Cohort Change and Racial Differences in Intergenerational Education and Income Mobility

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Abstract

From the early 1980s to the mid-1990s, American economic inequality increased and incomes became more unequal across levels of schooling. Though social stratification changed significantly, few studies have examined changes in the mobility of young adults in this period. We compare two cohorts of young men in the National Longitudinal Surveys, the first reaching their thirties in the early 1980s and the second entering their thirties in the mid-1990s. We find evidence of declining income mobility for white and black men across these cohorts. We also find that the educational attainment among black men depends more strongly on parents' status in the younger cohort, perhaps indicating the liberalization of opportunities for black parents raising children in the post-Civil Rights period.

Rising economic inequality has renewed interest in trends in intergenerational mobility in the United States (Levine and Mazumder 2002, Hertz

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2007). If mobility is declining and children's life chances are becoming more dependent on their parents' economic status, high levels of inequality today may foreshadow an enduring polarization of economic life. Mobility trends were a core interest of stratification researchers in sociology (Duncan 1968, Mare 1992), but recent work has been dominated by economics. In this paper we study recent trends in intergenerational mobility, combining economists' focus on income mobility with sociologists' analysis of racial differences and educational mobility.

Economic research on mobility trends has examined how children's incomes vary in relation to the incomes of their parents. This association is often measured by an "intergenerational income elasticity," obtained from regressions of children's on parents' log incomes. A high level of mobility is indicated by a low elasticity, reflecting the weak connection between parental incomes and the incomes of adult children. Estimates of the trend in income mobility vary widely across data sources, methods, and choices of starting and ending periods (Harding et al 2005, Mayer and Lopoo 2005). Some studies report evidence of declining mobility, particularly through the 1980s and 1990s as family income inequality rose (Levine and Mazumder 2002, Aaronson and Mazumder 2008). Other studies, however, report no clear trend (Hertz 2007, Lee and Solon 2009).

Sociological research on mobility trends has focused on educational and occupational mobility as well as differences in mobility across population subgroups. In the period of rising inequality, incomes have become more unequal across levels of schooling. Under these conditions, educational mobility has become a key channel through which economic inequality may be reproduced from one generation to the next. The African American experience with educational mobility is distinctive. For African Americans, the U.S.

mobility regime has been transformed not just by the rise in economic inequality, but also by Civil Rights reforms expanding educational opportunity. Black children born in the early 1960s were the first to grow up with school desegregation and institutionalized affirmative action in college admissions. By exploring changes in educational and income mobility among recent cohorts of black and white men, we hope to clarify trends in the reproduction of inequality under conditions of rapid political and economic change.

We study trends in mobility by analyzing two cohorts of the National Longitudinal Survey. The National Longitudinal Survey of Young Men (NLS66) provides data on a cohort born 1945 to 1952, who reach their early thirties concurrent with the large increase in income inequality in the late 1970s and early 1980s. We compare these men to those from the National Longitudinal Survey of Youth (NLSY79) who were born 1958 to 1965, reaching their early thirties in the early 1990s following a decade of rising income inequality, well after Civil Rights reforms had been implemented. In contrast to earlier studies, these data offer large sample sizes that allow us to distinguish the mobility of blacks and whites. We also broaden the analysis to consider several indicators of the socio-economic starting points of children—family incomes and the educational attainment of both parents. This approach provides a more encompassing look at the socio-economic resources of children, particularly at a time when mothers' labor force participation and single-parenthood were becoming more common.

Income and Educational Mobility

Partly motivated by the growth in U.S. income inequality, recent research on mobility trends has focused on the intergenerational association of incomes. Early estimates correlated the annual earnings of adult sons with

their fathers' earnings when the sons were just entering the labor market. These analyses yielded correlations of around .2, indicating that economic inequality was only modestly reproduced from one generation to the next in the United States (Behrman and Taubman 1985, Hauser and Sewell 1975). Solon (1992) argued that annual earnings data contained a large transitory component that attenuated these estimates. With data from the Panel Study of Income Dynamics (PSID), he estimated the permanent incomes of fathers by averaging over several years, reducing the influence of transitory variance. The intergenerational correlation of permanent incomes was found to be around .4 and subsequent estimates have been even larger as more longitudinal data was used in the estimation of permanent incomes (Mazumder 2005).

The economic focus on income mobility contrasts with sociological research on occupations and education. Sociologists understood the limitations of observations on a single year of income and viewed occupation and educational attainment as more stable indicators of socio-economic status. From a sociological perspective, education is an important outcome in its own right. Education measures social status, is amenable to policy interventions, and is the central variable intervening between parents' and children's economic stations. From this perspective, parent-child income correlations are largely products of parents' investments in children's schooling to improve their earnings potential. Educational mobility also occupies a central place in the analysis of American racial inequality. School desegregation and affirmative action in college admissions became key strategies for promoting black social mobility. By the late 1990s, tacitly weighing the contributions of discrimination and human capital to black disadvantage, Christopher Jencks and Meredith Phillips (1998) argued that disrupting the intergenerational

transmission of racial inequality depended significantly on the school success of African American children.

Typically in mobility studies, researchers focus on the status of fathers and their sons. For example, income elasticities are estimated for sons' incomes with respect to fathers' incomes. Studies of educational mobility relate sons' educational attainment to fathers' educational attainment. Because mothers' labor force participation, single-parenthood, and assortative mating increased substantially in the period under study, it is important to consider the family context for mobility. Under these conditions, fathers' status provides a partial signal of socio-economic origins (Beller 2009). We include information on both parents' characteristics, using mothers' and fathers' education as well as their combined income in order to gain a thorough picture of children's resources.

