SLAVERY AND THE INTERGENERATIONAL TRANSMISSION OF HUMAN CAPITAL

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Abstract—How much do sins visited upon one generation harm that generation's future sons, daughters, grandsons, and granddaughters? I study this question by comparing outcomes for former slaves and their children and grandchildren to outcomes for free blacks (pre-1865) and their children and grandchildren. The outcome measures include literacy, whether a child attends school, months spent in school, years of schooling, and two measures of adult occupation. Using a variety of different comparisons (for example, within versus across regions) I find that it took roughly two generations for the descendants of slaves to catch up to the descendants of free black men and women, for those outcomes that I observe. In other words, by 1920 the remaining legacy of slavery is such that all blacks are affected equally, not just the actual descendants of slaves. There is some evidence that this convergence was facilitated by intermarriage among slave and free families. The finding of convergence is consistent with modern estimates and interpretations of father-son correlations in income and socioeconomic status. The data used are from the 1880, 1900, 1920, and 1940 1% IPUMS samples, and a 100% sample of the 1880 Census.

"In America, anybody can become somebody."
—Jesse Owens, Four-time Olympic Gold Medalist, Medal of Freedom holder, grandson of slaves

I. Introduction

IN 1967 Damon Keith was appointed to the U.S. District Court in the Eastern District of Michigan. In 1977 President Carter elevated Judge Keith to the U.S. Court of Appeals, 6th Circuit, where he still sits today. Judge Keith is remarkable in part for his decisions promoting racial integration in Detroit schools and in part for the fact that he is the grandson of slaves.[1]

Is a family's journey from slavery to professional and economic success in two generations a rare event? More broadly, after institutional or political barriers are lifted, how many generations are needed for outcomes for previously separated groups of people to converge? How long before the less and more advantaged groups converge on measures of income, health, and education?

The rich existing literature on social mobility and income mobility would suggest that such convergence may take place rather rapidly. Many authors find that within OECD countries, the elasticity of son's earnings with respect to father's earnings is within the range of 0.3 to 0.5. This range spans estimates by Altonji and Dunn (1991), Solon (1992), Zimmerman (1992), Mulligan (1997), and Bjorkland and Jantti (1997). Solon (1999) is a detailed summary of this literature. If income transmission follows a simple first-order autoregressive (ARI) process, then the elasticity of a grandson's income with respect to his grandfather's income could be as little as $(0.3)^2$, or 0.09.

Convergence of wealth between two previously separated groups may be similarly rapid. Charles and Hurst (2001) find parent-child wealth correlations in the range of 0.23–0.5, which suggests that child-grandparent wealth correlations could be between 0.04 and 0.25.

This simple math implies a great deal of income and wealth mobility within two generations. Grandchildren are quite likely to fall into a different income, wealth, or education quintile than their grandparents. And hence, groups of people that start with very different levels of physical and human capital *could* end up with similar distributions of income, education, and physical and human capital two generations down the road. Whether or not such convergence actually takes place will depend in part on the degree to which institutional and social barriers that separate the two groups are lifted.

This paper tests for convergence (or at least high mobility) within two generations by comparing outcomes for former U.S. slaves, their children, and their grandchildren to outcomes for free blacks born before 1865 and their children and grandchildren. The outcomes examined include literacy, whether or not children aged 7–18 are in school, months spent in school, years of schooling, and two measures of occupation. I examine median income by occupation, and I use a dummy for manual versus nonmanual occupation.

The paper uses Census data from 1880, 1900, 1920, and 1940. I group people into three generations and examine outcomes for householders born before 1865 and their children and grandchildren.[3] I also present summary statistics by birth cohort. I use year and place of birth to classify blacks as being born into slavery or not. The assumptions behind this classification are defended in the data section that follows.

I find that in 1880 there is a huge literacy gap between former slaves and free blacks, and that this gap narrows

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[1] There are of course many successful African-Americans alive today who can trace their roots back to slavery. The most famous may be L. Douglas Wilder, the former governor of Virginia.

[2] By ARI, I mean autoregressive with the current generation's outcomes dependent on only one lagged value of the data. In other words, if a child's income depends upon the income of her parent's but not income from previous generations, then we can simply square the parent-child coefficient to get the parent-grandchild relationship. Recent work by Mazumder (forthcoming) finds parent-child income correlations that are even higher than those of Zimmerman or Solon. However, the basic implication of very high mobility within two generations remains.

[3] Throughout the paper, I use the word *householder* to refer to the head of household and his or her spouse if any. I use the term *free blacks* to refer to blacks who were free prior to 1865.

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considerably over the next two generations.[4] Similarly, the children of former slaves are less likely to be enrolled in school than the children of blacks born free, but this gap disappears when we examine the grandchildren of blacks born into slavery and the grandchildren of blacks born free. I use the 1940 data to examine years of schooling for blacks born before and just after 1865. Blacks born into slavery have 3.2 fewer years of schooling than blacks born free before 1865. This gap narrows to 2.6 years when we compare the children of slaves with the children of free blacks. Former slaves work in occupations with lower median income than blacks born free. However, once I control for current region, this gap is small and relatively constant between 1880 and 1920.

A finding of convergence between slaves and free blacks is by no means a foregone conclusion. If anything, the historical literature suggests that these two groups were long separated economically, socially, and politically. The black leaders of Philadelphia at the beginning of the twentieth century were referred to as the "tan aristocracy" and were allegedly all descendants of free blacks. The famous debate between W. E. B. Du Bois and Booker T. Washington was between a Harvard-educated member of the Northern elite and a former slave educated in the new black schools in the South. Du Bois (1899, 1903) documents the resentment that native blacks in Philadelphia felt toward the migrating freedmen from the South who not only represented competition in the labor market but were also the cause of deteriorating race relations. Sowell (1981) points out that many free blacks in New Orleans (the Creoles) had owned slaves, had fought for the Confederates, and after the war had opposed the founding of separate black universities (Southern University in particular). I argue that Jim Crow laws and racist institutions produced convergence precisely because whites began treating free blacks and former slaves with the same contempt.

My analysis is an attempt to separate out three of the major sources of disadvantage faced by blacks: (1) the direct effects of past slavery, (2) the effects of being black in a society with racist institutions, and (3) the effects of being in the South. Unsurprisingly, controlling for current region makes a huge difference in the estimated direct effects of slavery, because former slaves lived in the South, where schooling was markedly worse for everyone and particularly worse for blacks.[5] However the general trend toward convergence is evident even without regional controls. I propose below two imperfect ways of controlling for regional effects which would appear to place bounds on the speed of convergence.

One potential problem with the literacy measure is that it represents a minimal level of human capital, corresponding to 2–3 years of schooling. By 1920, the grandchildren of free blacks are approaching a 100% literacy rate. Convergence is inherently easier to find if we use a lower standard to define who possesses low human capital. I have two responses to this. First, even in 1920, the relationship between literacy and socioeconomic status is a strong one. For example, 8% of black heads of household had nonmanual jobs. Of those 8%, 93% were literate. Among the manual workers, 67% were literate.

Second, in addition to literacy I am also able to look at in school status (1880, 1920 Censuses), months spent in school (1900 Census), and years of schooling completed (1940 Census). All of these measures point in the same general direction, which is toward convergence between the progeny of slaves and progeny of free blacks. But my conclusions must be tempered by the fact that I do not have good measures of schooling, income, or wealth for all Census years. I find partial (and in some cases complete) convergence among those outcomes that the Census measures; it is possible that the unobserved outcomes (like wealth) show divergence.

A. *Relation to the Literature on the Black-White Wage Gap*

The literature on the twentieth-century black-white gap (for example, Smith & Welch, 1979; Smith, 1984; Welch, 1990; Brown, 1984; Margo 1990) has found strong convergence of wages between the 1940s and 1970s, which is consistent with my simple interpretation of parent-child income transmission coefficients. The more recent additions to this literature including Chandra (2001), Darity, Dietrich, and Guilkey (2001), Neal and Johnson (1996), and Heckman, Lyons, and Todd (2000) do not find a narrowing of the black-white wage gap during the 1980–1990 period.[6]

It is likely that institutional and cultural barriers between the two groups of blacks were lower than barriers between blacks and whites. This fact could explain the rapid intra-black convergence that I find and the slower black-white convergence that others find. The persistence of black-white differences could be explained if a new set of discriminatory institutions rose up after emancipation (as in Wright, 1986) and these institutions were not dismantled until the 1960s and 1970s [as argued by Donohue and Heckman (1991) and Almond, Chay, and Greenstone (2003)]. It is of course more difficult to understand why the black-white convergence process would get under way and then stop.

Collins and Margo (2003) find significant narrowing of the black-white gap in schooling during 1870–1960. In 1870 only 10% of black Americans 5–19 were in school, versus 53% of whites. By 1940 these numbers had changed

[4] Literacy turns out to be one useful measure of human capital during this time period. Both Higgs (1982) and Margo (1984) find that black literacy rates at the county level are strongly correlated with black wealth per capita.

[5] If we did not find a big difference when controlling for region, then we would surely conclude that the outcome measures are not useful.

