men rose from 1890 to 1920, remained relatively constant between 1920 and 1940, increased sharply during the 1940's, and ended with the steady and significant post-1960 rise in relative black incomes.[9] Table 4 indicates not only that black-white income ratios rose after 1960, but also that the 1960 income ratio is clearly larger than that which prevailed throughout the 1920-40 period, and that the 1920-40 ratios exceeded the ratio of 1890.

[8]This section relies heavily on material in Smith (1984).

[9]These decade-by-decade comparisons are necessarily made against the backdrop of major historical upheavals that can easily dwarf the type of slowly evolving forces that we argue were reshaping black America. For example, the Great Depression could easily have overwhelmed the factors at issue in this paper, for blacks surely bore more than their proportional share of its burdens. Thus, the 1940-30 comparison in Table 1 could easily suppress the slow economic evolution emphasized here.

Table

ESTIMATED BLACK-WHITE MALE INCOME RATIOS
BY BIRTH COHORTS

Birth Cohort	<u>Census Year</u>									
	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980
1956-60										.653
1951-55										.625
1946-50									.646	.624
1941-45									.608	.610
1936-40								.571	.583	.573
1931-35								.561	.582	.593
1926-30							.555	.555	.577	.583
1921-25							.542	.546	.571	.554
1916-20						.501	.532	.537	.562	.583
1911-15						.488	} .516	.536	.562	
1906-10					.509	.480		.526	.548	

1901-05					.500	.482	} .508	.524		
1896-1900				.515	.498	.483		.519		
1891-95				} .494	.494	.478	.503			
1886-90					.492	.469	.501			

1881-85		} .488		} .387	.481	.465				
1876-80			.458		.445					
1871-75	} .472	} .463			.452					
1866-70			.438							
1856-65	.454	.451								
1846-55	.435	.428								
1836-45	.417	.398								
1826-35	.397									
All Ages 10-75	.433	.442	.455	.476	.479	.474	.516	.542	.590	.611
Ages 20-64	.439	.449		.484	.486	.479	.522	.543	.585	.605

Table 4 pushes this relative income series back to 1890, leaving the twenty years after the Civil War still unaccounted for. But the sharp deterioration with age in relative black incomes in the 1890 and 1900 cross-section is a strong clue that an occupational base black-white relative income ratios rose between 1870 and 1890. For example, assume that 1890 age-specific black-white ratios of men in the labor market prevailed at earlier ages. Assume further that older workers in 1870 and 1880 had the identical relative wage ratio (.397) as those 55-64 in 1890. In that case, the relative income ratios for those 20-64 was .420 in 1880 and .409 in 1870.

Obviously, the relative income series in table 4 is far different than the common belief that the long term relative economic status was stagnant. This series suggests that from 1870 to 1920 there was a gradual but significant improvement in relative black male incomes (from .409 to .484). Between 1920 and 1940, however, the relative income series does indicate a slight deterioration in relative black incomes. As we have seen, both the occupation based and actual income series show sharp improvement in black economic status after 1940.

If Smith's occupation based estimates are reliable, trends in relative skills (human capital) must explain three basic trends in relative income by race: (1) the long term 120 year gradual increase in relative black economic status (2) the period of retrogression that occurred between 1920 and 1940, and (3) the post 1940 acceleration in the rate of improvement in black incomes. In the next section, we discuss the ability of human capital to meet these challenges.

Black Schools

It may be surprising that until recently we did not even know what the post-Civil War trends in racial education differences were. The twentieth century trends were well documented, but there was a tendency to simply extrapolate those trends back to the Civil War. That extrapolation turns out to be extremely misleading. To see this, table 5 lists post-Civil War levels of average schooling completed by five-year birth cohorts, derived from Smith (1984). To highlight differential secular trends, Table 6 lists racial differences in school completion for each birth cohort.

