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Understanding the Mechanisms Behind Intergenerational Persistence: A Comparison Between the United States and United Kingdom*

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Abstract

In this study, we build on cross-national research to examine the mechanisms underlying estimates of relative intergenerational mobility in the United States and the United Kingdom using harmonized data from the two nations. We examine several pathways by which parental status is related to offspring status, including education, labor market attachment, occupation, marital status, and health. We find that these intergenerational linkages differ between these two nations in systematic ways. Our results suggest that for the United States, limited access to highly rewarded educational qualifications severely limits mobility, while the rigidity of the structure of occupational prestige and professional standing encourage intergenerational persistence in the United Kingdom. We begin by describing our methodology and data and then present results for men and women separately, before summarizing our results and offering some thoughts on the nature of the interventions that may be effective for increasing mobility in the two nations.

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I. INTRODUCTION AND BACKGROUND

Research efforts to understand the processes underlying the transmission of economic position from parents to their offspring have a long and distinguished history. Quantitative sociologists were the first to empirically explore the linkage between parental economic position and that of their children using occupational status as the indicator of position; their contributions in the 1960s and 1970s form the foundation on which subsequent efforts rest.[1]

Few economists addressed issues of intergenerational mobility until the late 1980s. In 1986, the model of intergenerational investment introduced by the economists Gary Becker and Nigel Tomes set out a framework that has motivated dozens of economic studies of parental-offspring linkages. This research emphasized earnings and income rather than occupation as indicators of economic position. Gary Solon (1992) and Gary Zimmerman (1992) were simultaneously early contributors to a long stream of empirical economic mobility research using longitudinal data. Anders Björklund and Markus Jäntti (2009) provide a state-of-the-art summary of economic research into intergenerational mobility.

Even more recently, numerous U.S. and European studies have attempted to measure and compare the extent of social mobility across nations with different economic systems and values; this work is reviewed in Solon (2002), Miles Corak (2006), Björklund and Jäntti (2009), and Jo Blanden (2009). These studies, along with recent cross-national studies by sociologists (Erikson and Goldthorpe 2002; Breen and Jonsson 2005; Beller and Hout 2006), provide evidence that the overall level of social mobility in the United States and the United Kingdom, once thought to be greater than elsewhere, is little different and arguably lower than that in other western rich nations.[2] The estimates also indicate an underlying positive relationship between income inequality and intergenerational income persistence.[3]

In this study, we build on this cross-national research by using harmonized data to study the mechanisms underlying estimates of relative intergenerational mobility in the United States and United Kingdom. We examine several pathways by which parental status is related to offspring status, including education, labor market attachment, occupation, marriage, and health. We begin by describing our methodology and data and then present results for men and women separately, before summarizing our results and offering some thoughts on the nature of the interventions that may be effective for increasing mobility in the two nations.

II. CONCEPTUAL FRAMEWORK

Our empirical decomposition of the parent-offspring linkage is based on the standard intergenerational human capital investment framework first proposed by Becker and Tomes (1986). In this model, parents are altruistic and benefit from both their own consumption and that of their offspring. The earnings (wages) of offspring depend upon their innate ability (which, by assumption, is positively correlated with parental ability/earnings because of genetic transmission or culture) and the value of their human capital (for example, educational attainment). Parents forego some of their own consumption in order to invest in offspring human capital; investment faces diminishing marginal returns and (by assumption) the returns to parental investment are positively related to offspring ability.

With smoothly functioning capital markets, parents equate the market interest rate on borrowing with the present value of the marginal return to investing in offspring. If borrowing is not possible, the opportunity cost of investing (for example, via reducing parental own-consumption) is increased. With or without credit constraints, the level of investment in children—and hence offspring income—depends upon both offspring ability (by assumption)

and parental income. And with credit constraints, the link between parental and offspring income is stronger.