[6] Margo (2002, 1995) and Wright (1986) show that, controlling for occupation, black-white wage gaps for unskilled labor in the postbellum South were small. But other evidence suggests large gaps for skilled labor (Margo, 1990).

to 67% of black Americans and 75% of whites (Collins & Margo 2003, p. 42). The black-white gap in average years of education was equal to 3 years for people born 1880–1984 and 0.78 years for people born in 1950–1954. My thesis of within-black convergence in educational outcomes is plausible given the black-white convergence that occurred for those same outcomes.[7]

The literature on the black-white *wealth* gap finds that it was enormous following the Civil War and that it narrowed rapidly during 1865–1910 (see Higgs, 1982; Margo, 1984). Pope (2000) estimates that the ratio of white wealth to black wealth was as large as 50:1 in 1870. In 1880, whites in Georgia held 36 times as much property as blacks, and this ratio fell to 16 by 1910 (from Higgs, 1982). Collins and Margo (2001) find that the black-white gap in homeownership narrowed considerably during the twentieth century, though not consistently. And yet, as Blau and Graham (1990) show, a large black-white wealth gap remained in 1980s, even conditioning on age and income. It is unclear whether the black-white wealth gap narrowed at a faster or slower rate than the black-white income gap during 1870–2000, because blacks started the period with such extremely low levels of wealth.

Atack and Passell (1994) conclude that freed slaves in the South experienced at least a 34% gain in income from emancipation, if one considers the value of increased leisure time. This is Atack's compilation of estimates provided by Ransom and Sutch (1977) and Fogel and Engerman (1974). If this estimate is correct, then such a large jump in income would imply some convergence in income levels between slaves and free blacks as a result of emancipation. I address the period after emancipation and ask whether such convergence continued.

B. *Effects of Slavery on Black Family Structure*

In Sacerdote (2002) I show that the overwhelming majority of children and grandchildren of slaves lived in two-parent households. This confirms the results of Fogel and Engerman (1974) and Gutman (1976), who argued against the then prevailing wisdom that slavery and the plantation system destroyed the black family.[8] Furthermore, Moehling (2003) concludes that racial differences in family structure do not explain much of the racial differences in schooling in 1900–1910. Nonetheless, I do find some evidence that children and grandchildren of slaves were modestly more likely to live in female-headed households than children and grandchildren of free blacks. This is consistent with W. E. B. Du Bois's (1899) conviction that slavery induced some tendency toward "loose cohabitation and family dissolution" among descendants of slaves.

C. *The Role of Institutions*

Within each region, institutions probably contributed to the convergence in outcomes between former slaves and former free blacks. What is required is that blacks were treated equally badly without respect to whether their parents were slaves or free. Thus, Jim Crow laws, which were applied equally to both groups, may have contributed to convergence. There were some pre–Civil War schools for free blacks in the South, most notably in Baltimore and New Orleans.[9] But after the war, my hypothesis is that the children of free and slave blacks were educated in the same set of schools in the South.

In the North, the answer is less clear. Du Bois notes the gap in economic well-being and the strong resentment between free black families and freedmen who migrated north. Thus it is quite possible that the children of free blacks attended a different set of schools and had better educational opportunities than the children of slaves. However, Frazier (1949) documents that in New York City children of black migrants from the South were integrated into the schools in Harlem alongside the children of free black families during the early 1900s.

The more interesting question is whether enough institutional progress was made in the South to eliminate a meaningful portion of the schooling gap between Northern and Southern blacks. The answer is yes. There was tremendous demand for schooling on the part of freed blacks, and this demand was at least partially met with the construction of thousands of simple schoolhouses, some black high schools, and a system of black colleges. Both Booker T. Washington (1901) and John Alvord, the Inspector of Schools for the Freedman's Bureau, indicate a very strong demand for education on the part of freed slaves and their children.[10] Washington describes his boyhood memories of the opening of the first black school in his corner of West Virginia. All freedmen regardless of age made efforts to attend the school in order to learn to read. Black parents organized schools and created a system of fees to compensate the teachers, rather than wait for the state to build and fund the schools.

Donohue, Heckman, and Todd (2002) and Anderson (1988) show the important roles of the Rosenwald school-building program and NAACP litigation in promoting school availability and school quality in the South. A very large number of black schools were built between 1867 and

[7] Collins and Margo are able to examine a longer time period than I because race is captured in the Census, whereas I have to infer own and parent's slavery status using the algorithm described below. Collins and Margo are able to make full use of the Censuses of 1940, 1950, and 1960, which ask years of schooling.

[8] Fogel and Engerman's conclusions about the stability of slave unions are partly challenged by the later work of David et al. (1976).

[9] Sowell (1981).

[10] At the same time, Washington's personal childhood stories indicate that his freed family's extreme poverty was an obstacle to his learning to read and his ability to attend the Hampton Normal and Agricultural Institute in Virginia. Unfortunately for me, in their writings Washington and Du Bois spend little time directly addressing differences between free families and former slave families.

1930. Anderson's figures show 5,000 black schools built in the South during 1914–1932, with the Rosenwald Fund bearing 15% of the cost. McPherson (1964)[11] documents that Northern whites in the American Missionary Association sent roughly 2,000 teachers and built 1,000 schools between 1865 and 1874. The Freedman's Bureau spent $3.5 million to construct black schools during the first five years after the war.[12] However, Gutman (1976) and Anderson both make it clear that we should not give most or even much of the credit for black schools to the Freedman's Bureau. Schools were set up spontaneously by blacks long before the Freedman's Bureau arrived in an area, and were supported privately by blacks in cases where the Bureau ceased financial support.[13]

Public black high schools in the South were much harder to find. Margo (1990, p. 20) documents that there were only 64 black public high schools in the entire South in 1910. The private market stepped in to satisfy some of the demand. The U.S. Commissioner of Education's report in 1900 shows 4,000 black students in public high schools but 12,000 in private high schools.[14] *Normal schools* were established to train black teachers. One of the most famous examples is The Tuskegee Normal and Industrial Institute founded by Booker T. Washington. By 1900 there were 16 land grant and 12 city and state normal schools, 50 public and 200 private high schools, and 60 private colleges in the South.[15]

I make no claim that Southern black schools were equal in quality to Southern white schools or to black schools in the North. Indeed we know from Margo (1990, ch. 2) that in the South, black schools had class sizes that were 27% to 100% larger and per-pupil expenditure that was 50% to 66% lower than that of white schools. Most black children in the South attended ungraded schools, and if the family migrated north, the Northern black schools had to place the child in a younger grade relative to age (Frazier, 1949). I am not arguing for complete convergence across regions, but rather for some convergence across regions, and nearly complete convergence within each region.

The remainder of the paper is structured as follows: Section II outlines the empirical approach and three separate estimators of the differences in outcomes between former slaves and their progeny and between free blacks and their progeny. Section III discusses the data and how I classify people as being born slaves versus born free, and section IV presents the empirical results.

II. Empirical Approach

All of the estimates of the difference in outcomes between former slaves and free blacks (and their children and grandchildren) are presented either as a difference in means or as a coefficient from an ordinary least squares regression. I argue that one of my estimates represents an upper bound on the direct effect of slavery and that another represents a lower bound.

In the simplest analysis, one could estimate the difference in outcomes between former slaves and free blacks (and their progeny) as the raw difference between the two groups, without controlling for a given family's current location. For example, I estimate the difference in literacy between the groups as β_1 in the following regression:

$$literacy = \alpha + \beta_1 \times former\ slave + \gamma X. \quad (1)$$

Here X is a vector of controls including a dummy for male, the number of children in the household, and birth-year dummies. When I measure the effect of slavery on the first generation born after emancipation, the right-hand variable of interest becomes whether or not a person's mother was born into slavery. And for the second generation after emancipation, the dummy is for whether or not the person's mother's mother (maternal grandmother) was born a slave.[16]

In this simple analysis, β_1 is obviously picking up more than just the negative effects of slavery itself. Most former slaves and their families continued to live in the South and hence were affected by schooling conditions, labor market conditions, and social interactions that were different than those experienced by blacks outside the South.[17] For this reason I also attempt to identify the effect of former slavery status on own and children's outcomes by using families that move—both families of former slaves that move out of the South and families of free blacks that move into the South. I do this by including dummies for current region in equation (1).

The dummy for South is actually a dummy for former slave state and hence includes Missouri as well as Delaware, West Virginia, Virginia, Maryland, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Louisiana, Arkansas, and Texas.[18] I am not attempting to use for identification any distinctions between the old and new South or between border and nonborder states or between Confederate and other states.

The above approach estimates the effect of slavery as the difference in outcomes between black families that move

[11] Cited in Sowell (1981).
[12] Sowell (1981, p. 203) and Du Bois (1935).
[13] It is true that public spending on black schools and white schools was more nearly equal during and directly following Reconstruction (1865–1877) than in the early 1900s. For example, in Alabama the ratio of black to white per-pupil expenditures was nearly 1 in 1890 but fell to 0.31 in 1910 (Margo, 1990, p. 21).
[14] Anderson (1988).
[15] Anderson (1988).
[16] Most of the dependent variables are binary, and I report coefficients from linear probability models. The marginal effects from probits are not reported here, but are extremely similar. The standard errors are corrected for heteroskedasticity and within-family correlation of the error terms.
[17] Margo (1986, 1990) and Donohue, Heckman, and Todd (2002) are among the many papers that document the poor state of black public schools during this time period.
[18] West Virginia was not a separate state until 1863, but I list it here for clarity.

out of the South and black families that were already outside the South. This estimate assumes that families that leave the South are similar to families that do not move. If the families that move have unobservably higher socioeconomic status (SES) or human capital (as argued by Margo, 1986, 1990), then my estimate will understate the effects of slavery and will implicitly overstate the speed of convergence.[19] My third estimator (below) will grossly understate the speed of convergence, and my best point estimate for the effect of slavery will lie somewhere between these two bounds.