Table 5

MEAN SCHOOLING LEVELS BY BIRTH COHORTS

Birth Cohort	White Males	Black Males	White Females	Black Females
1951-54	12.64	11.82	12.70	12.24
1946-50	12.68	11.93	12.45	11.86
1941-45	12.32	11.25	12.14	11.33
1936-40	12.00	10.46	11.81	10.89
1931-35	11.09	9.78	11.52	10.37
1926-30	11.38	9.11	11.33	9.87
1921-25	11.14	8.44	11.12	9.03
1916-20	10.74	7.65	10.80	8.36
1911-15	10.15	6.75	10.37	7.70
1906-10	9.72	6.26	10.02	7.16
1901-05	9.19	5.72	9.45	6.46
1895-1900	8.74	5.42	8.96	6.03
1891-95	8.18	4.96	8.42	5.52
1886-90	7.74	4.72	8.11	5.13
1881-85	7.56	4.38	7.95	4.67
1876-80	7.44	4.11	7.88	4.27
1871-75	7.22	3.56	7.58	3.59
1865-70	7.07	3.06	7.45	2.89
Pre-1865	6.76	2.37	7.13	2.00

Source: Smith (1984)

The 120-year post-Civil War period turns out not to be a simple story of steady and constant narrowing of human capital differences between the races, as backward extrapolation of twentieth-century data would have led one to expect. For those born in this century, the underlying trend was indeed one of convergence. Similarly, racial differences in mean schooling levels diminished sharply for both sexes during the first quarter-century after the Civil War. Matters took a different course, however, for the generations born between 1886 and 1905. During this period, racial disparities in school completion

Table 6

RACIAL DIFFERENCNE IN MEAN SCHOOLING LEVELS
(ADDITIONAL YEARS OF SCHOOLING OF WHITES)

Birth Cohort	Men	Women
1951-54	.83	.46
1946-50	.75	.60
1941-45	1.07	.81
1936-40	1.54	.92
1931-35	1.91	1.15
1926-30	2.27	1.47
1921-25	2.71	2.09
1916-20	3.09	2.44
1911-15	3.41	2.69
1906-10	3.46	2.86

1901-05	3.46	3.00
1896-1900	3.32	2.93
1891-95	3.23	2.90
1886-90	3.02	2.98

1881-85	3.18	3.28
1876-80	3.33	3.62
1871-75	3.67	4.00
1865-70	4.01	4.55
pre-1865	4.39	5.13

Source: Smith (1984)

expanded for males and stabilized for women. This 20-year reversal has had important implications for the economic history of blacks right to the present.

Table 6 suggests that a convenient way of understanding the history of black schools is to separate that history into three distinct subperiods. The initial post-Civil War phase of convergence (1865-85) during the Reconstruction era, the period of divergence (1886-1905) during the Restoration period, and finally, the more familiar narrowing of schooling differences during the twentieth century.

In each of these subperiods, a unique set of political and economic events shaped the ability of blacks to expand the amount of schooling they could achieve and to improve the quality of that schooling. Because of these events, the amount of progress blacks were able to make relative to their white contemporaries in their schooling accomplishments differ in each of these three periods, and these differences in schooling go a long way towards explaining the relative economic progress blacks were able to make.

Since schooling of black slaves was prohibited by law, it is not surprising that evaluated from that base, the period after the Civil War was one of improvement. The effective origins of black schooling on a large scale took place in the first two decades of the Civil War. Financed by northern philanthropic organizations and the Freedman's Bureau, schools for black children were constructed throughout the South. Between 1870 and 1880, the number of black children in school rose by 500 percent and the proportion of the young in school increased from 9 percent to a third. While from the start, black and white

children attended separate schools in the South, it may be that, although separate, these schools were more equal in the ten years after the Civil War than they would be for some time.[10]

Compared to pre-Civil War levels, table 6 shows that black schooling levels rose by more than two years. Racial progress in the diversion of skills during this period is indicated by a narrowing of black-white differences in schooling by almost a year and a half for men and more than two years for women.

The next 20 years, 1886-1906, represent a temporary stall during which the human capital of blacks, as measured by years in school and quality of schooling, fell behind that of whites. This subperiod roughly coincides with the erosion of black political power in the South as the forces of disfranchisement worked their way through the system. But events in the North were of equal import in causing their reversal.

In the North, the principal development was the spread of public high school education on a wide scale. The speed at which white high school attendance and completion became common during this subperiod is illustrated in Table 7, which lists school continuation propensities, conditioned on elementary school graduation.

