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The Role of Education and Occupation in U. S. Social Mobility:
A Glimpse Inside the Black Box

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Abstract

While several studies have examined the link between parents' Socio-Economic Status (SES) and offspring SES, little is known regarding the actual transmission mechanisms which underlie these relationships. The purpose of this paper is to understand some of the independent transmission channels by which different measures of parental SES (income, education, and occupation class) are related to offspring income. We examine both the direct relationships between these parental SES measures and offspring income, and indirect relationships through offspring education and offspring occupation. In the absence of a structural model that establishes causation, we provide a glimpse inside the black box of social mobility as a first step to identifying causal pathways.

We first report bivariate relationships between three indicators of parental SES (income, education, and occupation status) and analogous SES indicators for their children. We then estimate ordered probit models for offspring education and occupation as a function of the three parental SES measures (and other exogenous characteristics). We view these offspring SES variables as important in their own right, and as intervening channels through which parental SES affects children's income. Finally, we estimate offspring income as a function of parental SES, offspring education, and offspring occupation class.

This approach allows us to isolate the relationship of each of the three parental SES measures to offspring income, holding other parental SES measures constant. From these estimates, we can gauge the relative effect size for each of the direct and indirect channels through which parental SES influences offspring income.

In the penultimate section of the paper, we use the results of the multi-equation multivariate analysis to simulate the expected effect of parental SES on offspring income, focusing on the effects of changes in parental SES that operate through offspring education and offspring occupation class.

The results of the analysis suggest that parental income has a large direct effect on offspring income, indicating that parental income is related to offspring income through mechanisms *other than* offspring educational attainment and occupation class. In contrast, parental education and occupational class indicators of parental SES are more closely related to offspring educational attainment and, to a lesser extent, offspring occupation. The strong indirect relationship between parental educational attainment and offspring income through offspring education suggests that differential educational aspirations, academic ability, information about higher education, or other similar mechanisms may be at least as important of a barrier to mobility for youth as lack of financial resources to cover education costs.

I.   Introduction

Understanding the process by which some people do, and others do not, attain social and economic status is essential in guiding social and economic policy. A highly fluid process, indicating a high degree of mobility, suggests policies designed to support poor people who are in that state only temporarily. A more rigid society, with little mobility, indicates that poverty is a more permanent state, and implies the need for fundamental policies designed to alter the labor market and education processes through which economic success is attained.

Indeed, important education and labor market measures are undertaken to promote mobility. Public financial support for higher education is justified as a means to provide a more 'even chance for success' among the nation's youth, offsetting the influence of parental SES on offspring economic position. Policies restricting nepotism and racial/gender favoritism, as well as market-oriented firm hiring policies that emphasize optimal matches between employer needs and worker skills, are also intended to foster mobility. Such measures are seen as 'filters' that will erode the stratifying effect of parental social class on offspring economic position.

Current concern regarding the increasing economic selectivity of U.S. colleges and universities reflects the view that college selection policies have eroded the mobility effect of higher education; that these policies may "reinforce many of the advantages of birth."[1] The work of social scientists also reflects this perspective. Goldthorpe (2005), for example, argues for an

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[1] See Correspondents of the <u>New York Times</u>, 2005 and Leonhardt, 2005, which states:
> On campuses that enroll poorer students, graduation rates are often low. And at institutions where nearly everyone graduates - small colleges like Colgate, major state institutions like the University of Colorado and elite private universities like Stanford - more students today come from the top of the nation's income ladder than they did two decades ago. Put another way, children seem to be following the paths of their parents more than they once did. Grades and test scores, rather than privilege, determine success today, but that success is largely being passed down from one generation to the next. A nation that believes that everyone should have a fair shake finds itself with a kind of inherited meritocracy.

'education-based meritocracy' in which a merit-based higher education system offsets the role of social class in determining outcomes.[2]

These concerns are also related to the broader issue of economic inequality. The United States has the highest level of income inequality among industrialized nations.[3] Moreover, the upward trend in American inequality contrasts with slower upward movements or reductions in other nations, especially after the millennium (Brandolini and Smeeding, 2007; Congressional Budget Office, 2007). This large and increasing level of inequality would be of less concern if a high level of mobility both within and between generations existed in the U. S. or if the differences reflected in the inequality measures were seen as resulting from a fair and meritocratic process. Unfortunately, this appears not to be the case. Evidence on the lack of mobility (especially at the bottom of the income distribution; see Jantii, et al., 2006) and on the growing economic selectivity in the nation's educational system (see Haveman and Wilson, 2006; Haveman and Smeeding, 2006) raise doubts regarding the openness of the structure of opportunities in the U. S. economy.[4]

In this paper, we use three measures of parental economic position (income, education, and occupation class), and estimate the direct linkage between these and offspring income. We

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[2] In his view, movement toward a less class-based society requires "…three main processes of change: (i) the association between individuals' social origins and their educational attainment must increasingly reflect *only* their level of ability; (ii) the association between individuals' educational attainment and the level of employment they eventually acquire must *strengthen* - as a result of qualifications acquired through education; and (iii) the association between educational attainment and level of employment must become *constant* for individuals of differing social origins."

[3] The families of children at the 10th percentile of the U. S. income distribution have about $8,900 per year per child, while those at the 90th percentile have about $50,000 per child (Rainwater and Smeeding, 2003). These differences are larger than in any other rich nation; and the 10th percentile number is lower in real PPP-adjusted spending terms than the same statistic for almost any other rich European Union country.

[4] Jantti, et al. (2006) have shown that the United States exhibits a much higher correlation between father's and son's incomes compared to the correlations in 5 other rich countries using well-matched longitudinal datasets. This is particularly true for the bottom quintile. They conclude, "Indeed, the combination of a high probability of American sons of the poorest fifth of fathers remaining in the lowest quintile group, the lower probability of "rags-to-riches" (poorest to richest) and slightly lower probability of "riches-to-rags" (richest to poorest), places the notion of American exceptionalism in a new light. The U.S., or at least the population of young U.S. men, seems to be distinguished from other countries by having greater low-income persistence, rather than less, having fewer very large position changes across generations rather than more, and possibly having a greater persistence of high income, rather than less." (p. 27)

also present estimates of the transmission channels between parental SES and offspring income, through offspring education and offspring occupation. Our results are no different from those of others in that they do not enable us to discuss causation; they do, however, provide a glimpse inside the black box of social mobility as a first step to identifying causal pathways, which we take to be the contribution of this paper. We first present a brief literature review and a discussion of our methods. The paper concludes with a summary of our findings, and suggests next steps for research.

II. Research on Intergenerational Mobility

Research on intergenerational mobility has a long and distinguished history. The first systematic empirical analysis of this process appeared in the early 1960s; this history is reviewed in Haveman (1987). Duncan and Hodge (1963) presented the dynamic process of social mobility in terms of a socioeconomic life cycle, distinguishing three important stages—family, schooling, and work. Family socioeconomic status was described by the occupational status of the father, and was seen as explaining the socioeconomic status (occupational status) of sons. The son's educational attainment was viewed as an intervening variable, determined in part by family SES (father's occupation) but also making an independent contribution to the son's occupational status.[5]

This early work served as the basis for a large number of empirical investigations of the questions suggested by the Duncan-Hodge work. The first of these was by Blau and Duncan (1967), and was a path-breaking analysis that rested on a special survey conducted by the U. S. Census—the Occupational Changes in a Generation (OCG) study. Blau and Duncan employed the model suggested by Duncan and Hodge, and were the first to reliably document the

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[5] The logic of this model suggested the following relevant questions: 1) What is the gross association between the SES (occupational status) of fathers and sons? 2) How does the son's educational attainment mediate this association? 3) What is the net association of son's educational attainment and his occupational status (apart from the relationship of the son's educational attainment on the fathers SES)?

relationship between son's education and his SES (occupational status), and that the son's education was the most important channel by which father's SES influenced son's SES.

The same OCG data, supplemented by other variables (e.g., IQ), were used in a subsequent study by Duncan, Featherman and Duncan (1972). They estimated increasingly complex models, including more extensive family background variables (family size and race), intervening variables (e.g., intelligence and motivation), and outcome variables (e.g., education and income).