My third estimator of the difference in outcomes for former slaves (and their families) and free blacks (and their families) uses outcomes for whites to estimate the effects of being born in the South separately from the effects of slavery. For the first generation following emancipation, I run the following regression for black and white families:

$$\begin{aligned} literacy = {} & \alpha + \beta_0 \times black \\ & + \beta_1 \times black\ and\ mother\ born\ in\ slave\ state \\ & + \beta_2 \times mother\ born\ in\ slave\ state \\ & + (\text{dummies for current region}) + \gamma X. \end{aligned} \tag{2}$$

I then interpret β_1 as the effect on a child's literacy from having a mother born into slavery. β_1 is the interaction effect of being black and having a mother born in the South, over and above the main effects of being black, having a mother born in the South, and current region.

The principal objection to this approach is that I attribute all of the interaction effects of being born black and in the South to slavery, when in fact it is certain that post-slavery institutions in the South were differentially worse for blacks. For this reason, β_1 must surely overstate the direct effects of slavery on literacy (or years of schooling or the like).

III. Data Description

The data come from the 1880, 1900, 1920, and 1940 U.S. Censuses. (I have also run—but, to save space, do not report—results from the 1870 Census.) Most of the results use the 1% Integrated Public Use Micro Samples (IPUMS) created by the Minnesota Population Center at the University of Minnesota. These data sets provide basic demographic variables for a large number of households and the individuals within those households. I also use head of household's occupation from a 100% sample of the 1880 Census.[20] I present results for all black families living in New England and the New York City area.

Table 1 contains descriptive statistics for both the 1880 and 1920 1% samples. The 1880 sample contains 12,342 black children and 55,570 white children. In the 1880 sample I drop children who are older than 15 because they were born before the Civil War ended. I also drop children who are younger than 7 because they have missing values for both the schooling measure and the literacy measure. I drop any heads of household or their spouses who were born after 1865. (There were very few such cases.)

Within the 1880 sample, 97% of black children had a mother born in a slave state, and 94% of black children lived in a slave state at the time of the Census. On average, the black children come from a family with 4 children, and the white children come from a family with 3.7 children.

In the sample, 35% of the black children and 85% of the white children are reported as being literate. Census enumerators asked separately about ability to read and ability to write for each individual in the household. The questions are only asked for persons aged 10 or older. I coded the literacy variable as a dummy variable which equals 1 if the person is able to read and write.[21]

A separate census question asked whether or not each person was enrolled in school at any time during the previous year. I create an in-school dummy for all children who were aged 7–18. The dummy equals 1 if the child was enrolled in school in the past year and 0 if not. Table 1 shows that 32% of black children and 73% of white children (ages 7–18) in the 1880 sample were reported as enrolled.

One criticism of this variable is that it does not capture the number of days of schooling during the year, but rather asks for any school attendance at all. To mitigate this problem, I also report one table of results for the 1900 Census, because the 1900 Census collected the number of months that each child was in school during the past year.[22]

One ideal measure of human capital is years of schooling completed, and this variable first appears in the 1940 Census. In the interest of completeness, I report results for years of schooling using blacks alive in 1940 who were born before 1865 and during 1865–1885. There is of course inherent survivorship bias in examining these two older groups. The survivorship bias is severe for the pre-1865 group, which consists of people aged 75 and older. The group that I designate as children of slaves and free blacks are aged 55–74 in 1940.[23]

The Censuses also asked for the occupation of each person in the household. This was written down as a text

[19] Clearly, families that move are different than ones that stay, and so I offer the various estimates of the effect of slavery not as perfect estimates, but rather as the best estimates that I can produce.

[20] These data were compiled by the Mormon Church and the University of Minnesota. A full description is contained in Sacerdote (2002).

[21] These literacy numbers for whites are consistent with Murray (2004), which uses demonstrated ability to sign legal documents as a measure of literacy.

[22] It has been alleged that the 1900 Census undercounted school attendance. However, Margo (1990 pp. 28–32) shows that the resulting bias to estimates of attendance is small.

[23] We might expect that more-educated people or higher-income people will live longer. But this bias affects both the slaves and the free blacks. I cannot predict how survivorship bias would affect the estimated difference in years of schooling between the groups.

TABLE 1.—MEANS FOR CHILDREN

Variable	Black Households			White Households		
	N	Mean	Std. Dev.	*N*	Mean	Std. Dev.
		A. 1880 Census				
Child's literacy	7,442	0.35	0.48	34,752	0.85	0.36
Child is in school	12,342	0.32	0.47	55,570	0.73	0.44
Mother was born in a slave state	12,342	0.97	0.16	55,570	0.42	0.49
Child's age	12,342	10.52	2.53	55,570	10.66	2.52
Mother's age	11,868	36.57	8.69	53,798	38.47	7.66
Number of children in family	12,342	4.00	2.17	55,570	3.68	2.04
Child is male	12,342	0.51	0.50	55,570	0.51	0.50
Current region is South	12,342	0.94	0.26	55,570	0.40	0.48
Current region is Northeast	12,342	0.03	0.14	55,570	0.25	0.43
Current region is Central	12,342	0.03	0.22	55,570	0.31	0.48
Current region is West	12,342	0.00	0.04	55,570	0.03	0.17
Mother's literacy	11,868	0.17	0.38	53,798	0.87	0.34
Father's literacy	10,550	0.22	0.41	51,660	0.89	0.31
Father has manual job	11,859	0.96	0.20	53,323	0.84	0.37
Father's occupational income score	10,396	15.24	5.15	50,881	19.88	10.90
		B. 1920 Census				
Child's literacy	13,799	0.83	0.37	84,713	0.98	0.13
Child is in school	13,119	0.67	0.47	77,822	0.81	0.40
Grandmother born in a slave state	16,647	0.98	0.14	101,204	0.49	0.50
Child's age	16,647	14.69	5.19	101,204	14.93	5.28
Mother's age	16,647	42.57	5.45	101,204	43.37	5.50
Number of children in family	16,647	4.10	2.52	101,204	3.28	2.21
Child is male	16,647	0.51	0.50	101,204	0.53	0.50
Current region is South	16,647	0.91	0.29	101,204	0.43	0.50
Current region is Northeast	16,647	0.04	0.19	101,204	0.19	0.39
Current region is Central	16,647	0.05	0.21	101,204	0.31	0.46
Current region is West	16,647	0.00	0.07	101,204	0.07	0.26
Mother's literacy	16,647	0.67	0.47	101,204	0.96	0.19
Father's literacy	13,300	0.66	0.47	92,315	0.95	0.22
Father has manual job	13,103	0.95	0.21	89,748	0.79	0.41
Father's occupational income score	13,155	16.17	5.82	90,526	22.65	11.57

Notes: All data are from 1880 and 1920 IPUMS 1% samples of the Census of Population. The 1880 sample includes children aged 7–15. (Observations for children under age 7 have neither literacy measure nor the schooling measure. Children over 15 were born before the end of the Civil War.) Means for mothers and fathers are taken at the child level, that is, the means are weighted by the number of children in the family.

The 1920 sample includes any children aged 7–35 within households. South dummy is defined as all former slave states.

field by the enumerator. Children who do not have an occupation are frequently listed as being "At Home." I use the occupation variable in two ways. First, I use reported occupation to classify men as having manual or nonmanual jobs. This classification has some intuitive appeal, and the classification of jobs is relatively straightforward. However, there is only a modest amount of variation in the manual-job dummy. Table 1 shows that 84% of white male heads of household were manual workers and the equivalent figure for blacks is 96%.

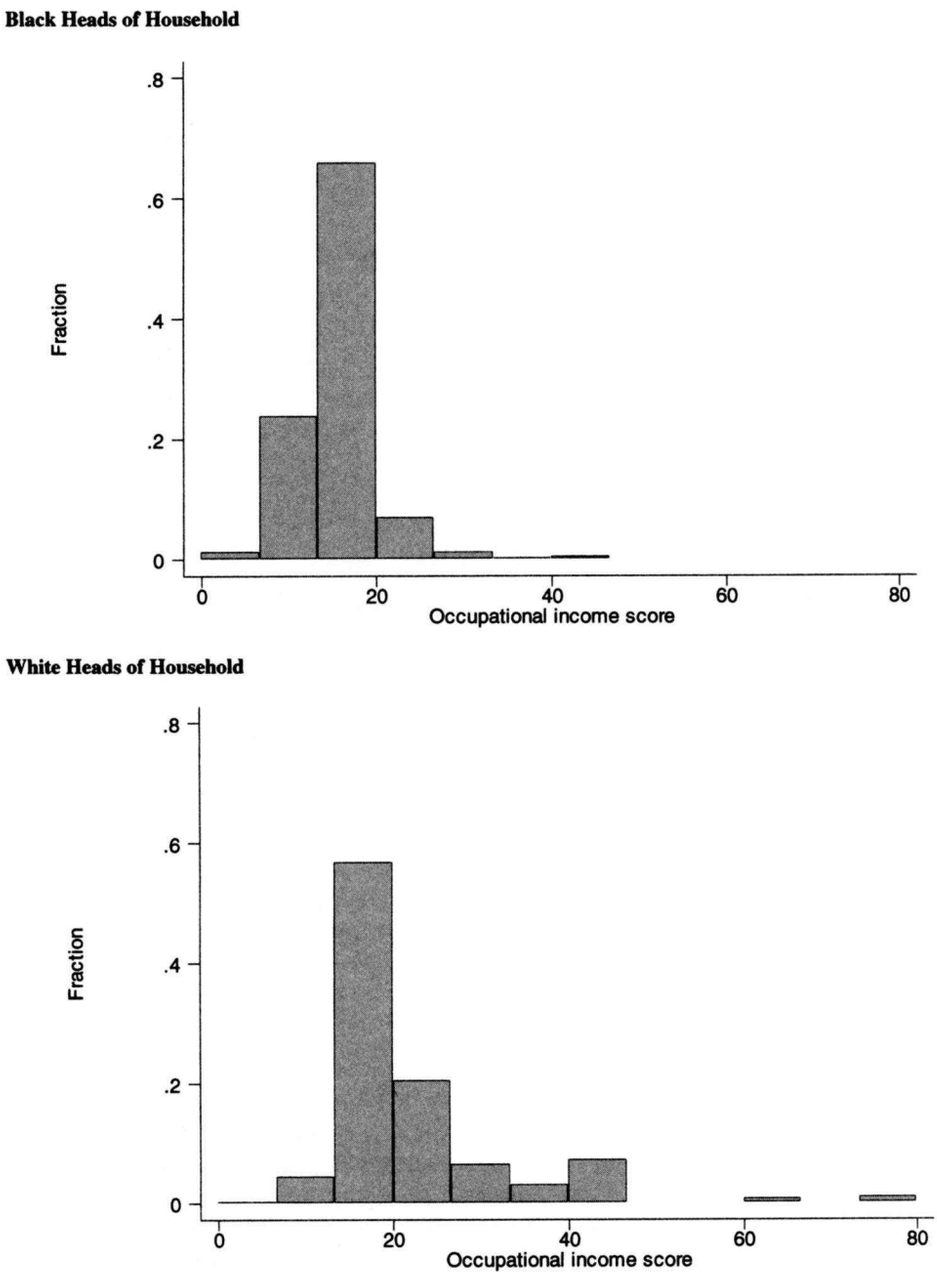
Second, IPUMS researchers have linked each occupation to the median occupational income from the 1950 census.[24] This number is the annual median income by occupation in hundreds of 1950 dollars. Table 1 shows that the black male heads of household in the 1880 sample have an occupational income score of 15.24 versus 19.88 for the white male heads of household. These figures excluded men with occupations that have a score of 0 (for example, "retired") and men with no occupation listed.