Across the span of years that covers those born in 1886 to those born in 1916, the fraction of white males who continued their education beyond elementary school rose dramatically. By the birth cohort of 1916, more than 8 in 10 white male elementary graduates continued in school, and 60 percent would earn their high school diplomas--almost double the rates that existed 30 years earlier. In contrast, these high school completion rates were stable (at around 30 percent) among blacks

[10]See Welch (1974), Lieberman (1980).

Table 7

Birth Cohort	White Men		Black Men	
	Go On	Complete High School	Go On	Complete High School
A. School Continuation Probabilities For Elementary School Graduates				
1916-20	83.1	59.7	75.6	41.2
1906-10	70.4	44.7	65.7	32.4
1896-1900	58.6	36.2	57.0	29.2
1886-90	49.8	31.3	54.3	30.8
1876-80	44.0	29.0	51.4	29.1
B. Increase in Average Schooling by Year of Birth ^a				
	<u>North</u>	<u>South</u>	<u>North</u>	<u>South</u>
1888-1908	2.30	1.75	2.09	2.01
1908-28	1.64	1.58	1.78	1.98

Source: Smith (1984)

between 1886 and 1910.[11] Table 7 panel B, attests to the lead taken by the North in the development of the public high school. Between birth years 1888 and 1980, the largest increases in mean education were achieved by northern-born whites. In contrast, for those born between 1908 and 1928, the largest schooling gains would be registered among southern born blacks.

[11]Note that black progression rates were initially higher than those of whites. Those black who reached the eight grade were clearly a very select group. Later in this century, progression rates for high school graduates to college were also higher for black men, a reflection of a similar phenomenon.

Political developments in the South also played a role in causing this period of reversal. Starting with Bond (1934), a number of scholars have demonstrated the link between reduced schooling opportunities for blacks and the erosion of black political power during the Restoration era (see also Welch (1974), Lieberman (1980)). This impact on black schooling took a variety of forms--a shift of education funds from black schools to those attended by whites, a sharp divergence in the quality of black and white teachers. With the return to office of conservative Democrats in the elections of 1876-77 and the end of Reconstruction, whatever equivalence had previously existed between the quality of black and white southern schools began eroding, a process that accelerated with disfranchisement. Therefore, events both in the North and South contributed to the retrogression of black skills highlighted in Table 6.

Trends in the twentieth century are widely known. Table 6 shows that as each new generation of blacks and whites born in this century arrived in the labor force, the difference in schooling achieved by race continuously narrowed. The message conveyed by nominal years of schooling is reinforced by data on schooling quality, which tell a clear twentieth-century story of improving relative quality of black schools.[12]

[12]To cite but two examples, in 1920, black youths attended school only two-thirds as many days per year as white students, but by 1954, there were no real black-white differences in days attended. Similarly, in 1920, teachers of black students had 1.75 times as many pupils as the average teacher in the country. By 1954, this difference had been reduced to 1.18. See Welch (1974) for a more complete summary.

SCHOOL QUALITY

Secular trends in years of schooling completed are, of course, only part of the story. We need to know what that schooling was able to buy in terms of enhanced market earnings. This brings us squarely to the issue of school quality. Black economic mobility was, and unfortunately continues to be, severely constrained by the inferior education open to them. Judged even by the standards of its own time, the quality of Southern black rural schools in the late 19th and early 20th century was often abysmal. Teachers were poorly trained, the school a dilapidated one room building, transportation facilities for the large distances students had to travel almost non-existent, and books so scarce that they had to be shared among large numbers of children.

The consequences of this inferior education show up clearly, even with such rudimentary indicators as attendance rates, the length of the school term, and illiteracy. Even as late as 1920, the average black school term was only four months long--three quarters of that of whites; only two-thirds of black school aged children attended school on a typical day (the corresponding white figure was 75 percent); and less able black teachers had classrooms of 56 students compared to 32 pupils per teacher in white schools. In 1920, more than a fifth of the black population was illiterate, five times the rate of whites. Even among black school aged children, one in seven were illiterate.[13]

The only bright side to this dismal portrait is that the evidence is also quite clear that the relative quality of black schooling has improved significantly throughout this century. This evidence is

[13]This statistic is for black males aged 15-19. See Smith (1984).

detailed elsewhere (see especially Welch, 1974), so we do not repeat it here. But the message conveyed by nominal years of schooling is reinforced by data on schooling quality which tell a clear twentieth century story of improving relative quality of black schools.