This research resulted in a follow-up survey undertaken in 1973, referred to as OCGII, designed to enable study of the change in the mobility process from the early-1960s to the early-1970s. Featherman and Hauser (1978) undertook the primary analyses of the OCGII data, and exploited their replication of the OCG data. They applied more advanced models of the sort developed in the earlier studies, and their analyses yielded several important results, including evidence of increasing mobility over time (concentrated in middle of the occupational distribution), an increasing trend in the influence of schooling as a vehicle for occupational attainment, and strong and increasing effects of son's educational attainment on his occupation. These findings led the authors to conclude that 'opportunity' for men had increased somewhat over time in the U.S.

One final line of work should be noted. The 'Wisconsin Study' involves the numerous research papers and books that have analyzed data from the Wisconsin Longitudinal Study, a longitudinal probability of 9,000 seniors in Wisconsin high schools in 1957. A primary volume from this study, Sewell and Hauser (1975), employed the basic model of Blau and Duncan, but extended it in several dimensions—including the use of education/occupation variables (as both outcome and intervening variables), school characteristics, and more specific attributes describing family background. While the basic findings from these studies are consistent with

prior work, the Wisconsin studies reflect substantial advances in both empirical methods and data.

Despite the obvious importance of intergenerational economic mobility to concerns with both equity and efficiency, few economists addressed issues of social mobility until the 1990s. Solon (2002) and Zimmerman (2002) were simultaneously amongst the first in a long stream of mobility research by economists that make use of increased longitudinal data enabling multiple years of observations of the economic status of both parents and their offspring. In addition, new methodological tools have allowed a clearer understanding of some key measurement issues in assessing the intergenerational transmission of socio-economic status. In both the United States and Europe, numerous recent studies have measured and compared the extent of social mobility across nations with different economic systems and values (see review in Björklund and Jantti, 2008).

A number of recent contributions characterize current economic research on intergenerational mobility, including Solon (2002), Corak (2004), Bowles, Gintis and Osborne-Groves (2005), and Lee and Solon (2006).[6] This work provides substantial evidence that the overall level of U. S. social mobility, once thought to be greater than elsewhere, has come to be seen as little different and arguably lower than that in other western rich nations.[7] This result derives from both methodological and data advances, especially the use of more permanent measures of family economic status than those used in the early literature (see, for example,

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[6] Reviews of this literature include Erikson and Goldthorpe (2002), Corak (2004, 2006), Breen and Jonsson (2005), and Piraino and Haveman (2006) as well as Björklund and Jantti(2008) .

[7] Jantti et al. (2006) study patterns of intergenerational mobility across six nations—the U.S. and five European countries—using consistent sample restrictions (including the same ages of birth and periods of observation of fathers and sons incomes) and a common estimation method. They find statistically significant differences in intergenerational earnings persistence across six countries, with the level of mobility lowest in the US and highest in the Nordic countries. They find that most of the cross-country mobility differences are accounted for by intergenerational patterns in the tails of the bivariate earnings distributions. The authors (page 2) state: "Comparative studies of socio-economic mobility have long challenged the notion of 'American exceptionalism' and its belief in high rates of social mobility (citing Tocqueville and Marx, not Lipset). The sociological approaches (Erikson and Goldthorpe, 1992, 2002) suggest that the United States is fairly unexceptional. The economics literature (including Solon, 2002) suggests that the United States may indeed be exceptional not in having *more* mobility but in having *less*, a finding our results support."

Mazumder, 2005). This conclusion contrasts with the findings of sociological studies, which typically measure social status in terms of occupation or education. These studies generally find that intergenerational mobility in the U. S. (in terms of educational attainment and social fluidity) is similar to that in the more open European countries (see Breen and Jonsson, 2005).[8]

Finally, a few recent studies have attempted to discern intertemporal trends in mobility in the United States. Using two temporally separated cohorts, Lee and Solon (2006) find no trend in the father-son earnings elasticity over the past 30 years in the United States. Results by Fisher and Johnson (2006), who use a measure of consumption mobility, also find little intertemporal trend, but Ferrie (2005) finds a decline in economic mobility in the United States over the 1850 to 1973 period.

These recent studies have advanced our understanding of both the anatomy of social mobility in the United States, and the relationship of U.S. social mobility to that in other countries. In contrast to the earlier work in sociology, the measures of socioeconomic status that are studied include earnings and income. The longitudinal data used spans long periods and variables describing parental status and intervening attainments are improved. Both sons and daughters are now included in the samples studied, and the statistical methods employed are more rigorous.

Nevertheless, these recent studies are subject to several reservations. First, the empirical findings regarding the 'intergenerational elasticity' should be supplemented by both the presentation of 'transition matrices' using quantile rankings (see Beller and Hout, 2006; Breen and Jonsson, 2005), and by the consideration of 'structural' mobility, meaning that offspring are absolutely better off economically than their parents when observed at the same age. It is the rare

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[8] The finding of higher mobility in the United States is generally explained by both larger measured returns to incremental schooling in the U.S. and the more generous welfare/income support systems in Europe.

study that adopts both perspectives (for exceptions, see Ermisch and Francesconi, 2004; Smeeding and Wilson, 2007; PEW Trust, 2008; and the discussion in Beller and Hout, 2006).

Several technical and measurement issues also plague this literature. These include concerns regarding 1) the robustness of results across cohorts and across datasets [the Michigan Panel Study of Income Dynamics (PSID) and the National Longitudinal Surveys of Youth (NLSY) being the primary datasets], 2) the selection of measures of SES (annual income, permanent income, earnings, wealth, education, occupation or some combination), 3) the ages at which parents and offspring are compared, 4) sample sizes and measurement error, and 5) sample selection[9]. Recent studies by Lee and Solon (2006), Mazumder (2005) and Grawe (2004) have helped clarify these measurement issues.[10] In the following analysis, we address a number of these concerns, including the sample selection issue (where we include children with unobserved father's position in our sample), and employ a variety of measures of economic status.

III.   Data and Estimation

A.   Data, Sample, and Definitions

We use the Michigan Panel Study of Income Dynamics (PSID) for our estimation. The PSID is a longitudinal data set that includes annual information on individuals in the United States since 1968.[11] Our sample consists of 1,329 individual 'offspring' born in 1956-1960. We

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[9] With respect to the sample selection issue, nearly all studies exclude sons where the father is absent or where father's earnings are not observed in the relevant period, thus eliminating a large group of children (e.g., those from unmarried single parent units) whose chances of success are relatively low.

[10] Bowles et al. (2005) and Corak (2004), Roemer (2004), Jencks and Tasch (2005) and Solon (2004) also reveal subtle differences in how mobility interacts with equality of opportunity and outcome.

[11] The PSID collected data annually 1968-1997 and bi-annually since 1997. Some persons observed did not respond in an intervening year but reentered the sample the following year. Such persons are included in our analysis, and the missing information filled in by averaging the data for the two years contiguous to the year of missing data. For the first and last years of the sample, this is clearly not possible, and we assign the contiguous year's value, adjusted if appropriate using other information that is reported. Studies of the PSID find little reason for concern that attrition has reduced the representativeness of the sample. A recent study by Fitzgerald, Gottschalk, and Moffitt (1998) finds that, although "dropouts" from the PSID panel do differ systematically from those observations retained, estimates of the determinants of choices such as schooling and teen non marital childbearing generated from the data do not

observe the characteristics of the parents of these offspring when the offspring were aged 12 to 15, and the characteristics of the offspring themselves during their ages 33-37.

Measures of parental SES include parental education and occupation,[12] and family income[13] averaged over offspring ages 12-15. For each of these parental SES indicators, we define three mutually exclusive, monotonic 'classes'—low, middle, and high. Family income in the bottom quartile corresponds to the lowest category, the middle two quartiles to the middle category, and the top quartile to the top category.[14] Parental education is classified as having dropped out of high school, graduated high school but not attend college, and attendance at college (including having a college degree).[15] Parental occupation is classified as routine and/or manual, intermediate, and managerial or professional.[16] We also create a composite variable that captures all three SES measures by assigning a value of 1 (bottom category) to 3 (top category) for each measure, and summing across the indicators.