In this context, we would expect some societies to have greater intergenerational mobility than others. Comparing two otherwise identical societies, the Becker-Tomes model would suggest greater mobility in the country with (a) the more smoothly functioning capital market, (b) fewer education/occupation preferences associated with parental status, (c) less dependence on private financing of schooling (or more public subsidies for schooling), and (d) the higher average income (implying a lower cost of marginal foregone consumption).

Our decomposition approach breaks down total intergenerational persistence into the relationship between parental income and the child's characteristics, and in the second part the returns to those characteristics. This clearly has parallels with the Becker-Tomes model; investments are to some extent influenced by parental income, and this, combined with the return on those investments, determines the final link between incomes across generations.

Our priors indicate some important differences between these nations, which will guide our empirical explorations. For example, the model highlights the linkage between parents' and offspring's wages through offspring human capital (for example, education and health). Differences in the education systems between the two countries are large, especially at the tertiary level. For example, while the United Kingdom allocates about 1.3 percent of its GDP to the support of tertiary schooling, the United States allocates more than double this level. Nearly two-thirds of U.S. spending is private, while about two-thirds of U.K. tertiary spending is public (OECD 2008).

These considerations pose several interesting questions. Is the connection between parental resources and offspring schooling closer in the United States than in the United

Kingdom, as the reliance on private spending for tertiary schooling in the United States would imply? Is the offspring-earnings return to schooling in the United Kingdom greater than that in the United States, as the constrained supply of tertiary resources would suggest? Has the return to skills grown more in one country than the other, in response to the strong rise in income inequality in recent decades in both countries?

Health status is also an element of human capital, and as is well-known, the health systems in the two nations are also vastly different. The OECD reports that in the United States, 25 percent of above median income people forego health care because of cost, while only 8 percent forego care in the United Kingdom. For those with less than median income, the percentages are 52 percent and 9 percent for the two countries, respectively.[4] Access to health care for youths in the United States is largely dependent on parental health insurance; lower-income youths have less and lower quality health care than those from higher-income families. Again, there seems to be a positive relationship between parental income and offspring earnings through the health status linkage.

The framework also suggests that differences between the two countries in occupational structure are relevant to understanding intergenerational linkages. For example, the structure of occupational prestige and professional standing in the United Kingdom is typically referred to as "rigid," and is often compared to the more flexible U.S. labor market (see Devine 1997). In addition, recent work by Jan Jonsson and colleagues (2009) uses the United States as an exemplar nation for weak "big-class" identification.[5] Is offspring occupation more closely linked to parental economic status in the United Kingdom compared to the United States? Is the association between earnings and occupation also larger?

It is possible that the linkage between parental and offspring status may also operate through the marriage market. While both nations have seen major changes in marital and cohabitation status over recent decades, the rate of single parenthood and the rate of out-of-wedlock births in the United Kingdom exceed those in the United States. Is the link between single parenthood among the offspring of low status U.K. parents greater than this relationship in the United States? Is the return to marriage in the United Kingdom smaller than that in the United States, as the difference in single parenthood between the two nations would suggest?

Our exploration of the linkages suggested by this framework also has the potential for pointing to broad strategies for increasing social mobility. For example, if constrained resource allocation to education leads to a closer link between parental resources and offspring schooling, perhaps an education strategy targeting children from low-income families may be effective in increasing social mobility. Or, if occupational status explains a large share of the level of economic persistence between parents and offspring, perhaps policies to increase access to professional occupations should be considered. In the same way, the magnitude of other linkages that we explore may point to different policy strategies.

III. ESTIMATION METHODS

The standard approach to measuring intergenerational mobility (IGM) follows from estimating the regression model shown in equation 1:

$$\ln Y_i^{child} = \alpha + \beta \ln Y_i^{parent} + \varepsilon_i \qquad (1)$$

where the estimated beta ($\hat{\beta}$) expresses the degree of intergenerational persistence (with the degree of IGM = 1 - $\hat{\beta}$). For example, if $\hat{\beta}$=0.4 , it is estimated that, on average, 40 percent of

the difference between the incomes of parents is reflected in the difference in income of their offspring.