Mobility Trends

Research on mobility trends typically emphasizes the link between mobility and opportunity. Declining mobility indicates what Duncan (1968, p. 677) called the "rigidification" of social stratification. Increasing mobility indicates greater social openness, perhaps associated with modernization, reduced discrimination, or greater meritocracy. Mobility and opportunity are not synonymous; even with perfect opportunity we would expect some relationship between parents' and children's socioeconomic statuses (Jencks and Tach 2006). Nevertheless, by examining mobility patterns across birth cohorts, we may gain insight into how economic, social, and political affairs shape stratification processes (Mare 1992).[1]

[1]In fact, with our study design we cannot distinguish cohort from period effects. In theory, differences in the mobility experiences of two cohorts could stem from differences

Sociological research examining cohorts born from 1900 to 1960 regularly reports increasing occupational mobility (Biblarz et al. 1996, Grusky and DiPrete 1990, Hout 1988). In contrast to this work on older cohorts, studies including cohorts born since the 1960s do not find a clear upward trend in occupational mobility. Recent research on income mobility that includes cohorts born since 1960 also finds no clear trend. Harding and coauthors (2005) examine several surveys, including the General Social Survey and the Occupational Change in a Generation (OCG) surveys, and find no consistent trend in mobility. Several analyses of the PSID also report no clear trend in income mobility across cohorts (Mayer and Lopoo 2005, Lee and Solon 2009).

An important exception within the literature on income mobility is given by Aaronson and Mazumder (2008) who analyze census data from 1940 to 2000. With these data, parental income is not observed directly but estimated as a function of the average income at the time and place (state) of the son's birth. The analysis had much more power to detect trends than analyses centered on smaller surveys such as the PSID. With this method, income mobility is found to remain stable from 1950 to 1980 then increase from 1980 to 2000. The authors observe that trends in income mobility track trends in income inequality, which they attribute in part to the rising returns to education when inequality is increasing. In this interpretation, educational mobility may remain constant, but highly educated sons experience rising incomes, increasing the intergenerational income elasticity.

The diversity of findings can be attributed to different cohort compar-

in the characteristics of the group members or from differences in the macro-social environments during the years in which they were growing up and entering the labor and marriage markets. Since we cannot separately identify cohort and period effects in this paper, we use the two terms interchangeably.

isons, different measures and data, and different sample selection rules. The sensitivity of results to model specifications and data analytic decisions can be acute even when analyzing the same surveys. For example, Harding and coauthors (2005) use a linear trend to detect cohort changes in the intergenerational income elasticity using the PSID and find that the elasticity rises over time (thus, mobility declines) while Mayer and Lopoo (2005) also use a linear trend in the PSID and find the elasticity declines (thus, mobility rises), though in both cases the change is statistically insignificant.

Sociological and economic evidence to date remains inconclusive regarding whether the mobility regime shifted for cohorts born around 1960. The 1960s cohort is the first to grow up through the period of rising inequality. Inconclusive results, largely based on the PSID, are partly due to small samples of cohorts. This limitation motivates an analysis of mobility trends with additional, larger, datasets.

Race and Mobility

Racial differences in mobility trends are of longstanding sociological interest (Blau and Duncan 1967, Featherman and Hauser 1976, Hout 1984). For this research, the Civil Rights Movement is pivotal. Before the mid-1960s, African Americans' economic attainment was largely detached from that of their parents. The sharply segregated and discriminatory structures of opportunity during the pre-Civil Rights period—in schools and the labor market—narrowed the occupational possibilities for black workers. High rates of black occupational mobility estimated for this period largely reflected small upward and downward movements within this narrow range (Hout 1984, p. 1393). School desegregation, anti-discrimination law, and other measures to equalize opportunity coincided with converging patterns of labor market mobility

between blacks and whites. Featherman and Hauser (1976), for example, find that the association between African American fathers' and sons' occupational status was significantly higher in 1973 than 1962. They interpret the appearance of declining mobility to reflect the wider range of socio-economic outcomes and improvements in black parents' ability to convey advantages to their children.

Much of the research on black mobility trends compares 1962 to 1973, the years of the Occupational Change in a Generation Surveys (OCG). By 1973, however, the liberalization of America's racialized opportunity structure was barely underway. Affirmative action in higher education, both in college admission and hiring, only unfolded in the 1970s. Private anti-discrimination measures, such as the development of human resource departments in large firms, also expanded significantly after 1973. Between 1970 and 2000, the number of young black men with college degrees more than doubled, and black families' incomes and male workers' earnings gained relative to whites through the mid-1970s, although progress halted through the 1980s (Jaynes and Williams 1989, Welch 2003). Though there remains strong evidence of racial discrimination in the contemporary American labor market, educational and economic opportunities for African American children growing up during the 1980s and 1990s seem significantly better than in 1973, in the immediate aftermath of Civil Rights. As a consequence we would expect even greater convergence in black and white mobility for younger cohorts than were found in the studies of the 1970s.

Data, Measures, and Methods

We draw our data from two cohorts of the National Longitudinal Surveys: the 1966 Young Men (NLS66) cohort and the 1979 Youth (NLSY79) cohort.

The NLS66 surveyed a national sample of 5,225 men aged 14 to 24 in 1966 and reinterviewed them regularly through 1981. The NLSY79 is based on a national sample of 12,868 men and women age 14 to 22 in 1979. The NLSY79 cohort was surveyed annually through 1994 and every other year thereafter. Useful for our analysis of racial differences in mobility, both surveys contain an oversample of African Americans. These two cohorts are ideal for comparing the mobility patterns of black and white men, as the earlier cohort entered the labor market shortly after major Civil Rights advances and just prior to the large increases in economic inequality, while the latter entered during a period of sharply rising economic inequality but after Civil Rights reforms had time to take hold.