Measures of offspring adult SES include average total household income ages 33-37, occupation at age 35, and educational attainment at age 25. Offspring education is grouped into

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appear to be significantly affected. They conclude, "Despite the large amount of attrition, we find no strong evidence that attrition has seriously distorted the representativeness of the PSID through 1989, and considerable evidence that it's cross sectional representativeness has remained roughly intact" (p. 251). Other studies that suggest that attrition in the PSID is not a cause of concern include Haveman and Wolfe (1994) and Becketti et al. (1988).

[12] Parental education and occupation status are the values for the parent with the higher education/occupation value, if two parents are present. (The alternative is to restrict the analysis to only married couples and then combine the effects of parents' education with marital sorting. See Ermisch, Francesconi and Seidler, 2006; Raum,et al., 2007, on this point.) Parental occupation is the mode occupational category reported during offspring ages 12-15. Parental occupation indicated by "no occupation" is interpreted as having no parent working.

[13] We use the income (taxable income and cash transfer income) of the family unit, rather than the earnings of the head of the family. We judge that family income provides a more complete picture of the economic well-being of the family than the earnings of one parent. We also use family income rather than the more common individual earnings variable used in most studies of social mobility because of our inclusion of both males and females in our analysis. This family-based SES measure reflects marital sorting and household labor supply choices which may complicate our analysis of the various factors determining mobility.

[14] In our sample, the cutoff for the bottom quartile is an income/needs ratio below 1.8, and thus includes those in poverty or near-poverty; the top quartile cutoff is an income/needs ratio above 4.25, indicating income more than four times the official poverty line.

[15] Only 31 percent of parents attended college, which is not surprising given that the parents were educated in the 1940's and 1950's.

[16] Parent's occupation was mapped into the three-digit national statistics socio-economic classification (NS-SEC) (See Rose and Pelavin 2003). The NS-SEC supplants skill and "manuality" with managerialism, professionalism, routinization, and supervision, and is consistent with the current sociological literature on class and mobility. Our ordinal three-classification version of the NS-SEC is designed to minimize differences within NS-SEC classifications and maximize differences between classifications.

four categories: having dropped out of high school, graduated high school grad, attended college, and graduated college. Similarly, offspring occupation has four possible values: no occupation, low class occupation, middle class occupation class, and high class occupation. Appendix Table 1 presents the mean and standard deviation of the variables used in the analysis.[17]

B.   Empirical Estimation

We first present bivariate statistics on the three offspring attainment variables by parental SES characteristics. We then show intergenerational transition matrices relating parental and offspring income quantiles. To isolate the relationship of each of our measures of parental SES to offspring income, we estimate a three-equation model designed to reveal the two indirect effects of parental SES on offspring income (through offspring education and occupation) and the direct effect of parental SES on offspring income.[18] Finally, we use the results of this analysis to simulate the expected effects of independent measures of parental SES on offspring income, focusing on the effects that operate through changes in offspring education and occupation.

IV.   Empirical Estimates

A.   Bivariate Relationships

Table 1 presents our bivariate estimates of the relationship between our four measures of parental economic status—income, education, occupation status, and the composite SES measure—and offspring income. Offspring adult income for those growing up in a family in the bottom income quartile averages $40,984, compared to $95,314 for those growing up in a top quartile family, a gap of over $54,000.[19] Offspring growing up in a bottom income quartile family also have lower educational attainment and occupational status as adults. A gap of two

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[17] The PSID includes an over sampling of low-income and minority families, but sample weights are used for descriptive statistics to make the sample nationally representative. All monetary values are expressed in 2000 dollars, using the Consumer Price Index for all items.

[18] The model that we estimate is similar to those used in earlier work by Hauser, Featherman, and Sewell (see section II.)

[19] Some of this difference is due to the effect of very high incomes on mean values; the median household income of offspring growing up on a family with income in the bottom income quartile is $34,595 compared to a median of $74,239 for those in the top childhood income quartile, a gap of $39,644.

years separates offspring from the lowest parental income quartile from those in the highest (11.95 years vs. 13.96 years). A child from the highest parental income quartile is almost five times more likely to graduate from college than a child from the lowest income quartile (36.2 percent vs. 7.7 percent). One-half of offspring from families with income in the top quartile go on to work in high status occupations, compared to only 21.9 percent of those from the lowest income quartile work.

Similar differences in offspring outcomes are seen when parental education, occupation, and composite SES (panels B, C, and D) are used as indicators of parental SES. On average, offspring whose parents worked in a high status occupation have income of $85,719, 13.27 years of education, and 55.4 percent are working in high status occupations (panel B). This compares to values of $50,386, 12.19 years, and 23.7 percent in a low status occupation. Similar patterns are observed in Panels C (parental education) and D (composite parental SES). For nearly all outcomes, the gaps are largest for the composite parental SES variable, which reflects all of the parental income, occupation and education effects.

Although one-quarter to one-third of offspring are in each of the high and low parental status categories (see weighted means in Appendix 1), the income gap between the top and bottom offspring categories is substantially greater for the parental income, parental education, and the composite parental SES variables than for the parental occupation variable.

B.   Intergenerational Income Transitions

Table 2 shows patterns of relative intergeneration income mobility.[20] Panel A shows how offspring from various parental income quartiles are distributed over offspring income quartiles. For example, 58.6 percent of offspring from families in the bottom parental income quartile are themselves in the bottom quartile; 19.2 percent move up one income quartile, 11.6 percent move

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[20] Similar mobility patterns for occupation, education, and the composite SES variable are available from the authors on request.

up two quartiles, and 10.7 percent move from the bottom parental income quartile to the top offspring quartile. In contrast, 42.4 percent of those in the top parental income quartile are also in the top offspring quartile as adults; 13.3 percent fall to the bottom offspring quartile. Those from families in the upper middle income quartile have an equal chance of being in any offspring quartile. Upward mobility of offspring from poor families appears to be less than downward mobility of those from higher income families, consistent with the Jantii, et al. (2006) finding for the United States using a different dataset.

Panel B shows that the vast majority (71.5 percent) of offspring in the top income quartile were from families in the two highest parental income quartiles; 44 percent of offspring in the highest income quartile were from families in the highest parental income quartile. Again, the picture is one of substantial stability of economic status from childhood to adulthood.

C.   The Relationship of Parental SES to Offspring Income: Direct and Indirect Effects

The bivariate relationships in Table 1 indicate a strong relationship between parental SES and offspring status, and imply a rather low level of social mobility in the United States. However, because our three measures of parental SES—family income, parental education, and parental occupational status—are correlated, these relationships do not reveal the independent effect of any single measure on offspring income (e.g., the effect of parental income on offspring income, holding constant parental education and occupation). Nor do they indicate the direct and indirect channels by which the parental SES variables are related to offspring status. In this section, we present regression results for a three-equation model of the linkages between parental SES and offspring status.

A Three-Equation Model of Offspring Income

In our 3-equation model, parental SES (measured by income, education, and occupation) can affect offspring income indirectly through effects on offspring educational or occupational attainment, or by directly affecting offspring income (which includes all other potential

intermediate channels). The first two equations examine the relationship between parental SES and offspring educational attainment and occupation; each equation is estimated using an ordered probit model.

$$\text{Offspring Education}_i = a + B*\text{Parental SES}_i + C*X_i + e_i \tag{1}$$

$$\text{Offspring Occupation}_i = \delta + \Theta*\text{Parental SES}_i + \Omega*X_i + \eta_i \tag{2}$$

This model is estimated using three indicators of parental SES in the Parental SES$_i$ vector--parental income, parental education, and parental occupation. The vector X contains exogenous variables of parental race, gender, and being born in a foreign country.

The third equation relates offspring income to parental SES, offspring education and offspring occupation.

$$\ln(\text{Offspring Income}_i) = \alpha + \beta*\text{Parental SES}_i + \Lambda* \text{Offspring Education}_i + \Gamma* \text{Offspring}$$

$$\text{Occupation}_i + C*X_i + \varepsilon_i \tag{3}$$

This equation is again estimated including three indicators of parental SES. Offspring Education is a vector of three dummy variables indicating level of education attained by the individual and offspring occupation is a vector of three dummy variables measuring occupational category.