The occupational score is obviously a highly imperfect measure of income. The biggest problem is the fact that relative incomes among occupations undoubtedly shifted between 1880 and 1950, when median incomes are calculated. Goldin and Katz (1998, 1999) document large changes in the return to skill and return to various occupations during this period. Furthermore, it is likely that some 1880 occupations are misclassified because the nature or name of the occupation changed greatly during 1880–1950. Despite the limitations of the occupational income score, papers such as Angrist (2002) and Darity et al. (2001) use the measure because it is available for long periods of time and is not subject to the same types of measurement error as self-reports of income.

Though the occupation score is probably a bad measure of actual income, it may be a reasonable index of SES. Occupations that paid a lot in 1950 were typically

[24] Details are available at www.ipums.org. The 1880 Census did not collect individual income.

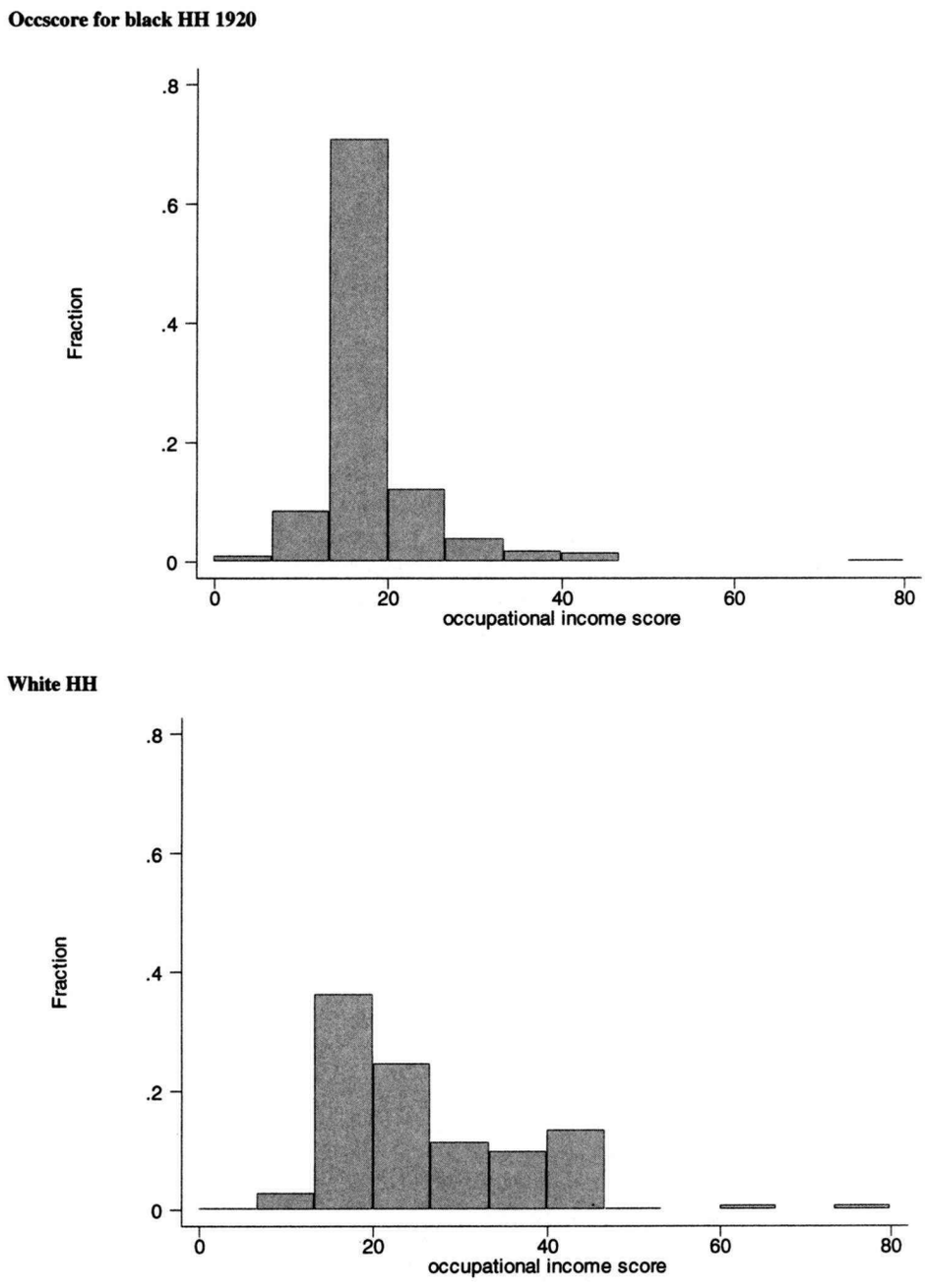
FIGURE 1.—DISTRIBUTIONS OF OCCUPATIONAL SCORE IN 1880 FOR HEADS OF HOUSEHOLD



also high-paying, high-human-capital, desirable jobs in 1880. Appendix table III in Sacerdote (2002) shows the 1880 occupations and income scores for black heads of household who were born free. These data are from the 100% sample of black families in New England and the New York metropolitan area. Physicians have the highest score in the table (at 80). Craftsmen have scores that range from 24 to 29, and unskilled laborers have scores of 9. One glaring problem is that preachers and clergy receive a fairly low occupational income score of 24 despite the fact that preachers were among the most educated and influential members of the black community during the period in question. Figures 1 and 2 show the full distribution of scores for male household heads by race in 1880 and 1920.

Panel B of Table 1 gives the means for the 1920 sample. By 1920, 83% of the black children are literate and 98% of white children are literate. Of black children, 67% are in school, versus 81% for whites. The average child age is higher for the 1920 sample because I include children in the household who are aged 7–18. In the 1880 sample, I excluded any child born before 1865, because I wanted the first postbellum generation. The occupational income scores for the male householders in 1920 are modestly higher than

FIGURE 2.—DISTRIBUTIONS OF OCCUPATIONAL SCORE IN 1920 FOR HEADS OF HOUSEHOLD



in 1880, and the percentage who are manual workers is modestly lower.

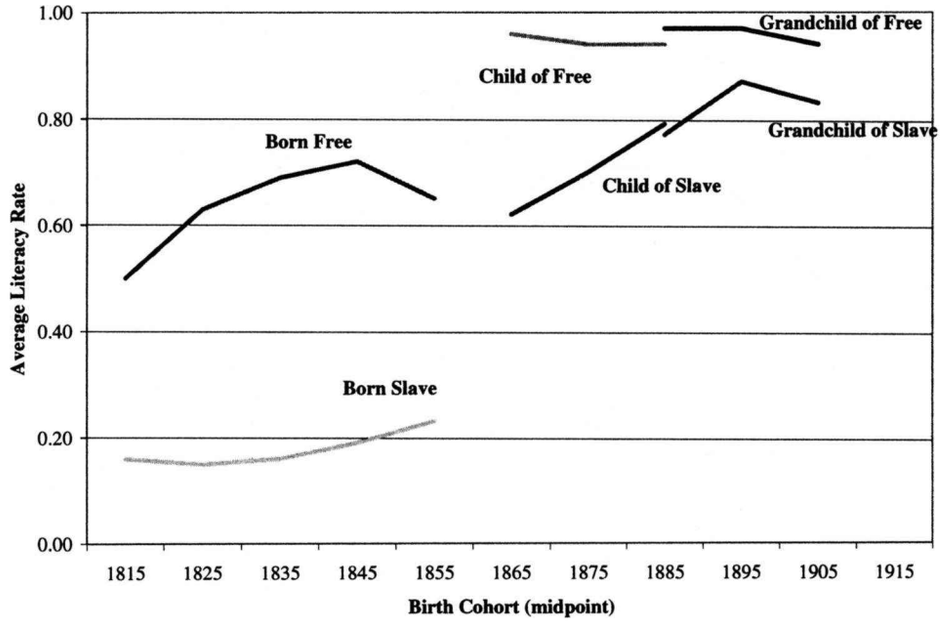
A. *Slave versus Nonslave Status for Blacks*

I classify blacks as being born into slavery if they were born in a slave state before 1865. Although this appears to be a bold assumption, it is a reasonable approximation to the truth. Fogel and Engerman (1974) estimate that in 1860, 94% of blacks in the South were slaves.