Within each cohort, we focus our analysis on sons and their parents.[2] We observe each son in our sample twice. The first observation, at ages 14 to 21, records parents' income and education. This age range ensures consistency across cohorts and no overrepresentation of late home-leavers. The second observation is taken 12 to 15 years later, the longest lag possible given the end point of the NLS66 survey. At the second observation we record the family incomes and educational of attainment of the now-adult sons. The sample is restricted to sons who were living with at least one parent at the time of the first observation and who were living outside the parental home and not enrolled in school at the time of the second observation.

[2]We restrict our analysis to male children for two reasons. First, it increases cross-cohort comparability, since the NLS66 includes only men in its sample. However, it is possible to use the NLS Young Women 1968 cohort data to study daughters' mobility. In this study we focus only on sons, following most of the mobility literature (though for an exception see Chadwick and Solon 2002). Men's and women's labor market experiences differ substantially enough that combining men and women may obfuscate economic mobility patterns. Moreover, women's labor market attachment increased steadily over the period covered in this analysis, likely further distinguishing male and female mobility trends. Future analyses should consider trends in daughters' mobility.

Sons' education is measured by the years of schooling completed by the time of our follow-up, in their late twenties to mid-thirties. Because years of education is topcoded at 18 in the NLS66, we also topcode education at 18 years in the NLSY79. Robert Mare (1981) showed that linear regression estimates of the effect of family background on schooling were sensitive to changes in the distribution of educational attainment. Family background effects declined across the OCG surveys as an artifact of rising educational attainment. Mare proposed a logistic regression analysis of a series of dichotomous conditional transitions (e.g., entering high school given completion of elementary schooling, entering college given high school graduation) that has since become standard in the field. In our data, the mean level of schooling changes little across cohorts, so shifts in the education distribution do not induce changes in the regression coefficients. We report linear regression estimates, as they allow us to retain all the information on schooling completed (rather than focusing on a few dummy variables). We code parental education in five categories: missing (if the parent either does not live with the child or does not report his/her years of education), less than high school (fewer than 12 years of schooling), high school (12 years), some college (13 to 15 years), or college or more (16 to 18 years of education). This categorical measure captures the non-linear relationship between parents' and sons' schooling. Table 1 contains descriptive statistics for parents' and sons' educational attainment by cohort and race. As expected, the educational attainment of the young men's parents' increased across cohorts. Somewhat surprisingly, the young men's education appears to decline slightly across cohorts. The mean difference is driven primarily by the somewhat higher proportion of sons with at least a college education in the NLS66 survey. Comparisons of men from the same birth cohorts in the March Current Pop-

Table 1. Descriptive statistics for parents' and sons' education, 1966 and 1979 cohorts by race.

	Whites		Blacks	
	1966 Cohort	1979 Cohort	1966 Cohort	1979 Cohort
Son's Schooling				
Mean Yrs	13.91	13.31	12.37	12.43
SD Yrs	2.55	2.41	2.77	2.02
$< HS$	8.45	11.16	27.62	17.44
BA+	35.04	25.98	15.12	10.61
Father's Schooling				
Mean Yrs	10.91	12.26	7.42	10.23
SD Yrs	3.36	3.24	3.84	3.33
Missing	13.59	6.45	41.33	27.22
$< HS$	40.17	26.72	47.38	37.38
BA+	10.55	20.27	1.81	4.32
Mother's Schooling				
Mean Yrs	11.18	11.98	8.41	10.94
SD Yrs	2.76	2.40	3.45	2.52
Missing	7.17	4.76	20.16	10.39
$< HS$	34.11	23.42	64.72	46.02
BA+	9.15	11.48	2.22	7.05
N	1715	2186	496	1319

ulation survey (CPS) confirm the higher prevelance of college completion in the earlier cohort. CPS data show about 33 percent of white men aged 29 to 36 in 1981 (born 1945 to 1952) obtained a college degree or further education (compared with about 35 percent in our sample), while this percentage declined for white men aged 29 to 36 in the 1994 CPS (born 1958 to 1965) to about 28 percent (compared with 26 percent in our sample) (authors' tabulations). These results also appear to agree with Goldin and Katz (2008, p. 249).

Like our measures of sons' educational background, our measure of sons' economic background includes information on both parental householders. We create measures of family income that sum husbands' and wives' annual

income from several sources, including wages and salary, farm and business income, and several government programs such as unemployment compensation. We deflate income to constant dollars using the personal consumption expenditures index. We then average over three years of observation (the first three years of the survey for origin family income and the last three years of observation for adult family income) in order to reduce the influence of measurement error, which has been shown to reduce parental-child income correlations (Haider and Solon 2006). Estimates of the income elasticity are based on parents' and sons' log family income. A few respondents with non-positive incomes are dropped from the analysis.