The estimates of coefficient β (equation 3) indicate the direct relationship between parental SES and offspring income; the indirect relationship through offspring education is a function of B (equation 1) and Λ (equation 3); the indirect relationship through offspring occupation is a function of Θ (equation 1) and Γ (equation 3). The total relationship between offspring income and parental SES is thus a function of β, B, Λ, Θ, and Γ. Figure 1 provides a graphical representation.

Figure 1: Three Equation Model of Offspring Income
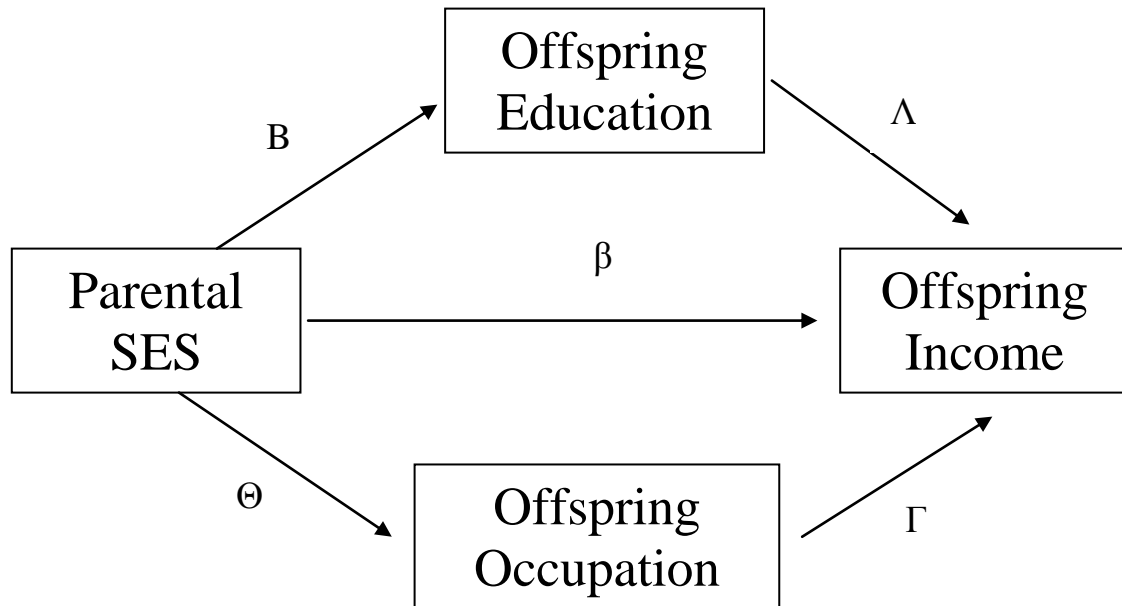
Our model is designed to explore the potential role of parental resources in securing improved educational and occupational opportunities for offspring, and through these channels offspring adult income. Both the educational and occupational parental-offspring linkages are central concerns in understanding the structure of opportunities in the U.S. (see footnote 1, Haveman and Wilson, 2006). Numerous examples of such linkages exist—through relaxing liquidity constraints (income effects), providing social/labor market contacts, instilling (unobserved) work ethic, conveying inter-vivos transfers (e.g., paying college tuition), or providing a home environment emphasizing schooling and learning. In the model, these channels of opportunity would be indicated by statistically significant coefficient values for B, Θ, Λ and Γ; in the extreme case in which all of the effect of parental SES on offspring income operates through offspring education and occupation β will not be statistically significant. A direct effect of parental SES on offspring income is indicated by a positive and statistically significant β coefficient.

A few examples may demonstrate how the model reveals the channels through which parental SES may affect offspring income.

- Example 1: Assume that parental income provides the opportunity for the offspring to attain additional education, because of liquidity constraints or the direct parental purchase of educational services. The additional education attributable to parental income may then lead to improved offspring occupational status, and hence increased offspring earnings and income. In this case, parental income would be related to offspring educational attainment and occupation (B, Θ, Λ and Γ will be statistically significant), but have no <u>direct</u> effect on offspring income (β will not be statistically significant); all of the effect of parental income on offspring income operates through offspring education and occupation.

- Example 2: Alternatively, parental income may reflect unobserved parental work ethic or an inter-vivos transfer which is directly passed on to offspring. In this case, parental income will be related to offspring education (B is significant) because of the unobserved work ethic or payment of college tuition, but may also have a direct effect on offspring income (β is also significant), e.g., higher income due to higher work ethic or additional transfers from parents.

- Example 3: If parental education results in a home environment emphasizing schooling and learning, offspring may have increased educational expectations for youth (or increased information about the education system). In this case, parental SES will be positively related to offspring income, but operates through parental education rather than parental income; in this case, the relationship between parental education and offspring education (and hence income) would be positive and statistically significant, while the relationship between parental income and offspring education would be statistically insignificant (B and Λ would be significant but not β).

Estimation Results for Three-Equation Model

Table 3 presents ordered probit estimates of equations (1) and (2), indicating the independent effect of each measure of parental SES on offspring education and occupation attainment while holding the other parental SES measures constant (marginal effects are presented in Appendix Table 2). Offspring education and occupation attainments are positively and significantly related to each of the parental SES measures (income, education, and occupation), even when controlling for race, gender and birth location of parents and the other measures of parental SES. With all three of the indicators of parental SES included in the estimation, each measure has an independent positive and statistically significant effect on the level of offspring education and occupational attainment. Controlling for the three measures of

14

parental SES, African-American and female offspring have higher educational attainment than those without these characteristics (although the effect is significant only at the 10 percent level). However, female offspring are likely to be in lower status occupations, but this effect is significant at only the 10 percent level.

Table 4 presents estimates of the final equation of this system, equation (3). The dependent variable—offspring income—is defined as the log of income averaged over the years when the offspring is ages 33 to 37 years. Independent variables include the three measures of parental SES, parental race, birth location, both parental and offspring gender, and offspring educational and occupational attainment. With all of the parental SES variables included in the estimation, only parental income is statistically significantly related to offspring income; the parental education and occupation variables are not statistically significant, either individually or jointly. Offspring own education and occupation have significant effects (both independently and jointly) on offspring income, even after controlling for all three indicators of parental SES.

From Tables 3 and 4, we conclude that all of the measures of parental SES are positively related to offspring income. Parental income is positively and significantly directly related to offspring income (Table 4). All of the measures of parental status—income, education and occupation—are significantly independently related to offspring educational and occupational attainment (Table 3), and offspring educational and occupational attainment are related to offspring income (Table 4). These patterns suggest a strong indirect effect of parental status on offspring income working indirectly through offspring education and occupation choices. In the next section, we test this suggestion via simulation.

V.   Simulating the Effect of Parental SES on Offspring Income

We conduct two sets of 'counterfactual simulations' designed to gauge the magnitude of the direct and indirect channels through which parental SES affects offspring outcomes. First, we show the effect of the three parental SES variables on offspring education and occupation. We

then examine both the direct and indirect linkages between parental status and offspring income (operating through offspring education and occupation).

A.   The Effect of Parental SES on Offspring Education and Occupation

We predict education and occupation outcomes for each of our sample offspring using the ordered probit coefficient estimates of equations 1 and 2 (Table 3) together with actual values of individual offspring characteristics (e.g., race and gender) and assumed values of the three set of parental SES variables (parental income, education, and occupation) taken one measure at a time and jointly. The predicted offspring outcomes are probabilities of being in any education/occupation category, given the individual's own individual characteristics and assumed values of any single parental SES measure (holding constant other SES variables). We then calculate the weighted average of these predicted values of the outcomes across the sample, thus measuring the effect of changes in each measure of parental status on overall offspring outcomes holding constant the other SES measures and offspring background variables.[21] The results are presented in Table 5.