As emphasized by Björklund and Jäntti (2009), β will reflect changes in the variance of income across generations, and this may influence international comparisons of the level of mobility if inequality is changing at a different rate in the two nations. To assess this we also consider the intergenerational partial correlation, which adjusts β by the ratio of the standard deviation of parental income with respect to the standard deviation of child's income.

$$r = \mathrm{Corr}_{\ln Y^{parents},\ \ln Y^{son}} = \beta\left(\frac{SD^{\ln Y^{parents}}}{SD^{\ln Y^{son}}}\right) \quad (2)$$

Simple Decomposition

Following the procedures in Blanden, Paul Gregg, and Lindsey Macmillan (2007), we then decompose the intergenerational β into two parts:

(a) A measure of the extent to which parental income is related to a pathway factor (for example, education):[6]

$$Ed_i^{child} = \alpha_{ed} + \lambda_{ed} \ln Y_i^{parent} + \varepsilon_{1i} \quad (3)$$

and

(b) A measure of the payoff of a pathway factor for the offspring:

$$\ln Y_i^{child} = \omega_1 + \rho_{ed} Ed_i^{child} + v_{1i} \quad (4)$$

The overall intergenerational elasticity is then decomposed by the formula:

$$\beta = \lambda_{ed}\rho_{ed} + Cov(v_{1i}, \ln Y_i^{parent}) / Var(\ln Y_i^{parent}) \quad (5)$$

The first term of equation 5, $\rho_{ed}\lambda_{ed}$, is the component of β explained by (in this case) education, the second term is the unexplained component of β. This simple framework measures the unconditional strength of the education linkage between parental and offspring incomes, without considering the interaction of education with other pathways by which parental and offspring status are linked. This unconditional framework is illustrated in the first diagram of figure 2.1.

While this unconditional example illustrates our decomposition framework using a single pathway variable, our empirical analysis considers five intervening "pathway factors"—offspring education, labor market attachment, marital status, health, and occupation. In this context, there are interactions between the pathway variables, and these need to be accommodated in the estimation.

In order to take account of the influence of the different interacting pathways, we adopt two approaches. First, we model the pathways through *sequential addition* to the offspring-earnings equation (see equation 7). Second, we estimate a *double decomposition* model that compares the conditional and unconditional relationships between parental income and the individual pathways.

Figure 1 here

Sequential Analysis

The sequential addition approach is best understood by considering a model that includes two pathway variables, say, education and occupation. In a first step, we calculate the unconditional relationships between each pathway variable and parental income; neither of these estimated relationships reflects the linkage between parental income and the other pathway variable. For education, we use equation (3), above.

$$Ed_i^{child} = \alpha_{ed} + \lambda_{ed} \ln Y_i^{parent} + \varepsilon_{1i} \quad (3)$$

An analogous unconditional relationship is between parental income and offspring occupation.

$$Occ_i^{child} = \alpha_{occ} + \lambda_{occ} \ln Y_i^{parent} + \varepsilon_{1i} \quad (6)$$

We then estimate a regression equation that relates offspring earnings to both of the pathway factors, offspring education and occupation:

$$\ln Y_i^{child} = \omega_2 + \gamma_{ed} Ed_i^{child} + \gamma_{occ} Occ_i^{child} + v_{2i} \quad (7)$$

With these two pathways, it follows that a decomposition analogous to equation (5) is:

$$\beta = \lambda_{ed}\gamma_{ed} + \lambda_{occ}\gamma_{occ} + Cov(v_{2i}, \ln Y_i^{parent}) / Var(\ln Y_i^{parent}) \quad (8)$$