Data on parental incomes must be recoded in the two surveys. In the NLS66 survey, parental income is measured categorically. We impute income as the mid-point of the category, with the exception of the top, open-ended category, which we multiply by 1.4. (Different topcodes did not affect our results.) To make the NLSY79 data comparable to the NLS66, we recoded NLSY79 incomes into the same categories of quantiles as the NLS66. For example, if 10 percent of NLS66 sample fell into the lowest income category, we set the lowest income cateogry in the NLS79 to include the bottom 10 percent of incomes. Just as we did for the NLS66, we then set parental income in the NLSY79 to the midpoints of each income category, adjusted for inflation, then averaged over three years. Despite the recode, important differences remain. In the NLSY79 survey, the parents themselves reported their income. In the NLS66, the sons reported their parents' income during the first years of the survey. Nevertheless, it is possible to validate the reports for some respondents. Some of the fathers of the NLS66 sons were themselves surveyed as part of the National Longitudinal Survey of Older Men 1966. A correlation analysis of the fathers' and sons' reports of the

Table 2. Descriptive statistics for parents' and sons' family incomes, 1966 and 1979 cohorts by race. Log permanent income, 2000 dollars.

	Whites		Blacks	
	1966 Cohort	1979 Cohort	1966 Cohort	1979 Cohort
Parental Family Income				
Mean	10.624	10.724	9.794	10.052
SD	.583	.585	.704	.696
Sons' Family Income				
Mean	10.640	10.548	10.191	10.060
SD	.586	.658	.802	.916
N	1679	1412	612	729

parents' income reveals a reliability ratio of 0.93, extremely high (Levine and Mazumder 2002). Thus, differences in measurement error in parental income should not cause cohort differences in mobility. Table 2, reporting descriptive statistics for incomes, indicates the increase in income inequality across the NLS cohorts for black and white sons.

Our analysis aims to describe trends in the relationship between sons' social backgrounds and their adult attainment, not to produce a set of causal parameters estimating the "effect" of parents' income or education. Consequently, we focus on parsimonious models that allow for simple descriptions of mobility in the two cohorts. Because of the NLS design, we are able to divide our data into two mutually exclusive cohorts and we allow them to differ in completely flexible ways. We assume no specific functional form for the cohort change, nor do we assume that the cohorts share the same error variance. Most other studies of mobility trends have been unable to avoid at least one of these assumptions because of small samples (e.g., Fertig 2003, Harding et al. 2005, Lee and Solon 2009). We examine the mobility experiences of black and white men in each cohort separately, then study within-race cross-cohort differences in mobility. We also use difference-in-

difference statistics to test whether mobility trends differed across races.

Analysis

The analysis has three parts: (1) mobility from parents' education to son's education, (2) from parents' income to son's education, and (3) from parents' income to son's income. Differences in the income and education variables require different forms of data analysis. We describe each of our methods and results in turn.

From Parents' Education to Son's Education

We examine the relationship between son's educational attainment and the educational attainment of his father and his mother, $\boldsymbol{e}_{fi}$ and $\boldsymbol{e}_{mi}$, where $\boldsymbol{e}_{ji}$ is a vector of dummy variables indicating a parent from family i with: (1) less than high school education, (2) some college, (3) a four-year degree or more, or (4) missing due to nonresponse or nonresidence. Parents with no more (or less) than a high school diploma are in the reference category. This categorical measure captures the non-linear relationship between parents' and sons' schooling. For a given racial group in a given cohort, educational mobility is estimated with the regression,

$$e_i^s = \alpha_1 + \boldsymbol{e}'_{fi}\boldsymbol{\beta}_{1,f} + \boldsymbol{e}'_{mi}\boldsymbol{\beta}_{1,m} + \varepsilon_{1,i}$$

With this specification, mobility is described by the coefficient vectors $\boldsymbol{\beta}_m$ and $\boldsymbol{\beta}_f$. A summary statistic for the overall level of mobility is obtained by collecting the education effects in a single vector, $\boldsymbol{\beta} = [\boldsymbol{\beta}_f \boldsymbol{\beta}_m]$, and calculating the Euclidean norm,

$$\|\boldsymbol{\beta}\| = (\boldsymbol{\beta}'\boldsymbol{\beta})^{1/2},$$

which is the square root of the sum of squared elements of $\boldsymbol{\beta}$. A norm of $\|\boldsymbol{\beta}\| = 0$ indicates perfect educational mobility. When the regression coefficients are large, the norm of the vector will also be large, indicating a high degree of educational reproduction. A large Euclidian norm indicates that educational attainment is strongly inherited across generations. To obtain inferences for the norm, we simulate a posterior distribution, assuming the regression coefficients have a normal posterior distribution located at the least squares estimates. We also examine the role of distributional changes in educational mobility (such as educational upgrading across cohorts) by comparing bivariate densities.

Regressions for educational mobility are reported in Table 3. Son's educational attainment is associated with both mothers' and fathers' education. Highly educated parents are more likely to have highly educated sons than parents with low levels of education. An association between parents' and sons' educational attainment is evident for blacks and whites in both cohorts.

Has educational mobility changed across cohorts? Figure 1 indicates that patterns of educational inheritance for white sons remained stable across the two cohorts. The weights (coefficients) associated with different levels of paternal and maternal education in white sons' educational attainment function are extremely similar across cohorts. The one exception is the influence of a paternal BA: the sons of college-educated fathers obtained relatively more schooling in the later cohort than the earlier. In the earlier cohort, white sons with college educated fathers obtained an average of 0.8 extra years of schooling beyond their counterparts with high school educated fathers. In the later cohort, this advantage grew to about 1.5 years. Accounting for this rise in the coefficient of the paternal BA, total educational stability measured by the norm, $\|\boldsymbol{\beta}\|$, rose slightly for white sons, though the increase was

Table 3. Regression analysis of educational mobility, sons' years of schooling, black and white men, NLS66 and NLSY79.