Columns 1 and 2 in the top bank of the table show the relationship between parental education and offspring education, holding all other parental SES variables and offspring background characteristics constant at their actual level.[22] For example, if parents are high school dropouts the predicted probability that offspring drop out is 23.3 percent, but if parents

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[21] Note that for the simulation of the effect any single parental SES measure (parental income, parental education, or parental occupation) on offspring outcome, the predicted values are calculated with the other two parental SES measures set at their actual value. This exercise is not attempting to simulate a real world scenario, but rather to show the magnitude of the independent correlations of each parental SES variable with offspring income. For example, consider an offspring whose parents are high school dropouts, are in low status occupations, and have low income. We simulate the effect of increasing parental income from the lowest quartile to the top quartile by taking the predicted value of offspring education (occupation) based on the offspring's actual gender, race, etc., the actual parental SES values for parental occupation and parental education, and the simulated value of parental income in the top quartile, and comparing this value of offspring income to the actual value. Given that parental occupation, education, and income all are correlated, it would not be common to find such a parent with low occupation, low education, but high income, nor would it be a realistic outcome of a policy intervention. However, our simulation is designed to show the independent effect of parental income on offspring income, apart from effects of parental education and occupation.

[22] We show only the high and low offspring education and occupation categories in the table; simulated probabilities are available for the intermediate values from the authors.

attend college that probability falls to 6.8 percent, a decrease of over 70 percent. Similarly, again holding other parental SES measures at their actual level, we predict that the probability that the offspring graduates from college changes from 8.6 percent if parents are high school dropouts to 27 percent if parents attend college, a three fold increase.

In the next pair of columns in the first bank, we show the ceteris paribus simulated effect of parental education on offspring occupation—changing the parent's education from high school dropout to attend college decreases the predicted probability that the offspring will be in the low occupational category by over 24 percent, and increases the offspring's predicted probability of being in the highest occupational category by nearly 80 percent.

In the middle two banks of Table 5, we show the close relationship of occupation and income to offspring education and occupation attainments. For example, controlling for parental education and income, having a parent with high occupational status (relative to low occupational status) increases the (weighted average) predicted probability that the offspring will graduate from college from about 12 percent to nearly 24 percent, and reduces the probability of dropping out of high school from 19 percent to 10 percent. Changing the parent's income from the median of the bottom quartile to the median of the top quartile increases almost doubles the probability that the offspring will graduate from college from 11.6 percent to 22 percent.

The final panel of Table 5 examines the effect on offspring educational and occupational status when all three parental SES measures are allowed to change (holding constant the offspring individual characteristics). For example, moving the parent from the low to the high composite SES measure decreases the probability of dropping out of high school from about 38

percent to just over 2 percent, and increases the probability of being a college graduate from 3

percent to 44 percent. [23]

B.   The Effects of Parental Status on Offspring Income

We next examine the direct and indirect effects of parental status on offspring income,

again using a counterfactual simulation.[24] The direct effect is simulated using coefficient

estimates from the OLS offspring income equation [Equation 3 (Table 4)]; we calculate the

predicted value of offspring income using assumed values of a particular parental SES variable

(e.g., parent attend college), holding constant other parental SES variables and the effects of

parental status on offspring education and occupation choice. We simulate the indirect effect of

parental status on offspring income using coefficient estimates from the ordered probit equations

for offspring education and occupation [Equations 1 and 2 (Table 3)] to capture the independent

effect of parental SES on offspring education and occupation and Equation 3 to assess the ceteris

paribus effect of predicted education and occupation on offspring income. [25] The total effect is

the sum of the direct and indirect effects.   This simulation also allows us to examine the

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[23] Low SES is calculated as parental education at high school dropout, parental occupation is low class, and parental income is median of bottom quartile; High SES is calculated as parental education at attend college, parental occupation is high class, and parental income is median of top quartile.

[24] Our attempt to decompose the intergenerational transmission process into direct and indirect effects is similar in spirit to that in Sewell and Hauser (1972).

[25] We calculate the indirect effect of parental status on offspring income using simulated probabilities of offspring educational and occupation attainment (based on assumed values of parental SES), and actual values of alternative parental SES variables. Our simulation of the direct effect holds constant offspring education and occupation attainment, but simulates the effects of alternative assumed parental SES values on the fitted value of offspring income. Our simulation of the total effect uses simulated probabilities of offspring education and occupation status and alternative assumed parental SES variables in calculating fitted offspring income values. The following shows the calculation of the simulated income variable for each observation, i:

Direct Effect
$$\ln(\text{Offspring Income}_i) = \alpha' + \beta'*\textbf{Sim Parent SES}_i + \Lambda'*\text{Offspring Education}_i + \Gamma'*\text{Offspring Occupation}_i + C'*X$$

Indirect Effect Via Education
$$\ln(\text{Offspring Income}_i) = \alpha' + \beta'*\text{Parent SES}_i + \Lambda'*\textbf{Sim Offspring Education}_i + \Gamma'*\text{Offspring Occupation}_i + C'*X$$

Indirect Effect Via Occupation
$$\ln(\text{Offspring Income}_i) = \alpha' + \beta'*\text{Parent SES}_i + \Lambda'*\text{Offspring Education}_i + \Gamma'*\textbf{Sim Offspring Occupation}_i + C'*X$$

Total Effect
$$\ln(\text{Offspring Income}_i) = \alpha' + \beta'*\textbf{Sim Parent SES}_i + \Lambda'*\textbf{Sim Offspring Education}_i + \Gamma'*\textbf{Sim Offspring Occupation}_i + C'*X$$

magnitude of the independent effects of each of the parental SES measures (parental education, occupation, and income) and the channels (direct, indirect through education, and indirect through occupation) through which the different measures of SES operate.

Table 6 presents the predicted percent difference in offspring income if the youth grew up in a high SES family compared to a low SES family, ceteris paribus. The first three rows of the table indicate the independent effect of each of the three parental SES measures. For example, the first row shows the effect of parental education on offspring income, holding constant parental occupation, parental income, race, gender, and birth location. The final row of Table 6 presents the predicted percent change in offspring income as a result of simulated changes in all three parental SES measures from their lowest to their highest categories (e.g., parental education from high school dropout to attend college). Offspring SES is greatly influenced by parental SES, with offspring income predicted to be 87.7 percent higher with high SES parents than with low SES parents.

Figures 2 and 3 summarize the pattern of simulated effects of changes in parental SES on offspring income reflected in Table 6, revealing the relevant mechanisms and measures of SES. These patterns of counterfactual effects illustrate: i) the relative importance of the direct and indirect (through offspring education and occupation) channels of transmission, ii) the relative importance of the measures of parental SES (income, occupation, education), and iii) the primary mechanisms through which each measure of parental SES is operating.