There is no serious dispute about these broad twentieth century trends in relative quality of black education. The debate centers on the ability of blacks to translate their improving education into a significantly higher economic status. Put simply, how important has improving school quality been in shaping the economic history of blacks?

This is another instance for which reliance on post-1960 data has severely limited our ability to discriminate among alternative hypothesis. In the remainder of this section, we report on our recent estimates of schooling coefficients.[14] Using the 1940-1980 U.S. Census files, we obtained estimates for each race of the proportional increase in weekly wages associated with an additional year of schooling.[15] Given our regression specification, separate estimates exist for each of eight experience intervals from all five Census tapes.

Table 8 highlights some very dramatic secular changes by race. In this table, we list black-white differences in estimated education coefficients for men. Of the forty numbers in this table, there is but one instance where trends in the returns to schooling favored whites (the 1-5 experience interval between 1950 and 1960). In all other cases, a persistent narrowing of racial differences in schooling coefficients took place. The end result of this forty year persistence is that the magnitude of change became quite large. For example, among

[14]The details are contained in Smith-Welch, (1986).

[15]The other explanatory variables included in these regressions were residence in the South, SMSAs, and Central Cities of these SMSAs.

Table 8

RACIAL DIFFERENCES IN EDUCATION COEFFICIENTS
ARRANGED BY BIRTH COHORTS

Median Year of Work Cohorts	Years of Work Experience							
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40
1902								4.50
1907							4.86	
1912						4.88		3.60
1917					5.03		3.49	
1922				4.82		3.05		3.35
1927			4.07		4.30		3.43	
1932		3.77		2.88		2.64		2.66
1937	5.13		2.21		2.58		3.11	
1942		2.25		1.84		2.50		2.08
1947	2.06		1.99		1.68		1.73	
1952		1.63		1.42		1.34		
1957	3.12		0.88		1.27			
1962		0.75		-0.47				
1967	2.02		-0.47					
1972		-1.18						
1977	-1.09							

SOURCE: See Smith-Welch (1986).

those in their first five years of work in 1940, white men's income increased 5 percent more than did black men's for each additional year of school attended. In that year, for example, white men's income increased twenty percent more than black men's as a result of attending and completing college. This white advantage declined as each new cohort of workers entered the labor market. In fact, among men who first entered the labor market during the 1970s, income benefits blacks received from schooling now exceed those of white men.

Alternative explanations exist for why this racial convergence in education coefficients occurred. The Civil Rights movement and the associated legislation during the 1960s is one obvious candidate. A

number of studies, including our own, [16] demonstrated that black male college graduates were one of the primary beneficiaries of affirmative action pressures. Consistent with this view, the racial convergence in education coefficients was larger in the 1970s than in the 1960s.

However, this cannot be the whole story nor, for that matter, a very large part of it. Table 8 also indicates that the general pattern of rising relative returns to black schooling emerged long before the Civil Rights activism of the 1960s. Indeed, these rising relative black returns characterize the entire twentieth century represented in table 15. Because of this, we must search for causes that lie far deeper in black American history than contemporary political movements.

A subtle pattern contained within table 8 offers an important clue to what these underlying causes might be. The cross-sectional pattern in every Census suggests that black-white differences in education coefficients expand as we move from less to more experienced workers. This expansion is consistent with a life-cycle perspective where black skilled labor is denied access to jobs with significant career wage growth. Alternatively, it may reflect cohort styled effects where the relative returns to schooling are permanently higher for younger generations of black workers.

Table 8 strongly supports the second interpretation. Instead of black schooling coefficients declining relative to whites across actual life cycles (as implied by the cross-section) precisely the opposite occurred. Thus, the root causes of the improvements in relative black returns apparently lies within long-term improvements in black schooling across birth cohorts that enabled blacks to translate an incremental year schooling into more income.

[16] For one example, see Smith-Welch (1984); see also Leonard (1984).