	Whites				Blacks				Racial	Blacks
	1966 Cohort	1979 Cohort	Diff	Δ to 0?	1966 Cohort	1979 Cohort	Diff	Δ to 0?	Diff-in-Diff	$> \Delta$ to 0?
Intercept	14.457	13.164	−1.294	Y	15.056	12.779	−2.277	Y	.984	Y
	(.114)	(.079)	(.139)		(.486)	(.114)	(.499)		(.518)	
Father's Schooling										
Missing	−.635	−.785	−.149		−1.530	−.258	1.272	Y	−1.421	Y
	(.199)	(.199)	(.281)		(.466)	(.152)	(.491)		(.566)	
$< HS$	−.659	−.590	.069	Y	−1.141	−.197	.944	Y	−.875	Y
	(.145)	(.122)	(.190)		(.452)	(.139)	(.473)		(.510)	
Some college	.610	.737	.127		1.435	.435	−1.001	Y	1.128	Y
	(.233)	(.151)	(.278)		(.992)	(.265)	(1.027)		(1.064)	
BA+	.765	1.520	.756		1.124	.958	−.166	Y	.922	Y
	(.219)	(.142)	(.261)		(1.135)	(.296)	(1.173)		(1.201)	
Mother's Schooling										
Missing	−.882	−.998	−.116		−1.916	−1.254	.662	Y	−.778	Y
	(.243)	(.222)	(.329)		(.473)	(.198)	(.512)		(.609)	
$< HS$	−1.171	−.860	.312	Y	−1.845	−.534	1.311	Y	−.999	Y
	(.137)	(.121)	(.182)		(.405)	(.126)	(.424)		(.461)	
Some college	.735	.699	−.036	Y	−.275	.563	.837		−.874	
	(.209)	(.152)	(.259)		(.852)	(.220)	(.880)		(.917)	
BA+	1.008	1.156	.148		.950	1.503	.552		−.404	
	(.244)	(.168)	(.296)		(.893)	(.283)	(.937)		(.982)	
Education joint p-value	.000	.000	.000	-	.033	.000	.000	-	.000	-
$\|\|\boldsymbol{\beta}\|\|$	2.413	2.752	.340	-	4.398	2.447	−1.950	-	2.290	-
	(.148)	(.115)	(.187)	-	(.561)	(.192)	(.593)	-	(.622)	-
R^2	.185	.278	-	-	.171	.143	-	-	-	-
N	1715	2186	-	-	496	1319	-	-	-	-

small. For whites, there appears to be very little cohort change in educational mobility.

For blacks, in contrast, educational mobility increased substantially across cohorts. This increased mobility was driven in large part by reductions in the predicted influence of fathers' education. The average differences in sons' years of schooling across paternal education groups decreased significantly over time, as reflected both in Table 3 column 7 and Figure 1 panel 3. The average differences between the schooling of sons' with relatively low-education mothers (high school degree or less) also declined over time. Overall, total educational stability decreased significantly across the two cohorts for African American sons (dropping from a vector norm of 4.4 to about 2.4). African Americans sons' educational attainment appears to have become much less tied to their parents' education over time. The total level of educational mobility for the more recent African American cohort resembles the level of educational mobility of white sons, whereas in the earlier cohort educational mobility differed significantly across races.

From Parents' Income to Son's Education

To estimate mobility from parents' income to sons' educational attainment, we regress sons' years of schooling on parents' log income. The income-education equation is written:

$$e_i^s = \alpha_2 + \beta_2 y_i^p + \varepsilon_{2,i}$$

We detect similar patterns in income-education mobility as we found in education-education mobility. Table 4 shows that for whites, the relationship between parental income and sons' education has remained stable across the two cohorts, decreasing insignificantly from 1.46 to 1.23. For blacks,