Figure 2: Decomposing the Effect of High vs. Low Parental SES by Mechanism and Measure of SES
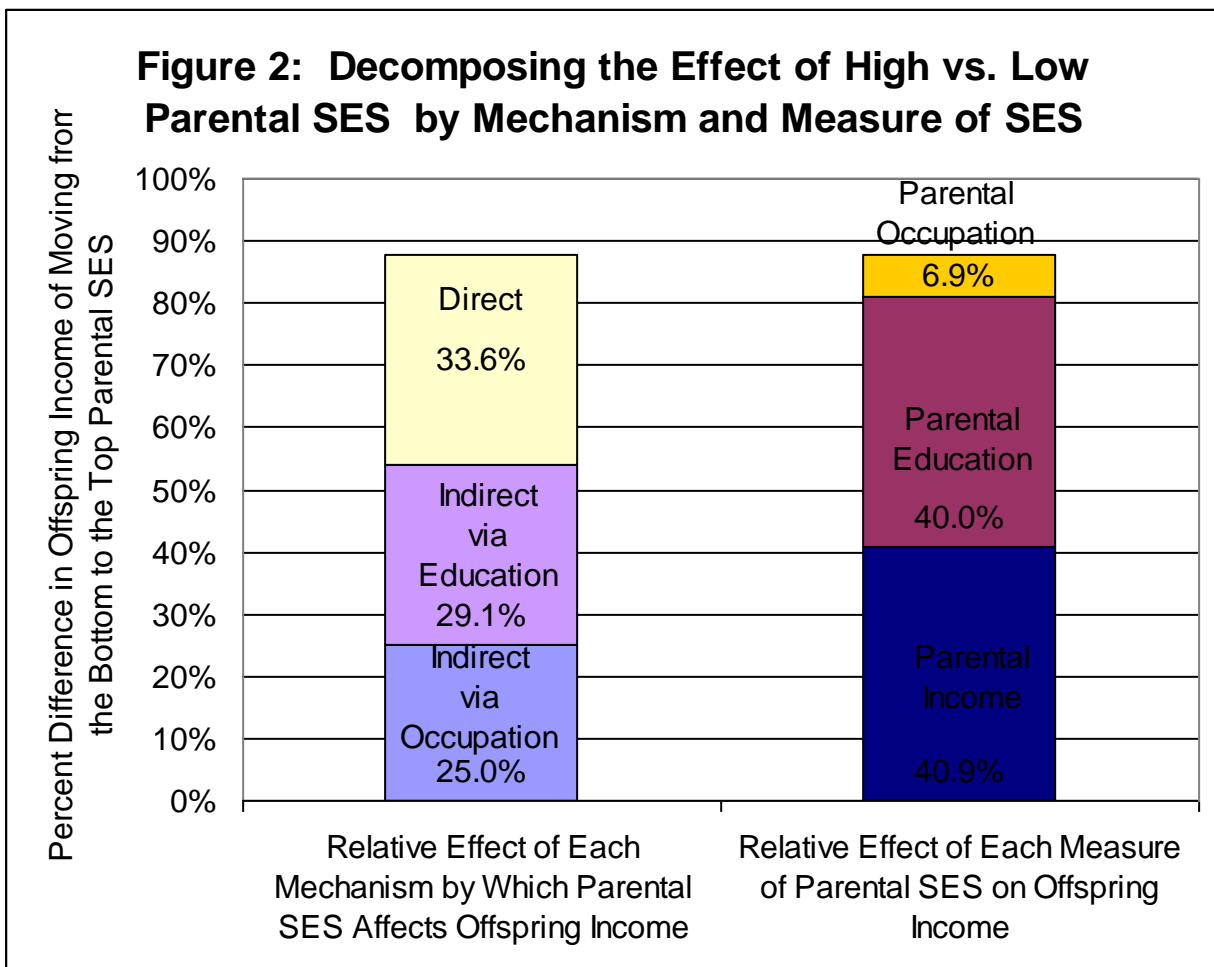
The first bar of Figure 2 shows the relative importance of the three mechanisms in the 87.7 percent increase in offspring income associated with growing up in a high (composite) SES family compared to a low SES family. About one-third of this effect (29.1 percent of the 87.7 percent difference in offspring income) operates through the mechanism of offspring education, a smaller portion (25.0 percent of the 87.7 percent) is through offspring occupation, and the largest portion (33.6 percent of 87.7 percent) is through the direct effect (which includes all other mechanisms). Thus, while offspring education and occupation are both important channels, there remains a large direct effect.

The second bar of Figure 2 reveals the relative total effects of the three measures of parental SES shown in the last column of Table 6. The independent effect of parental income and parental education are about equal and both very large; moving from the lowest to the

highest parental income quartile or from the lowest to highest parental education category increases offspring income by about 40 percent. In contrast, a similar independent move in parental occupation has a very small effect on offspring income.

Figure 3: Decomposition of the Mechanism for Each Parental SES Measure
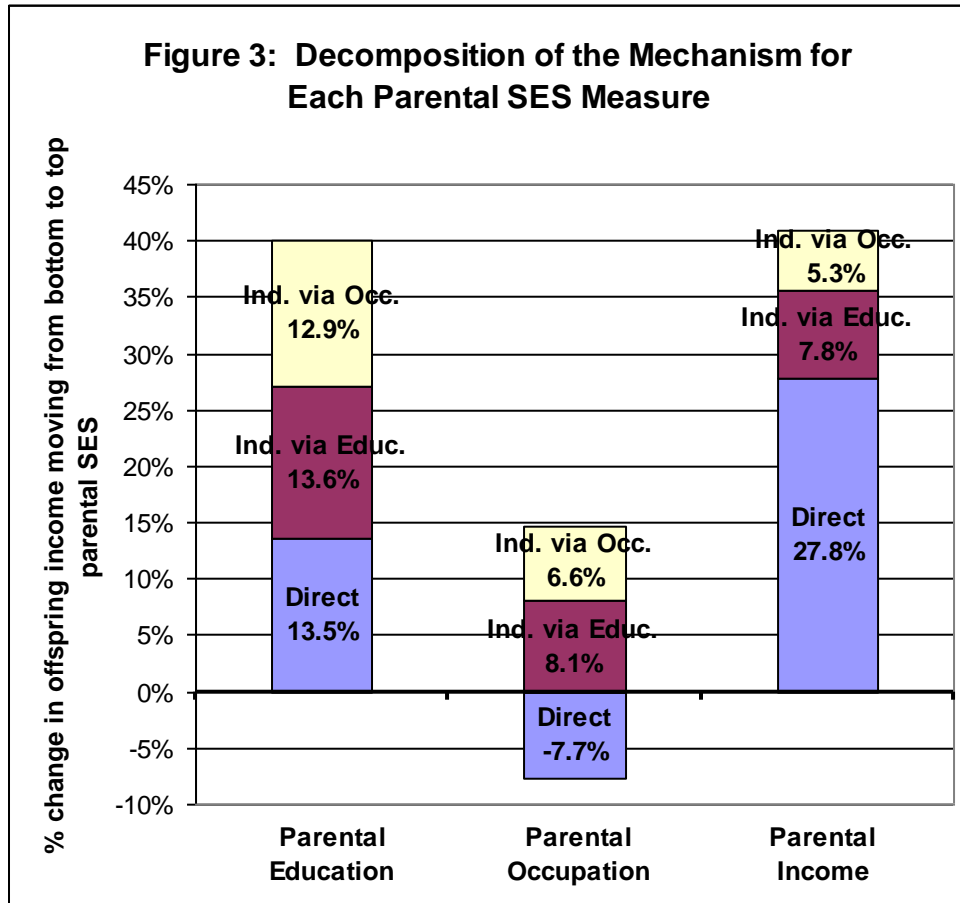
Figure 3 shows the relative importance of the three channels that compose the total effect on offspring income of each parental SES measure. The first bar indicates that the total 40 percent simulated increase in offspring income from assuming that parental education changes from the lowest category (high school dropout) to the highest category (parent attend college) is fairly evenly split between the mechanisms. About one third of the total effect operates through the indirect channel of offspring education, one third through the offspring occupation channel, with the remaining one third being a direct effect.[26] In contrast, the effect of parental income on offspring income is dominated by the direct effect, followed by smaller indirect effects via

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[26] The Table 4 estimate on which this direct effect is based is statistically insignificant.

education and occupation. The direct effect of parental occupation is unexpectedly negative, but is not statistically significant, while the indirect effects via education are slightly larger than those via occupation.

These patterns provide several insights into the process of intergenerational mobility. First, the level of offspring income is greatly influenced by parental SES; assumed changes in parental status elicit large predicted changes in offspring income that account for a substantial portion of observed income differences.[27]

Second, in general the direct effect is a primary link between parental income and offspring income; simulated changes in offspring income associated with the assumed changes in parental income indicate that the direct effect accounts for two thirds of the total simulated effect. This indicates that parental income is related to offspring income through some little understood mechanism other than offspring education and occupation attainments. Perhaps this mechanism reflects the direct transfer of income and assets (including social skills and labor market connections) from parents to children, which transfers enhance both offspring employment and marriage options. The direct effect, in contrast, is not statistically significant for the parental education or parental occupation variables; thus, these other mechanisms are more closely related to parental income than to parental education or occupation.