In truth many of the 248,500 free blacks in the South in 1860 were born as slaves, but were manumitted.[25] So 94% is an underestimate of the percentage of Southern blacks who were born into slavery. Olwell (1996) documents that many free blacks in the South purchased their own freedom using extra income earned working on their

[25] Fogel and Engerman use Census data to estimate numbers of manumissions. Olwell (1996) supplies a wealth of detail regarding the circumstances surrounding individual manumissions.

FIGURE 3.—LITERACY RATES BY BIRTH COHORT FOR FREE BLACKS AND SLAVES AND THEIR CHILDREN AND GRANDCHILDREN



This figure is intended to show the literacy gap between free and slave blacks before 1865 and how that gap eroded over time and across two generations. Means are taken by generation, by 10-year cohort.
Notes: Data are from 1880 and 1920 Census IPUMS. Slave status of self, mothers, and grandmothers is imputed from birth year and place of birth. Mother and mother's mother are used to assign slave status of parents or grandparents. Literacy rates in the first generation are calculated from the 1880 data, and the next two generations are taken from the 1920 data. Data from cohorts from 1865 on are taken from the 1920 Census. This switch partially explains the jumps in the graphs. Literacy is measured for persons aged 10 or older.

"own time." We know from Phillips (1997) and Gould (1998) that many of the free blacks in the South lived in Baltimore, New Orleans, and Charleston and the other major cities. I could further improve my approximation by dropping blacks in these cities.

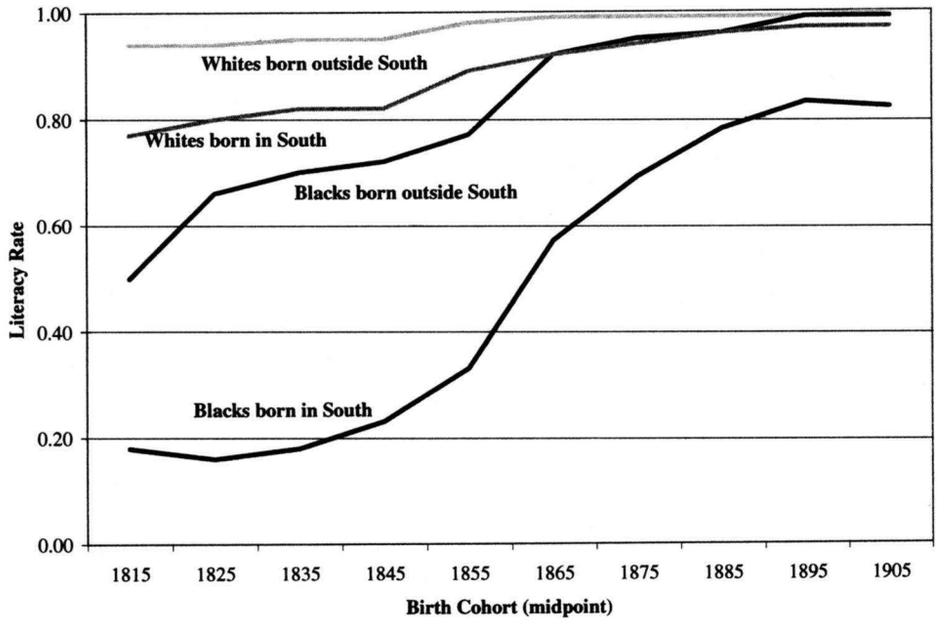
For the children born one generation after slavery, my right-hand side variable of interest is the mother's slavery status. This is easily obtained for the majority of children, because both own place of birth and mother's place of birth are collected for each person. In other words, for a given household, the place of birth for the female householder would be noted once for her own record and once again for every child she has in that household. For the children born two generations after slavery, I use the mother's mother's place of birth to obtain the child's grandmother's slavery status. I obtain this from the record for the mother in the household, so the grandmother need not actually be present. There is one additional condition needed to determine grandmother's slavery status for children in 1920 households: I limit the sample to households in which the mothers were born after 1865 but before 1885. This generates a sample of households in which the mothers were all born after Emancipation, but the mother's mother is almost surely born prior to Emancipation.[26]

If free blacks in the South were primarily manumitted slaves, who were the free blacks in the North? Work by McManus (1966), Hodges (1997), Zilversmit (1967), and other historians suggests that many of the blacks in the antebellum North were the descendants of colonial-era slaves. My examination of the 100% sample of the 1880 Census supports this claim. In Appendix Table II of Sacerdote (2002), I list the birthplace of the mother of the female householder (that is, the 1880 children's maternal grandmother) for free black households in New York and New England. Fully 36% of the mothers in my sample had mothers born in New York and 16% had mothers born in Connecticut. This does not demonstrate that free black families have northern roots that extend back to the American Revolution, but it does show that the vast majority are not recent migrants to the region.

The origin of northern blacks is important for the interpretation of my results. In essence I am comparing the descendants of slaves from a distant era to the descendants of slaves from a more recent era.

[26] One might be worried about measurement error in determining slave status. I am relying on individuals in the Census to accurately report their own place (for example, state) of birth and in some cases their mother's state of birth. I have no reason to suspect that people in 1880, 1920, or 2003 had unusual difficulty in knowing where they were born or where their mother was born. On the contrary, this is probably one survey variable that is recorded with a high degree of accuracy. Within families and within regions, the patterns of reported state of birth (and the implied migration patterns) seem plausible. For example, the majority of people live in the state in which they were born, and reported migrants are highly likely to have migrated from a neighboring state. Most children are reported as having been born in the same state as their siblings, and infants are almost always reported as having been born in the state in which the Census record was collected.

FIGURE 4.—LITERACY RATES BY BIRTH COHORT FOR WHITES AND BLACKS BORN INSIDE AND OUTSIDE THE SOUTH



This figure shows average literacy by birth cohort, race, and region of birth (South and non-South). Means are taken by generation, by 10-year cohort.
Notes: Data are from 1880 and 1920 Census IPUMS. Data from cohorts from 1865 on are taken from the 1920 Census. Literacy is measured for persons aged 10 or older.

IV. Results

Figure 3 shows average literacy rates by 10-year birth cohort for slaves and their descendants and for free blacks and their descendants.

Unsurprisingly, there is a huge literacy gap between blacks born as slaves and blacks born free. Free blacks born in 1850–1860 have approximately a 65% literacy rate as measured in the 1880 Census. Blacks born into slavery during 1850–1860 have approximately a 22% literacy rate. The latter rate appears to be vastly overstated, given that slaves had very limited opportunities for education under the plantation system. It is certainly conceivable that some former slaves learned to read as adults after emancipation. Indeed, the literacy rate among the 1850–1860 birth cohort of former slaves as measured in the 1870 Census is a modestly lower 17%. This is consistent with the idea of blacks learning to read after Emancipation. But another likely explanation is that respondents to the 1880 Census had some tendency to overstate their own degree of literacy.

Looking at the first generation born after slavery, children of former slaves and children of free blacks born before 1865, we find that both have a huge gain in literacy. There is a fair amount of upward convergence in which the children of slaves begin to achieve literacy rates closer to rates for children of free blacks. This is consistent with Collins and Margo (2003, pp. 8–9), who show that the upward trend in black literacy has a large structural break for cohorts born after 1870 and that Southern-born blacks had larger percentage point gains in literacy than non-Southern-born blacks. By the third generation, the grandchildren of free blacks have literacy rates approaching 100% and the grandchildren of free blacks have further narrowed the gap.

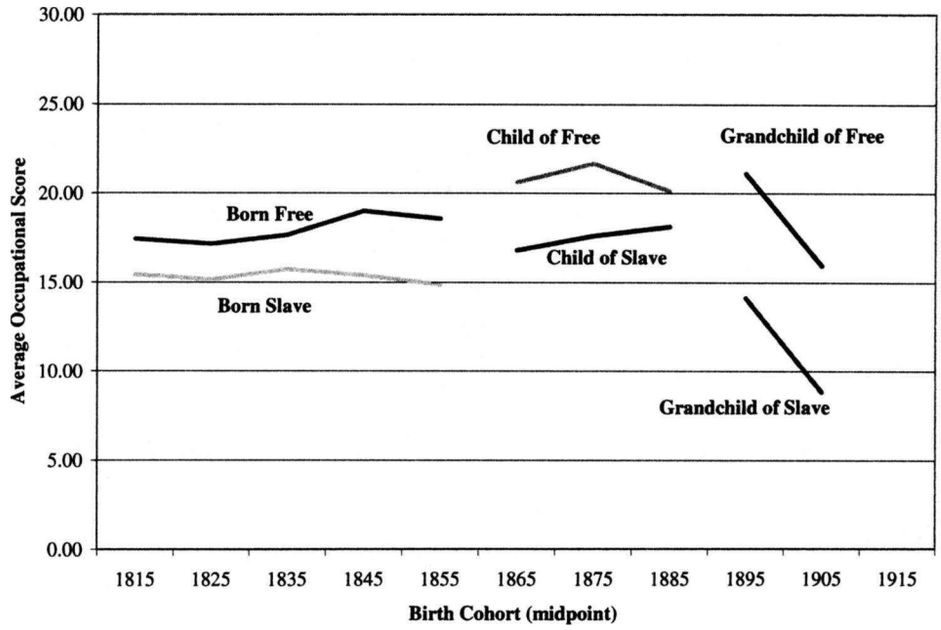
Figure 4 shows literacy rates by birth cohort, race, and place of birth (South versus non-South). There is a negative effect on literacy from being black, and a negative effect from being born in the South. But the interaction effect of being black and in the South is much bigger than the black or the South effect alone. By the 1895 birth cohort (1890–1900), all whites and blacks born outside the South have literacy rates approaching 100%. Blacks born in the South during 1890–1900 have approximately an 82% literacy rate.