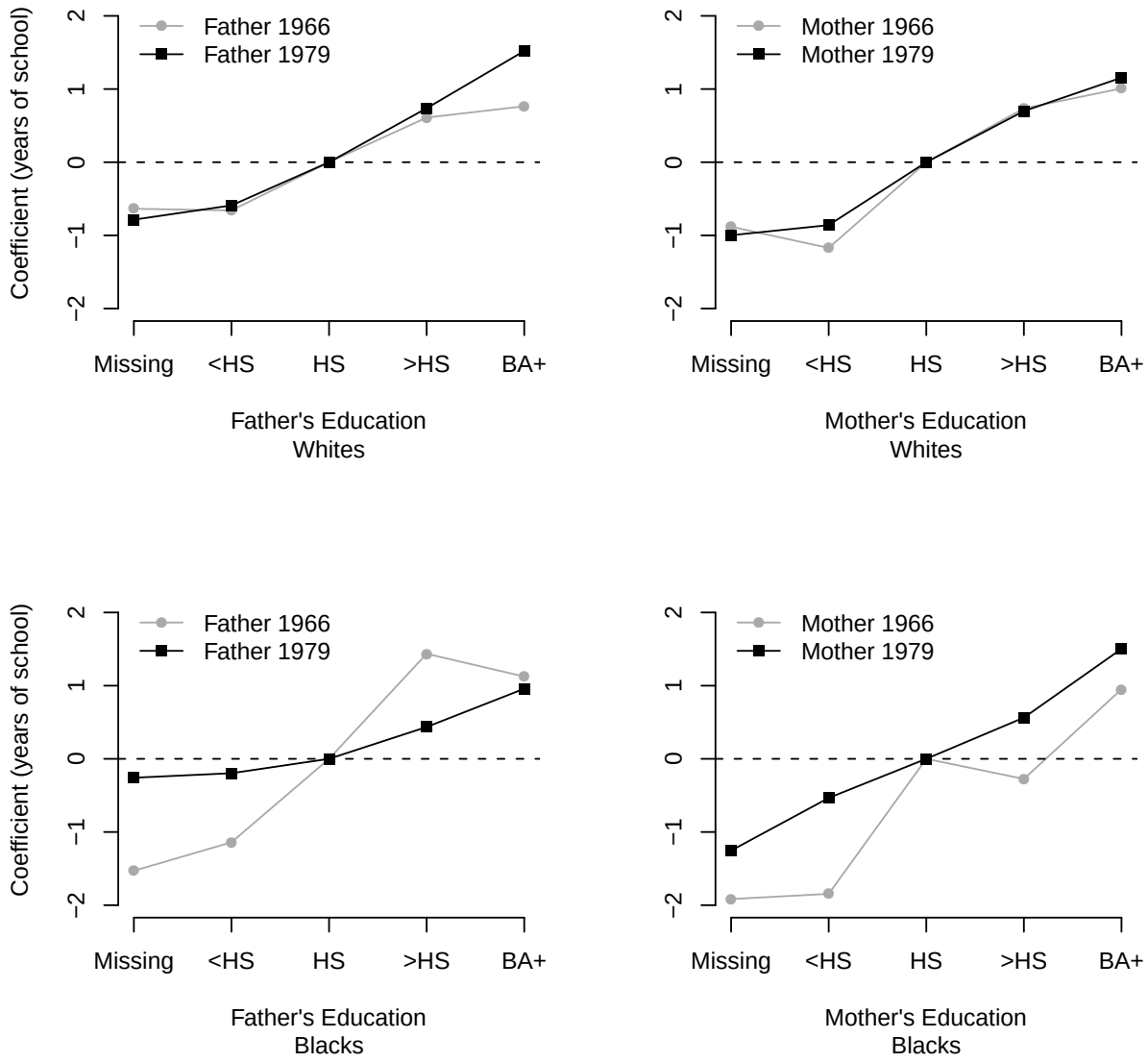

Figure 1. Coefficients from the regression analysis of educational mobility, black and white men, NLS66 and NLSY79.

Table 4. Regression analysis of income-educational mobility, black and white men, NLS66 and NLSY79.

	Whites			Blacks			Racial
	1966 Cohort	1979 Cohort	Diff	1966 Cohort	1979 Cohort	Diff	Diff-in-Diff
Intercept	−1.541	−0.046	1.495	2.241	6.110	3.870	−2.375
	(1.093)	(.965)	(1.458)	(1.674)	(.797)	(1.854)	(2.358)
Log Parental Income	1.464	1.230	−.234	1.040	.622	−.418	.183
	(.103)	(.090)	(.136)	(.170)	(.079)	(.188)	(.232)
R^2	.115	.098	-	.072	.052	-	-
N	1564	1729	-	478	1128	-	-

however, sons' schooling has become significantly less stratified by parental incomes. Figure 2 helps explain why: the educational distribution for black men became substantially more compressed in the later cohort. Because there were no longer black respondents with very low levels of education by the later cohort, the association between family background and educational attainment became weaker.

In the education domain, it appears that the changes associated with the Civil Rights movement, including affirmative action policies and school desegregation programs, may have helped increase African American mobility. However, these gains do not appear to translate to the economic realm. We observe a very similar, downward, trend in income mobility for both black and white men.

From Parents' Income to Son's Income

To model income mobility we follow recent studies by regressing sons' log incomes on log parental incomes. For a given cohort (NLS66 or NLSY79) and race (black or white), for a son in family i, log family income, y_i^s, is

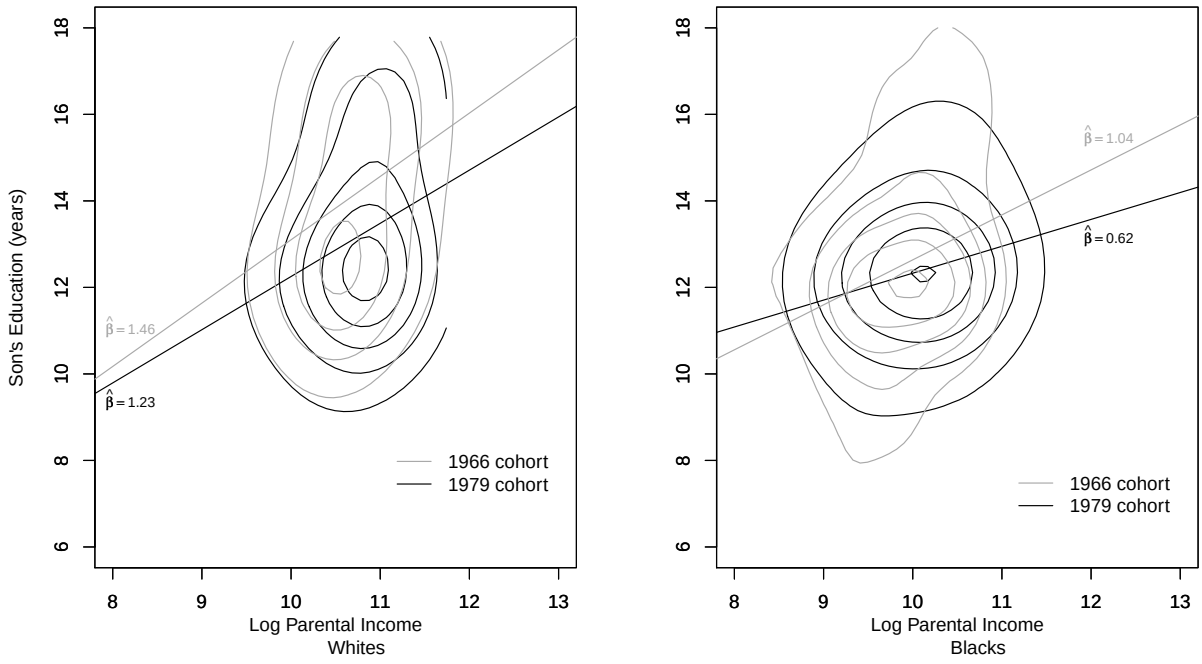

Figure 2. Bivariate density and linear fit for parental income and son's education, black and white men, NLS66 and NLSY79.