The relationship between the estimated contribution of the education pathway in equations (5) and (8) depends in part on the extent to which occupation is associated with education. Define the additional parameter, ϕ, (which is not in fact estimated).

$$Ed_i^{child} = \theta + \phi Occ_i^{child} + e_i \quad (9)$$

This implies that

$$\lambda_{ed}\rho_{ed} = \lambda_{ed}\gamma_{ed} + \phi\lambda_{ed}\gamma_{occ} \quad (10)$$

Hence, the extent to which the education effect will be modified by the inclusion of occupation will depend on the strength of the relationship between education and occupation, the impact of occupation on offspring earnings, and the association of parental income and offspring's education. This conditional framework involving two pathway variables is illustrated in the second diagram of figure 2.1.

In the full sequential addition analysis, we estimate four different versions of equation (7), leading to four different decompositions of β. The first considers only the education pathway. Although educational attainment is measured at age thirty, this outcome is primarily a

consequence of choices made in the late teens and even before. In the second specification, we add two variables reflecting early life cycle choices—early marriage (before age twenty-two) and early labor market attachment (ages twenty-two to twenty-five). Comparing the decomposition from this second specification of (7) with those from the first reveals the extent to which the addition of these early life cycle variables adds to our understanding of the pathway linkages. This comparison also reveals the extent to which the education channel observed in the first decomposition is working through the additional, early life cycle pathways. The third specification adds variables measured at around age thirty, including labor market attachment at ages twenty-six to twenty-nine, and marriage, health, and occupation at age thirty. Our final specification adds occupation at age thirty-four.

By adding these variables in a discrete time-sequenced ordering, we are able to estimate the maximum explanatory effect of each group prior to observing the extent to which this effect is explained through relationships of each group with later pathways.

Double Decomposition Analysis

In this approach, also designed to capture the interactions between the variables, we compare the conditional and unconditional relationships between parental income and the pathways. Again using the two-variable, education-occupation example, we begin with the unconditional relationships between parental income and offspring education and offspring occupation, as seen in equations (3) and (6).

$$Ed_i^{child} = \alpha_{ed} + \lambda_{ed} \ln Y_i^{parent} + \varepsilon_{1i} \qquad (3)$$

$$Occ_i^{child} = \alpha_{occ} + \lambda_{occ} \ln Y_i^{parent} + \varepsilon_{1i} \quad (6)$$

One reasonable conjecture is that those children with higher parental income have better occupations because they do better in education. In this case, we would add offspring education to equation (6):

$$Occ_i^{child} = \sigma_{occ} + \delta_{occ} \ln Y_i^{parent} + \varphi Ed_i^{child} + u_{1i} \quad (11)$$

Combining equations (3) and (11) with the parameters estimated in the conditional earnings function (equation 7), the decomposition would now be written as:

$$\beta = \lambda_{ed}\gamma_{ed} + \lambda_{ed}\varphi\gamma_{occ} + \delta_{occ}\gamma_{occ} + Cov(v_{2i}, \ln Y_i^{parent}) / Var(\ln Y_i^{parent}) \quad (12)$$

The part of β that was attributed to occupation ($\lambda_{occ}\gamma_{occ}$ in equation [7]) is now redistributed into two parts. The *indirect effect* of education through occupation is $\lambda_{ed}\varphi\gamma_{occ}$, measuring the extent to which children with higher family incomes obtain more education and therefore better jobs. The *direct effect* of occupation is $\delta_{occ}\gamma_{occ}$, indicating that even among those with the same education level, higher parental income is associated with occupational advantages. Hence, we label this approach a "double decomposition" and use it in our most complete specification. This approach is illustrated in the third diagram of figure 2.1.