Figure 5 shows occupational income scores for free blacks and their progeny and for former slaves and their progeny. There appears to be roughly a 3–5 point gap between the two groups that does not close over time. However, once I control for current region (as in the next section), this gap is not statistically significant, even for the first generation.[27]

Figure 6 shows occupational income scores by birth cohort, race, and born in South (0–1). The rank ordering from highest to lowest is non-Southern-born whites, Southern-born whites, non-Southern-born blacks, and Southern-born blacks. This pattern appears to persist across the sample period and does not show much convergence or divergence. (Recall that the income score does not allow incomes to vary within an occupation over time.)

[27] Controlling for current region, there is never a gap between free blacks and slaves in occupational income score. Hence it doesn't make much sense to think about convergence along this measure.

FIGURE 5.—OCCUPATIONAL INCOME SCORES FOR FORMER SLAVES AND FREE BLACKS AND THEIR CHILDREN AND GRANDCHILDREN



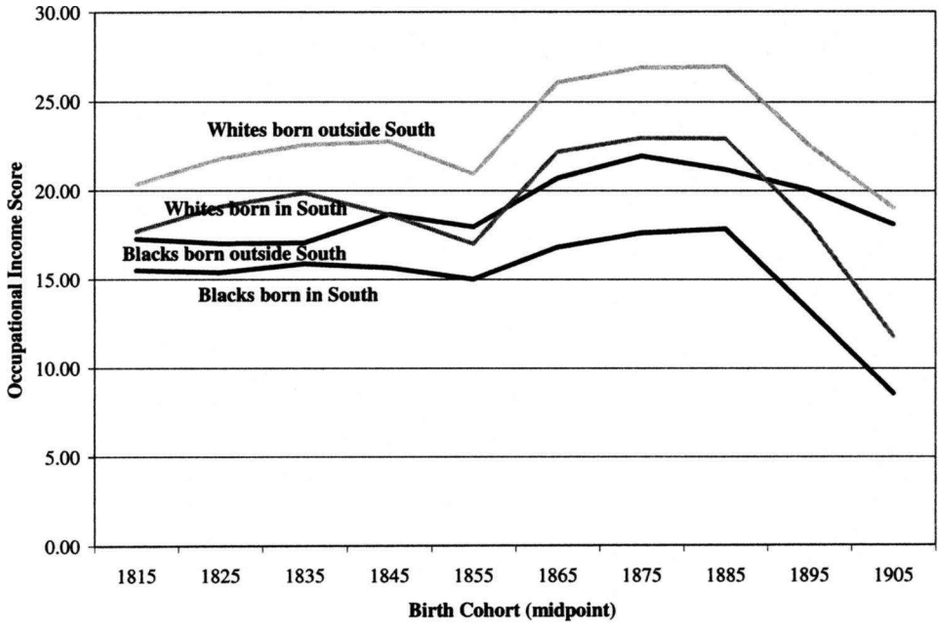
This figure shows average occupational income scores by birth cohort for free black men and former male slaves and their sons and grandsons. The occupational income score is calculated by IPUMS as the median annual income by occupation in 1950 and is reported in hundreds of 1950 dollars. Data for the later two generations come from the 1920 Census. The 1895 and 1905 cohorts have lower scores primarily because younger people are more likely to work in lower-wage occupations.

Results are presented in tables 2 through 4. I estimate the effects of slavery on outcomes (literacy, in-school status, months in school, years of schooling, occupational income score, and manual occupation) in the three ways described above.

A. *Effects on Literacy*

Table 2 examines the difference in literacy rates between former slaves and free blacks and the descendants of each group. The table is organized as follows: Each row

FIGURE 6.—OCCUPATIONAL SCORES FOR WHITES AND BLACKS BY BIRTH COHORT AND BORN IN SOUTH



The figure shows average occupational score by birth cohort, race, and born in South. The occupational income score is calculated by IPUMS as the median annual income by occupation in 1950 and is reported in hundreds of 1950 dollars. Data for the later two generations come from the 1920 Census. The 1895 and 1905 cohorts have lower scores primarily because younger people are more likely to work in lower-wage occupations.

TABLE 2.—EFFECT OF OWN SLAVE STATUS AND MOTHER'S OR GRANDMOTHER'S SLAVE STATUS ON LITERACY

Effect of	(1) No Controls (Raw Difference between Slaves and Free Blacks)	(2) Using Movers (Controls for Region and Year of Birth)	(3) Using Whites to Estimate Effect of "Born South"	(4) Mean Literacy for Slaves and Their Progeny (S.D.)	(5) *N* (Slaves, Free Blacks, Whites)
Own slavery status (householders in 1880):					
All female HH or spouses of HH	−.466	−.259	−.302	.193	8,622
	(.023)	(.030)	(.019)	(.395)	317
					48,745
All male HH	−.466	−.207	−.334	.237	7,352
	(.028)	(.035)	(.021)	(.425)	232
					43,520
Mother's slavery status (children in 1880)	−.548	−.100	−.290	.339	7,237
	(.028)	(.037)	(.027)	(.474)	205
					34,752
Mother's slavery status (children in 1880)[a]	−.584	−.082	−.299	.337	7,189
	(.027)	(.042)	(.028)	(.473)	140
					29,447
Mother's slavery status (householders in 1920)	−.275	−.099	−.187	.656	13,694
	(.013)	(.015)	(.014)	(.475)	495
					98,495
Grandmother's slavery status (children in 1920)	−.155	−.030	−.131	.831	13,509
	(.010)	(.011)	(.010)	(.375)	276
					84,727
Grandmother's slavery status (children in 1920)[a]	−.163	−.031	−.140	.837	9,137
	(.006)	(.017)	(.008)	(.370)	59
					47,031

[a] Families without intermarriage between slaves and free.

This table shows OLS estimates of the effect of being born into slavery (or having an ancestor born into slavery) on literacy. Column (1) shows the raw difference in literacy between slaves (and their progeny) and free blacks (and their progeny). Column (2) estimates the difference in literacy between the two groups within the current region. This estimate is identified from slave families that move out of the South and free families that move into the South, where South is defined as the former slave states. Column (3) adds the white population to the sample and estimates the effect of slavery as the interaction effect of being black and born in the South, over and above the effect of being born in the South for whites. Column (4) shows means and standard deviations of the dependent variable for the slaves and their progeny, and column (5) shows sample sizes for slaves (or progeny), free blacks (or progeny), and whites. The samples are from the 1880 and 1920 Censuses.

compares slaves and free blacks, or the children of the two groups, or the grandchildren of the two groups. Column (1) shows the raw difference in literacy rates between slaves (and their progeny) and free blacks (and their progeny). Column (2) adds dummies for current region (and year of birth), thereby identifying the effect using families who move. Column (3) includes whites in the regression and estimates the effects of slavery as the interaction effect of being black and born in the South before 1865. Column (4) shows the mean and standard deviation of the dependent variable for the slaves and their descendants, and column (5) shows the sample sizes.

The first two rows of table 2 are for householders in the 1880 1% sample.[28] Rows (1) and (2) show the raw (uncontrolled) effect of slave status on literacy for men and women. Slave status is associated with roughly a 47% decrease in the probability of being literate for both men and women. For women (men) this effect drops to −26% (−21%) when I include dummies for current region and birth year as in column (2). The standard errors on these point estimates are 0.03 and 0.035. Almost all of this decrease in the coefficient is attributable to the inclusion of the region dummies. Again, we would expect the region dummies to have this huge effect because the Northern and Southern labor markets and schools were so different.

In column (3), I include the whites in the sample and effectively use the whites to estimate the baseline effect of "born South" on literacy. The effect of slavery reported in the table is simply the interaction of black and "born South." For female householders in 1880, slave status reduces the probability of literacy by 30%. This likely *overstates* the true direct effect of slavery, because in reality emancipated blacks in the South faced worse opportunities than Southern whites, beyond the direct effects of slavery. The estimate of 26% based on movers probably *understates* the effect of slavery on literacy if blacks who moved out of the South had on average higher ability and human capital.

The whole sample of male and female householders in 1880 contains only 549 free blacks. This is basically an issue of precision of the estimates, and the standard errors in the tables reflect this small sample. Increasing the sample sizes would shrink the standard errors, but it seems unlikely that a larger sample would change my conclusion of convergence in outcomes among descendants of slaves and free blacks.

The next row of table 2 shows analogous regressions for the children of these same householders in 1880. The children here are aged 10–15; I limit the sample to children born after 1865, and literacy is only measured for persons

[28] I use the term "householder" to refer to the head of household and his or her spouse if any. The sample is limited to householders born before 1865.