written as a linear function of his parents' log income, y_i^p:

$$y_i^s = \alpha_3 + \beta_3 y_i^p + \lambda A_i + \gamma A_i^2 + \varepsilon_{3,i},$$

where we also adjust quadratically for son's age, A_i, to account for life-cycle effects. Given the small window of ages within which sons are observed, this adjustment does not have much impact on our results.

Interest centers on the income elasticity, β_3, that quantifies the average persistence of parental income across generations. An elasticity of 0.5 implies that a 10 percent difference in two families' incomes is expected to translate to a 5 percent difference in their sons' incomes. While the elasticity is a measure of persistence, $1 - \beta_3$ is a measure of mobility, representing the fraction by which an individual may expect to be closer to the mean than his parents (Bowles and Gintis 2002). The coefficient, β_3, describes the average mobility for a particular race and cohort. Adding subscripts to indicate race ($r = b$ or w) and cohort ($c = 66$ or 79), race-specific cohort trends are given by the difference, $d_r = \beta_{3,79r} - \beta_{3,66r}$. Racial differences in mobility trends are given by the difference-in-difference, $d_w - d_b$.

The change in mobility, d_r, can be decomposed into components due to the change in the income distribution and the change in the intergenerational correlation. To formalize the decomposition, transform y_i^s and y_i^p by regressing both on son's age, A_i and A_i^2 and saving the residuals. A regression of these transformed income measures, y_i^s and y_i^p, will now yield the same coefficients as a multiple regression of the raw measure of son's income on parental income and A_i and A_i^2. The bivariate regression coefficient from the transformed data for cohort c,

$$\beta_c = \rho_c \sigma_c^p / \sigma_c^s,$$

Table 5. Regression analysis of income mobility, black and white men, NLS66 and NLSY79.

	Whites			Blacks			Racial
	1966 Cohort	1979 Cohort	Diff	1966 Cohort	1979 Cohort	Diff	Diff-in-Diff
Intercept	7.680	3.559	−4.121	7.235	3.488	−3.747	−.374
	(.985)	(1.244)	(1.587)	(2.235)	(2.410)	(3.287)	(3.650)
Log Parental Income	.199	.299	.100	.140	.315	.175	−.075
	(.024)	(.029)	(.037)	(.047)	(.048)	(.067)	(.076)
Son's age (A)	.053	.415	.362	.183	.391	.208	.154
	(.112)	(.141)	(.180)	(.257)	(.274)	(.376)	(.417)
A^2	−.000	−.011	−.011	−.005	−.011	−.006	−.005
	(.003)	(.004)	(.005)	(.007)	(.008)	(.011)	(.012)
R^2	.076	.089	-	.016	.061	-	-
N	1679	1412	-	612	729	-	-

where ρ_c is the intergenerational correlation coefficient, and σ^p and σ^s are the standard deviations of incomes for parents and sons. The elasticity may rise (and mobility decline) if inequality rises (σ^p_c/σ^s_c declines) even if the correlation, ρ_c remains unchanged. Suppressing the race subscripts, the decomposition of the change in mobility is given by:

$$\begin{aligned} \log \beta_{79} - log\beta_{66} &= \log(\beta_{79}/\beta_{66}) \\ &= \log(\rho_{79}/\rho_{66}) + \log(\sigma^p_{66}/\sigma^p_{79}) + \log(\sigma^s_{79}/\sigma^s_{66}) \end{aligned}$$

The total change in the log elasticity thus depends on the change in the intergenerational correlation, the changes in parents' income inequality, and the change in sons' income inequality. If income inequality is rising over several decades, the elasticity may increase because inequality has increased for sons.

Table 5 contains our estimates of intergenerational income mobility. Income inheritance appears to have increased across cohorts for both black and white men. The income elasticity rose from an estimated 0.2 to about 0.3. Both of these estimates are below standard income elasticity estimates (likely due to the re-coded categorical measurement of parental income necessitated by the NLS66 data collection), although they correspond roughly with Levine and Mazumder's (2002) analysis of the same data. Although the level of estimated inheritance is low, the rise across cohorts is large and significant. Unlike the change in education mobility, the trend in income mobility is similar for black and whites. Black income inheritance rose slightly more than white, leading to nearly equal levels of income mobility among blacks and whites in the more recent cohort.

Increases in income elasticities could be driven by increasing income inequality or by increasing correlations between sons' and parents' incomes. The rise in inequality has been well-documented. Did the correlation also rise? Table 6 shows the decomposition of the elasticities reported in Table 5 into components representing changes in sons' income distributions, parents' income distributions, and parent-son correlations. Over 70 percent of the increase in inheritance (the decrease in mobility) was driven by changes in the correlation of parents' and sons' incomes, rather than changes in their income distributions. This estimate may be high because the categorical measurement of parents' incomes reduces the change in income variation across cohorts. In fact, the bivariate income densities (Figure 3) show little change across cohorts but for a mean shift, due in part to this measurement issue. Nevertheless, there is strong evidence that rising elasticities were driven not solely by rising inequality but also increasing correspondence between parents' and sons' incomes.