Third, of the indirect linkages (through offspring education and occupation), the effect operating through the offspring education channel exceeds that operating through the offspring occupation channel for all of the parental SES indicators that we simulate. This strong indirect relationship between parental education and offspring income through offspring education (independent from the effect of parental income) suggests that differential educational

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[27] In Table 1, we show the total gap in offspring income associated with having parents in the lowest and highest categories of each of our four measures of parental SES. For example, median income of offspring from families in the lowest parental education category was $36,005, compared to offspring income of $70,784 for offspring from the highest parental education category—a gap of $34,778. Simulating the assumed change in parental SES from the lowest to the highest education category indicates that $19,261 of this offspring income gap (55 percent) is attributable to the ceteris paribus change in parental education.

aspirations, academic ability, information about higher education, or other similar mechanisms associated with higher parental education may be as strong an effect of parental SES as a lack of income to pay for higher education.

Fourth, the parental education and occupation indicators are closely related to offspring educational attainment (and, to a lesser extent, offspring occupation), the indirect channels of effect. Moreover, once these indirect links are controlled for, there appears to be little further direct effect of these parental SES characteristics on offspring income.

Finally, our results provide some guidance for researchers in terms of the choice of the parental SES indicator to be used in analysis; simulated changes in the parental education and income indicators yield substantially larger independent effects on offspring income than do simulated changes in the occupation indicator.

There are a number of caveats to these results and conclusions. The estimated relationships that we report reflect correlations between the variables of interest, and not causation. While the primary variables are temporally ordered, there may be unobserved characteristics of parents and offspring that affect both parental SES and offspring education and occupation that we have not captured.[28] Therefore, the simulations should be interpreted as illustrative of the relevant mechanisms rather than indicative of causal impacts. Moreover, our model and estimates capture only two of many possible channels or mechanisms through which parental SES affects offspring income—those operating through offspring education and offspring occupation. We, for example, do not model the potential effect of offspring educational choice on offspring occupation. Hence, our model provides but limited insight into the full underlying process by which parental SES affects offspring income.

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[28] For example, parents willing to postpone gratification (because of lower rates of time preference) may obtain more education. Hence, the actual education of the parent may reflect this unobserved discount rate. Hence, estimated effects of parental education may reflect this unobserved time preference (which may, for example, influence parenting style) rather than the effects of schooling itself.

While the simulation results have decomposed the total effect of parental SES on offspring income into direct and indirect effects, the simulated direct effects of some of the parental SES variables—namely, those for parental education and parental occupation—are based on estimated coefficients that are not statistically significant; these results should be interpreted with caution.

Finally, some of our variable definitions and measurement conventions may affect the quantitative magnitude of our estimated effects. First, data limitations do not allow us to measure either parental or offspring ability (e.g., IQ) or parent or offspring wealth. Hence, our estimated effects may be biased upward relative to effects that are able to control for these characteristics. Second, we have classified our SES variables into a limited number of categories; use of more precisely measured and less aggregated measures of these variables are likely to increase the magnitude of estimated results.[29] Finally, our results characterize mobility patterns over the entire population of parents and offspring. Hence, they shed little light on the anatomy of mobility in the lower tail of the distribution, which is the primary culprit of American exceptionalism in the recent research on the problem of low mobility.

VI.   Conclusion

Social science researchers have explored a variety of factors relevant to understanding the transmission of socio-economic status from parents to their offspring, including the role of education systems, the labor market returns to schooling, the provision of public services, and the characteristics of the family. While the efficacy of education systems as a vehicle for social mobility has occupied much recent research, this mechanism must be assessed in the context of other underlying mechanisms that describe the complex social mobility process. How have marriage markets ('assortative' mating) and the higher earnings returns to education for both

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[29] For example, our variable for education captures only the quantity of education but does not capture the quality of the school attended.

men and women affected family income mobility (Ermisch et al, 2006; Raum et al, 2007)? How have other important differences such as health status been transmitted across generations (Case and Paxson, 2006)? How have inherited wealth or inherited position (occupation) or inter-vivos transfers figured into these patterns, regardless of the measure of SES (Brown, et al., 2006)? Do higher education systems serve to promote social mobility, or do the choices made by colleges and universities perpetuate class and income status across generations (Erikson et al, 2005; Haveman and Wilson, 2006)?

Our study rests on the view that the simple estimates of the 'intergenerational elasticity coefficient' that dominate the literature camouflage the complexity of the social mobility process. As our findings confirm, the transmission mechanisms through which parental SES influences offspring outcomes are very complex. Various aspects of parental status (e.g., income, education, occupation) have different impacts and influence offspring outcomes through different transmission mechanisms.

Our results highlight the importance of research designed to identify causal effects in the transmission of economic status from parents to children. While the glimpse into the black box that our results provide offers some understanding regarding the differential impacts of various parental status indicators on offspring attainments, a number of options exist for advancing understanding of these basic causal mechanisms. Studies that examine the process across space within or across nations, or changes in the process over time, or focus on specific mechanisms using structural modeling and sophisticated econometric techniques can all play a role in furthering our understanding of the full social mobility process.

The issue, of course, is to find a strategy for increasing social mobility in the U.S. Given the difficulty of limiting intergenerational transmission at the top end of the SES distribution, it would seem that policy should concentrate on increasing opportunities for children from low SES families. The question is how most efficiently to do this, and here answers are not clear.

Perhaps increasing access to the benefits of secondary and higher education, and also to early childhood learning, form the best options we have available.[30]

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[30] See Cunha et al. (2005). This conclusion is also reached in a recent *New York Times* article (Brooks, 2006). Brooks advocates increasing the child tax credit to strengthen families, extending the earned income tax credit to single males to encourage a reduction in single parent families, adoption of a universal personal capital account to encourage a sense of future possibilities, increased investment in quality child care, and pursuit of K-12 education that is more tailored to individual student capabilities and talents.

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Table 1: Bivariate Relationships

Offspring Outcome	Bottom	Top	Gap
Mean Income, Ages 33-37	$40,984	$95,314	$54,330
Median Income, Ages 33-37	$34,595	$74,239	$39,644
Years of Education, Age 25	11.95	13.96	2.01
College Graduate = 1, Age 25	7.7%	36.2%	28.6
High Occupation = 1, Age 35	21.9%	50.0%	28.1

Panel B: Offspring Outcomes by Parental Occupation Status Level

Offspring Outcome	Low	High	Gap
Mean Income, Ages 33-37	$50,386	$85,719	$35,333
Median Income, Ages 33-37	$43,025	$67,739	$24,714
Years of Education, Age 25	12.19	14.05	1.86
College Graduate = 1, Age 25	7.7%	36.2%	28.5
High Occupation = 1, Age 35	23.7%	55.4%	31.7

Panel C: Offspring Outcomes by Parental Education

Offspring Outcome	HS Drop	College	Gap
Mean Income, Ages 33-37	$42,197	$89,136	$46,939
Median Income, Ages 33-37	$36,005	$70,784	$34,778
Years of Education, Age 25	11.81	14.12	2.31
College Graduate = 1, Age 25	7.2%	38.2%	31.1
High Occupation = 1, Age 35	20.0%	55.0%	35.0

Panel D: Offspring Outcomes by Composite Parental Status Variable

	Low (3, 4)	High (8, 9)	Gap
Mean Income, Ages 33-37	$39,386	$97,785	$58,399
Median Income, Ages 33-37	$36,005	$70,784	$34,778
Years of Education, Age 25	11.59	14.40	2.81
College Graduate = 1, Age 25	4.7%	46.5%	41.8
High Occupation = 1, Age 35	18.8%	60.9%	42.1

Table 2: Income Transition Matrices

Panel A: Distribution of Offspring Income by Parental Income

(For example, 58.6% of offspring in the bottom parental income quartile are also in the bottom offspring income quartile)

Offspring Income Quartile	Parental Income Quartile			
	Bottom	Lower Mid	Upper Mid	Top
Bottom	**58.6%**	34.8%	25.9%	13.3%
Lower Mid	19.2%	**28.2%**	27.2%	21.3%
Upper Mid	11.6%	20.1%	**20.3%**	23.0%
Top	10.7%	16.9%	26.6%	**42.4%**
Total	100%	100%	100%	100%

Panel B: Distribution of Parental Income by Offspring Income

(For example, 45.9% of offspring in the bottom offspring income quartile are also in the bottom parental income quartile)