TABLE 3.—EFFECT OF OWN, MOTHER'S, OR GRANDMOTHER'S SLAVE STATUS ON PROBABILITY OF BEING IN SCHOOL, MONTHS SPENT IN SCHOOL, AND YEARS OF SCHOOLING FOR PERSONS IN 1880, 1900, 1920, AND 1940 CENSUS IPUMS

Variable	(1) No Controls (Raw Difference Between Slaves and Free Blacks)	(2) Using Movers (Controls for Region and Year of Birth)	(3) Using Whites to Estimate Effect of "Born South"	(4) Mean outcome for Former slaves, progeny (S.D.)	(5) N [Slaves, Free Blacks, Whites]
			Effect on "In-School" (0–1)		
Mother's slavery status	−.360	−.084	−.125	.309	12,025
(children in 1880)	(.036)	(.042)	(.036)	(.462)	317
					55,570
Mother's slavery status	−.390	−.090	−.124	.307	11,952
(children in 1880)[a]	(.040)	(.048)	(.038)	(.461)	215
					46,985
Grandmother's slavery status	−.088	−.019	−.090	.664	12,862
(children in 1920)	(.037)	(.036)	(.033)	(.472)	242
					77,837
Grandmother's slavery status	−.229	−.102	−.177	.682	8,899
(children in 1920)[a]	(.039)	(.032)	(.027)	(.466)	56
					43,498
			Effect on Months in School		
Grandmother's slavery status	−3.229	−.307		4.104	1,821
(children in 1900)	(.468)	(.538)		(6.176)	60
			Effect on Years of Schooling		
Own slavery status	−3.207	−2.455	−1.744	2.112	1,192
(adults 75+ years old in 1940)[b]	(.437)	(.483)	(.369)	(2.910)	91
					15,525
Mother's slavery status	−2.622	−1.595	−1.460	3.96	4,003
(adults 55–74 in 1940)[c]	(.276)	(.290)	(.248)	(3.404)	203
					37,778

[a]Families without intermarriage between slaves and free.
[b]That is, born before 1865.
[c]That is, born 1865–1885.
This table compares outcomes for former slaves and free blacks and the children and grandchildren of each group. Column (1) shows the raw difference in the outcomes for the former slaves, children, and grandchildren. Column (2) estimates the difference in outcomes between the two groups within the current region. This estimate is identified from slave families that move out of the South and free families that move into the South, where South is defined as the former slave states. Column (3) adds the white population to the sample and estimates the effect of slavery as the interaction effect of being black and having one's mother (grandmother) born in the South, over and above the effect of having one's mother (grandmother) born in the South for whites. Column (4) shows means and standard deviations of the dependent variable for the slaves and their progeny, and column (5) shows sample sizes for the former slave blacks (and progeny), former free blacks (and progeny), and whites. The samples are from the 1880, 1900, and 1920 Censuses.
Notes: 1880 sample includes children in households in IPUMS. Mother's former slave status is imputed from year and state of birth. All the mothers were born before 1865, and all of the children were born after 1865. (Children older than 15 and households with mothers younger than 15 are dropped.) The 1920 sample includes children aged 7–18 in IPUMS sample. The 1940 samples are (1) adults born before 1865 and (2) adults born 1865–1880.
In-school status is determined from the Census question which asked whether or not a person "attended school within the past year."

10 or older. Without controls, the free-versus-former-slave literacy gap is even larger for the children in 1880 than for the householders. For the children, the uncontrolled effect on the slave-status dummy is 55%, and the effect controlling for current region is 10%. The effect of mother's slave status using whites to estimate the baseline effect "mother born in the South" is 29%.

The fourth row of table 2 drops from the sample those families that resulted from the intermarriage between a slave and a free black. The point of this row is to provide evidence on whether intermarriage can explain the patterns that I observe. Of the 205 children of free mothers, 65 have fathers who were born into slavery. However, dropping these children from the sample does not appear to change the point estimates (on the effect of slavery on literacy) by very much.

The fifth row of table 2 examines literacy for householders in 1920 whose mothers were either slaves or free blacks.[29] The uncontrolled effect of mother's slave status on own literacy is −28%. When I add dummies for current region, the effect falls to −10%. When I limit the sample to blacks currently outside the South (not shown in table), the effect falls to −6%. Using the whites as a comparison in column (3), I find that the effect of mother's slave status on literacy is −19%. My best point estimate for the true effect of slavery lies between the −10% and −19% coefficients.

The trend toward convergence continues when I examine the grandchildren of slaves and free blacks in row (6). The raw effect of grandmother's slave status is −15.5% and the effect controlling for current region is −3%. Controlling for

[29] The sample consists of black householders aged 35–55. These adults are too young to have been born into slavery, but old enough that their parents most likely were born before 1865. This is a big assumption, but probably an accurate one for the majority of householders. The youngest householders in the sample were born in 1885, and some of them might have been born to parents who were born after 1865, but this would be a small fraction of my total sample.

TABLE 4.—EFFECT OF SELF OR MOTHER BORN SLAVE ON OCCUPATIONAL INCOME SCORE AND PROBABILITY OF BEING A MANUAL LABORER (MALE HOUSEHOLD HEADS IN 1880 AND 1920)

Effect of	(1) No Controls (Raw Difference between Slaves and Free Blacks)	(2) Using Movers (Controls for Region and Year of Birth)	(3) Using Whites to Estimate Effect of "Born South"	(4) Mean Outcome for Slaves and Their Progeny (S.D.)	(5) *N* [Slaves, Free Blacks, Whites]
Own slavery status on income score	−2.867	.133	1.062	15.300	7,218
(male householders in 1880 IPUMS)	(.361)	(.447)	(.705)	(5.316)	227
					42,507
Own slavery status on income score		.566		17.954	2,170
(male householders in 1880, 100% New England)		(.191)		(6.537)	2,982
Own slavery status on income score		−.497		15.967	1,709
(male householders in 1880, 100% New York)		(.217)		(6.984)	2,616
Father's slavery status on income score	−4.46	−.768	−0.385	17.119	5,936
(male householders in 1920, IPUMS)	(.509)	(.619)	(0.731)	(6.517)	172
					43,960
Own slavery status on manual status	0.154)	0.028	0.072	0.973	7,200
(male householders in 1880, IPUMS)	(0.012)	(0.015)	(0.023)	(.164)	226
					41,776
Own slavery status on manual status		.003		.961	2,050
(male householders in 1880, 100% New England)		(.006)		(.193)	2,742
Own slavery status on manual status		−.013		.952	1,670
(male householders in 1880, 100% New York)		(.006)		(.214)	2,605
Father's slavery status on manual status	.156	.063	0.074	.931	5,896
(male householders in 1920, IPUMS)	(.021)	(.034)	(0.027)	(.253)	172
					43,505

This table compares occupational outcomes for black male heads of household who were former slaves (or whose mothers were former slaves) with outcomes for black male heads of household born free (or with mothers born free). "Effects" of slave status are calculated by using an OLS regression of the outcomes on former slave status.

Notes: Samples include all black male heads of household. In the 1920 sample, the householders are aged 35–55 in 1920 (that is, born 1865–1885), which makes them old enough to have parents who were born as slaves, but young enough to be born after 1865. In the 1880 sample, the householders are all born before 1865.

Former slave status is imputed from year and state of birth. Those blacks born in one of the 16 slave states prior to 1865 are coded as former slaves. (The count of 16 states includes West Virginia.) For the 1920 data, if the householder's mother was born in one of 16 slave states, the mothers are coded as former slaves. Four regional dummies are coded so that the South dummy is really a slave-states dummy. Missouri is coded as South, and Washington, DC, is not.

The occupational income score is the median 1950 annual income in hundreds of dollars for a given occupation. Manual versus nonmanual status is designated by the author based on job title.

current region, the effect of slavery status on literacy disappears almost completely by the second generation after emancipation. Using any of the three procedures to estimate the effects of slavery, I obtain qualitatively the same conclusion, namely that the children of slaves and free blacks converged toward one another on literacy status.

These point estimates do not change when I limit the sample to grandchildren whose families contain no intermarriage between slaves and free blacks (row 7). Specifically, I limit the sample to children for whom all four grandparents were slaves or all four grandparents were free. The fact that the point estimates are not affected by the presence of intermarriage suggests that intermarriage does not explain the convergence in literacy that I observe. However, I obtain the opposite conclusion when I examine the relationship between intermarriage and in-school status.

Because literacy rates are approaching 100% for whites and free blacks, I also consider three other measures of schooling and human capital.

B. Effects on Schooling

In addition to effects of slave status on literacy, I am also interested in examining effects on schooling. Unfortunately, prior to 1940 the Census did not collect years of schooling. But we can examine whether or not children in the household were enrolled in school during the past year. As mentioned above, I create a binary variable for enrollment and measure this for all children aged 7–18. Table 3 examines the effect of mother's slave status on child's school enrollment. The sample in the first two rows consists of black children aged 7–15 in 1880 households, where the upper age limit of 15 is imposed to limit the sample to children born after the Civil War.

Without controls (that is, using the difference in means), children of former slaves are 36% less likely to be enrolled in school. Controlling for current region, children of former slaves are 8% less likely to be enrolled in school. The second row shows that these estimates are basically the same if I consider only children whose mother and father have the same slave status (no intermarriage).

The third and fourth rows use the 1920 data to look at the effect of maternal grandmother's slavery status on grandchild's probability of being enrolled. Grandchildren of slaves are 9% less likely to be enrolled than grandchildren of free blacks. But, controlling for current region, this effect

is not significantly different from 0. Thus, the data show convergence in in-school status between the grandchildren of slaves and free blacks.