With all this as background, are the long term racial relative income and relative skill series inconsistent? We believe not. First, start with skills indexed only by quantity of schooling (tables 5 and 6). Both of the two historical periods of clear racial convergence in education--the first 25 years after slavery and the twentieth century--show steady across-cohort improvement in the relative income of black men. In contrast, consider the 1920-1940, the subperiod in which no strong across-cohort trends exist in relative income of blacks. During those years, men born within the era of education retrogressions were passing through the labor market (see Table 4). Table 4 also demonstrates that the rate of improvement for blacks accelerated as we move towards younger cohorts. This acceleration makes sense in light of the speedup in racial convergence in education levels during this century.

If we then add from table 8 our results on school quality, we complete the story. Table 8 shows that since 1940 a significant increase in the relative economic gains from schooling took place - most likely due to improving school quality. In our view, the post 1940 acceleration in relative black male incomes mirrors a corresponding acceleration in relative black human capital. This acceleration in human capital results from both dimensions of skill--a improvement in the relative quantity and quality of black schooling. In conclusion, far from being inconsistent, we believe that evidence suggests that long term relative income series is a close product of the long term racial trends in human capital.

CONCLUSIONS

In this paper, we evaluated two objections to a human capital emphasis to racial differences in economic outcomes. The first posits that historical relative income and relative skills series are inconsistent. This objection turns out to be based on assumptions about the value of long term skill and income series that turn out to be false. Far from being inconsistent, recent estimates of these two series suggest that relative long term trends in relative income by race are a product of racial secular trends in skill.

The other objection discount the empirical importance of human capital's main empirical construct--education. Our work suggests that racial differences in education, both in terms of quality and quantity, can explain the major long term cycles in relative incomes by race.

BIBLIOGRAPHY

- Ashenfelter, Orley, "Comment on Smith-Welch, 'Black/White Male Earnings and Employment: 1960-1970,'" in Thomas Juster, ed., *The Distribution of Economic Well-Being*, National Bureau of Economic Research, Studies in Income and Wealth, No. 41, Cambridge: Ballinger 1977.
- Bond, Horace Mann, *The Education of the Negro in the American Social Order*, New York: Prentice Hall, 1934.
- Butler, Richard, and James Heckman, "The Impact of Government on the Labor Market Status of Black Americans: A Critical Review," in *Equal Rights and Industrial Relations*, pp. 235-281, Industrial Relations Research Association, The University of Wisconsin, 1977.
- Fogel, Robert, and Stanley Engerman, *Time on the Cross*, Boston: Little, Brown and Co., 1974.
- Freeman, Richard B., "Changes in the Labor Market for Black Americans 1948-1972," *Brookings Papers on Economic Activity*, 1: 67-120, 1973.
- Hanoch, Giora, "Personal Earnings and the Investments in Schooling," unpublished doctoral dissertation, University of Chicago, 1965.
- Leonard, Jonathan, "The Impact of Affirmative Action on Employment," *Journal of Labor Economics*, Vol. 2, No. 4, October 1984.
- Liebersohn, Stanley, *A Piece of the Pie*, Berkeley: University of California Press, 1980.
- Myrdal, Gunnar, *An American Dilemma*, New York: Harper and Brothers, 1944.
- Smith, James P., "Race and Human Capital," *American Economic Review*, Vol. 74, No. 4, September 1984.
- Smith, James P., and Finis Welch, "Black-White Male Wage Ratios: 1960-1970," *American Economic Review*, June 1977, 67, 323-38.
- Smith, James P., and Finis Welch, "Affirmative Action and Labor Markets," *Journal of Labor Economics*, Vol. 2, No. 2, April 1984.
- Smith, James P., and Finis Welch, *Closing the Gap: Forty Years of Economic Progress for Blacks*, R-3330-Dol, Rand Corporation, February, 1986.
- Thurow, Lester, *Poverty and Discrimination*, Washington: The Brookings Institution, 1969.

Welch, Finis, "Education and Racial Discrimination," in Orley Ashenfelter and Albert Rees, eds., *Discrimination in Labor Markets*, Princeton: Princeton University Press, 1974.

Zeman, Morton, "A Comparative Analysis of White-Non White Income Differentials," unpublished dissertation, University of Chicago, September 1955.