Parental Income Quartile	Offspring Income Quartile			
	Bottom	Lower Mid	Upper Mid	Top
Bottom	**45.9%**	21.1%	16.4%	11.7%
Lower Mid	25.0%	**28.4%**	25.9%	16.9%
Upper Mid	19.2%	28.2%	**27.0%**	27.5%
Top	9.9%	22.2%	30.7%	**44.0%**
Total	100%	100%	100%	100%

Table 3: Ordered Probit Regression Results for Offspring Education and Occupation Attainment

Parental Variable	Offspring Educational Attainment			Offspring Occupational Attainment		
	Coef. Est.	*St. Err.*	*Sign. Level*	*Coef. Est.*	*St. Err.*	*Sign. Level*
Constant	**-2.091**	0.758	0.008	-0.220	0.794	0.781
Ln of Income	**0.351**	0.069	0.000	**0.168**	0.069	0.015
High School Dropout	**-0.799**	0.113	0.000	**-0.541**	0.110	0.000
High School Graduate	**-0.466**	0.103	0.000	**-0.266**	0.096	0.006
Occ. Missing	-0.146	0.189	0.438	0.043	0.206	0.833
No Occupation	**-0.493**	0.143	0.001	**-0.359**	0.143	0.012
Low Occupation	**-0.480**	0.113	0.000	**-0.279**	0.111	0.012
Middle Occupation	*-0.205*	0.110	0.061	-0.051	0.103	0.623
African-American	*0.158*	0.081	0.051	-0.023	0.081	0.776
Female	*0.106*	0.063	0.093	*-0.116*	0.066	0.081
Parent Foreign Born	0.207	0.218	0.344	0.212	0.200	0.290
Mu(1)	**1.371**	0.050	0.000	**1.101**	0.045	0.000
Mu(2)	**2.208**	0.064	0.000	**1.618**	0.051	0.000

Note: Bold indicates the coefficient estimate is statistically significant at the 5 percent level; italics indicate significance at the 10 percent level.

Table 4: OLS Regression Results (Dependent Variable Ln of Offspring Income)

	Coef. Est.	*St. Err.*	*Sign. Level*
Parental Variables			
Constant	**9.037**	0.677	0.000
Ln of Income	**0.211**	0.059	0.000
High School Dropout	-0.135	0.093	0.146
High School Graduate	-0.066	0.082	0.421
Occ. Missing	0.038	0.168	0.822
No Occupation	-0.092	0.123	0.458
Low Occupation	0.077	0.096	0.420
Middle Occupation	0.137	0.091	0.134
African-American	**-0.502**	0.066	0.000
Female	**0.148**	0.054	0.006
Parent Foreign Born	0.263	0.176	0.136
Predicted Offspring Variables			
High School Dropout	**-0.635**	0.109	0.000
High School Grad	**-0.402**	0.094	0.000
Some College	*-0.186*	0.095	0.051
No Occupation	**-0.950**	0.088	0.000
Low Occupation	**-0.271**	0.075	0.000
Mid Occupation	**-0.165**	0.083	0.047

Note: Bold indicates the coefficient estimate is statistically significant at the 5 percent level; italics indicate significance at the 10 percent level.

Table 5: Simulations of Effects of Parental SES on Offspring Education and Occupation

	Offspring Educational Attainment		Offspring Occupation Attainment	
	HS Drop	*Coll Grad*	*Low Occ*	*High Occ*
Parent Education				
High School Dropout	23.29%	8.63%	39.00%	23.59%
College	6.82%	27.21%	29.43%	42.40%
Difference	-16.46	18.59	-9.57	18.81
% Difference	-70.70%	215.46%	-24.54%	79.75%
Parent Occupation				
Low Occupation Class	19.44%	12.47%	36.62%	28.38%
High Occupation Class	9.65%	23.75%	31.76%	38.04%
Difference	-9.79	11.28	-4.86	9.66
% Difference	-50.36%	90.51%	-13.27%	34.03%
Parent Income				
Median of Bottom Quartile	20.42%	11.63%	16.01%	29.14%
Median of Top Quartile	10.46%	22.05%	11.40%	36.77%
Difference	-9.96	10.42	-4.61	7.63
% Difference	-48.78%	89.60%	-28.79%	26.18%
Combined Parental SES				
Low SES	38.03%	2.91%	26.91%	15.96%
High SES	2.06%	43.71%	4.89%	51.66%
Difference	-35.97	40.80	-22.02	35.70
% Difference	-94.58%	1402.06%	-81.83%	223.68%

Table 6
Predicted Percent Change in Offspring Income with Simulated Change in Parental SES Variable from Lowest to Highest Category

Parental SES Variable	Direct	Indirect via Offspring Education	Indirect via Offspring Occupation	Total
Education	13.5%	13.6%	12.9%	40.0%
Occupation	-7.7%	8.1%	6.6%	6.9%
Income	27.8%	7.8%	5.3%	40.9%
Total (Three SES Measures)	33.6%	29.1%	25.0%	87.7%

Appendix Table 1: Sample Means

	Unweighted Sample		Weighted Sample	
	Mean	Std.Dev.	Mean	Std.Dev.
Offspring SES Variables				
Ln(Income ages 33-37)	10.438	1.129	10.791	0.806
Income ages 33-37	$50,843	$49,422	$64,252	$61,495
High School Dropout=1	0.214	0.410	0.142	0.349
High School Grad=1	0.445	0.497	0.423	0.494
Attend College=1	0.212	0.409	0.235	0.424
College Graduate=1	0.129	0.335	0.200	0.400
No Occupation	0.184	0.387	0.141	0.348
Low Occupation	0.368	0.482	0.315	0.465
Middle Occupation	0.176	0.381	0.196	0.397
High Occupation	0.273	0.446	0.348	0.477
Parental SES Variables				
Ln(Income ages 12-15)	10.634	0.653	10.940	0.597
Income ages 12-15	$50,965	$35,026	$66,688	$41,577
Parent HS Dropout	0.458	0.498	0.279	0.449
Parent HS Grad	0.346	0.476	0.407	0.491
Parent Attend College	0.196	0.397	0.314	0.464
Parent Occupation Missing	0.036	0.187	0.021	0.145
Parent No Occupation	0.148	0.355	0.063	0.243
Parent Low Occupation	0.444	0.497	0.361	0.481
Parent Middle Occupation	0.225	0.418	0.299	0.458
Parent High Occupation	0.147	0.354	0.255	0.436
Exogenous Controls				
African-American=1	0.468	0.499	0.165	0.371
Female=1	0.535	0.499	0.520	0.500
Parent Foreign Born=1	0.022	0.148	0.038	0.190

Appendix Table 2: Marginal Effects from the Ordered Probits on Educational and Occupational Attainment (Table 3)

	Offspring Educational Attainment				Offspring Occupational Attainment			
	HS Drop	HS Grad	Some College	College Grad	No Occup.	Low Occup.	Middle Occup.	High Occup.
Constant	0.550	0.201	-0.391	-0.360	0.055	0.032	-0.016	-0.071
Ln of Parent Income, offspring ages 12-15	-0.092	-0.034	0.066	0.061	-0.042	-0.025	0.012	0.054
Parent HS Dropout	0.210	0.077	-0.149	-0.138	0.135	0.079	-0.016	-0.071
Parent HS Graduate	0.123	0.045	-0.087	-0.080	0.066	0.039	-0.019	-0.086
Parent Occ. Missing	0.039	0.014	-0.027	-0.025	-0.011	-0.006	0.003	0.014
Parent No Occupation	0.130	0.047	-0.092	-0.085	0.090	0.053	-0.026	-0.116
Parent Low Occupation	0.126	0.046	-0.090	-0.083	0.069	0.041	-0.020	-0.090
Parent Middle Occupation	0.054	0.020	-0.038	-0.035	0.013	0.007	-0.004	-0.016
African-American	-0.042	-0.015	0.030	0.027	0.006	0.003	-0.002	-0.007
Female	-0.028	-0.010	0.020	0.018	0.029	0.017	-0.008	-0.037
Parent Foreign Born	-0.054	-0.020	0.039	0.036	-0.053	-0.031	0.015	0.069