The fourth row of table 3 shows less convergence when I limit the sample to children in 1920 with no intermarriage among their grandparents. The estimated effect of grandmother's slave status using movers is −10%. The degree of convergence may be lower for grandchildren without any intermarriage in their families, though the sample size of free blacks for this finding is only 56 children.

Table 3, row 5 uses data from the 1900 Census to examine the effect of grandmother's slave status on the child's number of months spent in school. On average, grandchildren of slaves spent 4 months in school, versus 7 months for the grandchildren of free blacks. However, controlling for current region reduces this gap to a statistically insignificant 0.3 months.

In the final two rows of Table 3 I use the 1940 Census to ask how years of schooling differs between former slaves and free blacks and the children of the two groups. Former slaves (free blacks) are defined as black persons who were born before 1865. Their children are defined as blacks born between 1865 and 1885. The chief caveat to this analysis is of course the survivorship bias discussed above; people who survive beyond age 74 are not representative of their birth cohort.

Row 6 shows that former slaves report 3.2 fewer years of education than free blacks. For the children of the slaves and free blacks, the gap narrows to 2.6 years of education. In column (2) we find greater convergence in years of schooling when we control for current region. Controlling for current region, former slaves have 2.5 fewer years of education than do free blacks. The children of former slaves have 1.6 fewer years of education than do children of free blacks.

In the raw data, the gap in years of schooling only narrows by 18% from one generation to the next and the drop is not statistically significant. However, in the literacy results (table 2) the biggest gains in literacy did not occur for the blacks born right after the Civil War. The big convergence in the raw literacy gap comes later in the first postbellum generation and during the second postbellum generation.[30] The results for years of education show a similar pattern to the results for literacy and in-school status, though certainly these results are suggestive rather than conclusive.

Do compulsory schooling laws explain the convergence in literacy rates and school attendance rates among the grandchildren of slaves and the grandchildren of free blacks? Margo and Finegan (1996) examine the period around 1900 and conclude that school attendance increased in states that combined compulsory schooling laws with child labor laws. Acemoglu and Angrist (2001) find that compulsory schooling laws increased attendance during 1950–1990, and Lleras-Muney (2001) finds the same for 1915–1939.

I address this question in appendix II of Sacerdote (2002). I take all black children outside the South and split the sample by children in states with both compulsory schooling and child labor laws (CSL states) versus all other non-Southern states. I use Margo and Finegan's determination of which states have both laws. In CSL states, 79% of the grandchildren of slaves are in school versus 90% for the grandchildren of free blacks. Of the grandchildren of slaves in the non-CSL states 77% are in school, versus 78% of the grandchildren of free blacks. This tells us two things: First, average school attendance (as measured this way) was higher in the CSL states. Second, the CSL states have a much larger gap in school attendance between the grandchildren of slaves and free blacks. So the CSL states do not appear to explain the convergence in school attendance between slaves and free blacks.

C. *Effects on Occupation*

Now I turn to the effect of slave status on male household head's occupation, as measured by the occupational income score and a dummy for manual occupation. The first row in table 4 uses the 1880 1% sample and compares black heads of household born into slavery to those born free. Controlling for current region, being born a slave lowers the occupational income score by only 0.13. Row (5) shows that former slaves are 15% more likely than free blacks to be manual workers, but that this effect falls to 3% on controlling for current region. The mean of *manual* for free blacks is 82%.

Rows 2 and 3 of table 4 compute the effects of slave status on occupational income score for a portion of the 100% of the 1880 Census. Within both New England and New York, former slave status is not associated with statistically different occupational income scores. Furthermore, there is no effect on manual-worker status.

Rows (4) and (8) look at the analogous effects for male heads of household in the 1920 sample. These are the children of former slaves and free blacks. Controlling for region, the effect of father's mother's slave status on the occupational income score is a small and statistically insignificant −0.77. The effect of mother's slave status on the likelihood of being a manual worker is 6% and is statistically significant at the 10% level.

The estimated effect of slave status on manual-worker status is somewhat larger for the children of slaves than for the former slaves themselves. This is plausible and consistent with Margo's (1990) discussion of the transition of labor from the farm to the nonfarm sector. In 1880, nearly everyone was a manual worker in agriculture, and slave status had little effect on manual status. During the next 40 years, those workers with high levels of human capital were the most likely to exit the farm sector. If children of slaves

[30] This is seen by comparing rows 1, 3, 5, and 6 in Table 2, column (1).

received less education than children of free blacks (as shown in tables 2 and 3), then children of free blacks were differentially more likely to exit the agricultural sector.

One interpretation of these results is that even in 1865 the occupations of free blacks and freedmen are not all that different. Using two crude measures of SES, we do not see a difference between the two groups within region. However, the finding might also indicate that our measures of SES are simply too crude to be useful. For example, within the occupation of farmer there is a very broad range of incomes and wealth, and we capture none of those distinctions.

D. Effects on Homeownership

Ideally one would also look at wealth differences between the descendants of slaves and descendants of free blacks. The Census data do contain an indicator variable for homeownership. In 1920, 34% of the householders who are children of slaves own their own home. The comparable number for householders descended from free blacks is 32%. If we thought that homeownership was a measure of wealth, we might conclude (surely incorrectly) that slavery increased family wealth. However, we have no measure of the quality or value of the home, and we do know that homeownership in 1920 is highly correlated with work in agriculture. Many of the black homeowners were sharecroppers and might own as little as a shack, so the homeownership measure is not particularly informative about wealth.

V. Conclusion

This paper has demonstrated that on certain basic outcome measures—namely, literacy, schooling, and occupation—the descendants of slaves caught up with the descendants of free blacks within two generations. This statement is particularly true when we identify the effects of slave status by comparing descendants of free blacks and slaves who reside outside of the South. If we instead measure the progress of free blacks and slaves (and their descendants) relative to whites born in the same regions, then we find partial but not complete convergence. Because income and wealth are not observed directly and years of schooling is not observed until 1940, the results must be interpreted as suggesting a general pattern rather than as the definitive answer on all relevant economic outcomes.

Controlling for current region, by 1920 the grandchildren of slaves had roughly the same literacy rate as the grandchildren of free blacks. The grandchildren of slaves also had a similar probability of being in school and attended school for a similar number of months. Using the 1940 Census I find that former slaves received approximately 3.2 fewer years of education than free blacks. However, blacks born immediately after the Civil War saw a smaller gap of 2.6 years. Controlling for current region reduces the gap to 1.6 years.

I control for region because it is essential in this analysis to attempt to separate the direct effects of slavery from the effects of Southern schools and institutions during the postbellum period. Using blacks who move out of the South is problematic because movers are different than nonmovers. However, I have suggested here an empirical strategy which bounds the amount of convergence that occurred. Relying on movers to control for region overstates the amount of convergence, whereas using whites to estimate the negative effects of being born in the South will understate the amount of convergence within a region.

As a whole, the results suggest that the direct effects of slavery per se on education and income may have been greatly diminished or even eliminated within two generations. Following the Civil War, blacks faced a heavy burden from at least three sources: (1) the lasting direct effects of slavery, which had prevented the majority of blacks in the United States from accumulating human or physical capital, (2) the direct effects of race, meaning that blacks lived in a society built around racist institutions which were particularly racist in the South, and (3) the effects of living in the South, which was a poor region that became more poor in relative and absolute terms after the war. This paper has attempted to isolate the magnitude of the first effect from the second two, which have already been studied extensively by historians and economists.

I conclude that by 1920, an individual person's family history of slavery was not so much the key handicap as was the more general racism directed at all blacks and the concentration of blacks in the poorest region. The past history of slavery undoubtedly shaped institutions and attitudes in the United States. But these broad effects of slavery appear to have affected all blacks equally, not just the actual descendants of slaves.

This convergence is consistent with the high degree of social mobility implied by modern estimates of parent-child income and education correlations. When I regress son's SES on father's and grandfather's SES, I find that father's SES has a coefficient of 0.20 to 0.55, but grandfather's SES only matters a small amount on controlling for the father's outcome. This is evidence of strong father-son correlations which decay rapidly with each successive generation.

If there is convergence, what is the cause? For literacy, one natural explanation would be the rise of public schools and the passage of mandatory schooling laws. Today's high mobility of income and wealth may also be driven in part by public schools and the availability of high-quality public universities, and in part by other great equalizers like the Internet. High social mobility in postbellum America or in the modern OECD need not be an inevitable outcome that is independent of government institutions. Social activism could be just as important or more important than other market forces in creating convergence.

A critical topic for future research is whether or not convergence within two generations is a common phenom-

enon observed after social barriers between groups are removed. For example, Irish immigrants who arrived in the U.S. during the nineteenth century arrived with low financial and human capital. How many generations passed before the Irish achieved the socioeconomic status of earlier groups? And how much of the convergence took place before versus after the overt discrimination in the labor market against the Irish abated? This same question can be asked about virtually any immigrant group: Eastern European Jews, Mexicans, Cubans, and so on.[31]

This convergence question has particular relevance for the U.S. in view of the twentieth century's dismantling of racial barriers in access to schooling and jobs. A natural extension of this paper would be to attempt to tie these results to the modern literature on black-white wage and education differentials. If political changes in the 1960s and 1970s freed black workers from institutionalized discrimination, then perhaps black-white convergence might occur within one or two generations from today. If we do not see this convergence, we must ask how far behind schedule we are, and examine the size of the remaining barriers that separate black Americans and all other Americans.

[31] Sowell (1981) is a discourse on this topic. I am suggesting complementing this with additional empirical work that measures Census outcomes for these groups generation by generation and estimates the intergenerational transmission coefficients.

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