Table 6. Decomposition of changes in income mobility, adjusted for son's age.

	Whites		Blacks	
	Ratio	Percent of Total	Ratio	Percent of Total
Total, $\log(\beta_{79}/\beta_{66})$	.408	100.0	.809	100.0
$\log(\rho_{79}/\rho_{66})$	.287	70.4	.681	84.1
$\log(\sigma^p_{66}/\sigma^p_{79})$	−.004	−.9	−.004	−.5
$\log(\sigma^s_{79}/\sigma^s_{66})$	.124	30.4	.132	16.4

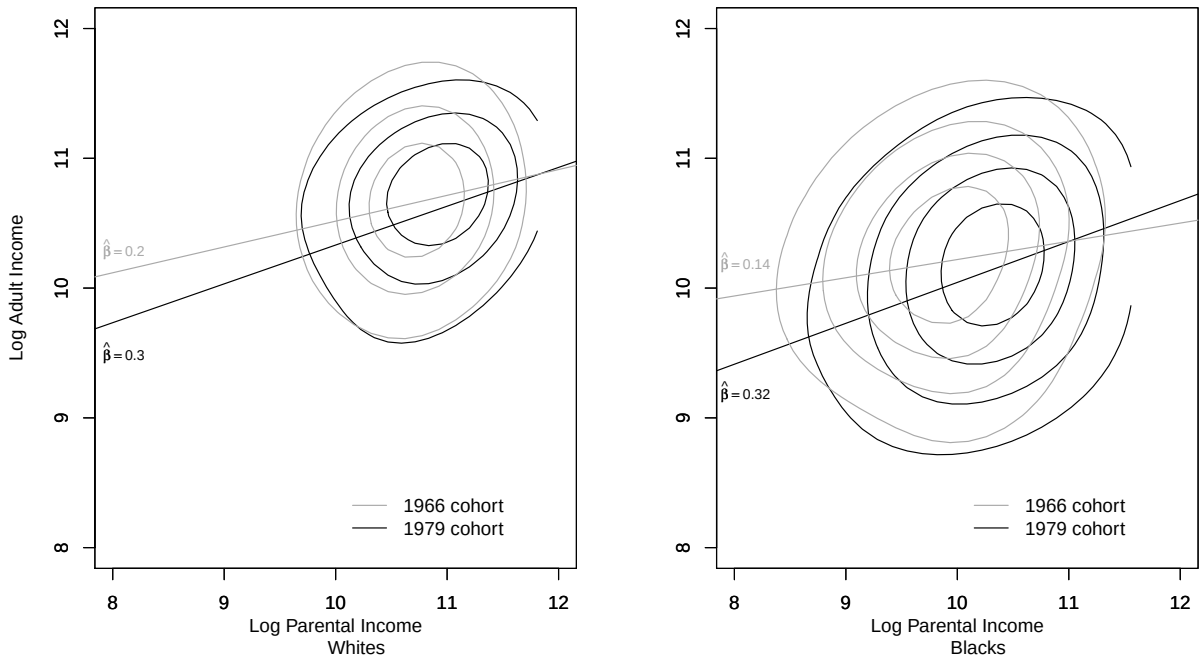

Figure 3. Bivariate density and linear fit for parental income and son's income, adjusted for son's age, black and white men, NLS66 and NLSY79.

Discussion and Conclusions

The comparison of mobility in the two NLS cohorts reveals two distinct patterns. First, there is clear evidence of declining income mobility across the two cohorts, and this can be seen for blacks as well as whites. The era of rising inequality has coincided with the increasing reproduction of income inequality. This trend is not merely an artifact of the rise in inequality but stems from the growing correlation in incomes of sons to their parents. Second, trends in educational mobility vary significantly for blacks and whites. Among white men, there is very little difference in either the income-education or education-education relationship across cohorts. Among African American men, there is clear evidence of increased educational mobility. We attribute this increased mobility to the expansion of educational opportunities for blacks growing up in the 1970s and 1980s.

The finding of declining income mobility in the period of rising inequality is consistent with analyses of other data by Aaronson and Mazumdur (2008) and Fertig (2003). Why might income mobility have declined, particularly when the educational mobility has remained stable or increased? Research on rising inequality suggests two conjectures. First, the marriage behavior of sons may have changed, selecting wives more on the basis of income in the past. There is little direct evidence on this, though several studies report an increase in educational assortative mating. If women's incomes are driving an increase in assortative mating, we would observe an increase in the correlation between parental income and sons' incomes, just as we found. Second, as labor market institutions have eroded, the income advantages of inherited wealth and cultural capital, independent of education, may also have increased. While these benefits of social background are seldom included in studies of earnings and family incomes, they are plausible drivers of income

inequality at time when collective wage-setting, by unions, internal labor markets, and minimum wage levels have eroded.

These findings also point to a larger conclusion. In much of the research on rising inequality, the role of education is pivotal. Education has been viewed as the key dimension along which inequality has increased, and improving educational opportunity is viewed as the main tool of egalitarian social policy (e.g., Goldin and Katz 2008, Jencks and Phillips 1998). Our analysis of mobility in the NLS cohorts suggests that economic inequality has become more enduring, independent of shifts in the structure of educational opportunities. The recent experience of African American men is particularly important. Educational opportunities improved for black men, though economic mobility declined. It does appear that, in the era of high inequality, there are significant influences of social background on incomes, that run independently of the intervening influence of the school. In this context expanding educational opportunities for disadvantaged children may do less to weaken the reproduction of economic inequality than many hope.

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