IV. THE U.S. AND U.K. DATA AND VARIABLES

We use two prominent longitudinal survey data sources, the 1970 British Cohort Study (BCS) for the United Kingdom and the Panel Study of Income Dynamics (PSID) for the United States. The BCS began with a target sample of the population of individuals born in a week in April 1970 (around 18,000), and has a usable sample of 7,665 for our intergenerational income analysis. The gap between the target and usable samples is largely due to attrition; by the age thirty-four survey, the number of observations had fallen to 9,665. The PSID includes the cohort born between 1960 and 1970, yielding a sample size of 1,448.

We devote a great deal of effort to making the two datasets as comparable as possible across all of the important variables for the analysis. Our measure of parental economic status is average gross parental income, measured when child is age ten and age sixteen in both countries. Because parental income in the BCS is reported in categories, we group PSID income into categories that are comparable to those in the BCS. Parental income is used rather than parental earnings as it captures the effect of public cash transfer benefits on the level of available parental resources. Moreover, parental earnings are not reported in the BCS.[7] We measure offspring economic status by average earnings at ages thirty and thirty-four as these are the adult ages for which surveys are available for the BCS.

Our pathway variables are shown in table 2.1, and like the parental and offspring economic status variables, the definitions and measures of these variables are harmonized. For the United States, offspring education is measured at age thirty in both countries, and classified as less than high school graduate, high school graduate, attend college, graduate from college, and attend graduate school for the United States; for the United Kingdom, education is classified as less than O level, O level or equivalent, A level, or degree or equivalent for the United Kingdom.[8]

We have transformed PSID occupation data into the eight-category version of the National Statistics Socio-economic Classification (NS-SEC) system; the BCS includes NS-SEC classification code.[9] For both countries, occupation is measured at ages thirty and thirty-four. [10] Two measures of labor market attachment are used. The first captures the percentage of years during the ages of twenty-two to twenty-five and twenty-six to twenty-nine when the offspring is primarily *not* in the labor market and *not* in school, while the second equals the percentage of years from age eighteen to twenty-eight during which the observation is engaged in full-time (or close to full-time) work or education. In both surveys, self-reported health status (excellent, good, fair, or poor) measures the health of the offspring at age thirty. Being married at age thirty and age of first marriage are used as indicators of the marital status of the offspring.

[Table 1 here]

[Table 2 here]

V. ASSUMPTIONS AND LIMITATIONS

Our procedures require us to make several assumptions regarding the process through which parental economic position is transmitted to offspring. These assumptions are implicit in our choice of pathways that we explore in decomposing the estimated βs. Here we mention only the most important of these assumptions and some of the other limitations associated with our methodology.

Omitted Pathways

While the pathways we analyze are guided by economic theory, they are also constrained by data limitations. There are many other potential pathways by which parental income may influence offspring earnings, including inherited cognitive and non-cognitive abilities, wealth, and

neighborhood effects. In our approach, we assume the linkages of these unmeasured pathways are not correlated with the included pathways and are therefore captured in the unexplained component of β. However, any relationship between unobserved and included pathways will lead to estimates of the included pathway effects that are biased. For example, we do not include measures of cognitive and non-cognitive ability, and if these are positively correlated with the pathways that are included, then the magnitude of the contributions of the included pathways to persistence will be inflated.[11] We can weaken this assumption of uncorrelated pathways somewhat, by assuming instead that if the omitted pathways are correlated with the included pathways, the extent of bias is the same for the two nations.

Independence of Linkages

We make two assumptions concerning the independence of the linkages. First, we assume that the link between parental income and any offspring pathway attainment is independent of the linkage between parental income and other pathway attainments. Second, we assume that the returns to pathway attainments are constant and independent of parental income. Both of these are essential to enable us to perform the decomposition.

Measures of Economic Status

We focus on parental income as our measure of family background, and average earnings at ages 30 to 34 as the final outcome measure for adult children. It is more common in the literature to measure the association between earnings across the two generations (Björklund and Jäntti 2009). This is not possible here as the U.K. data do not contain separate information on parental earnings. In some ways, parental income is a more appropriate variable, as it includes the impact of taxes and transfers, which will clearly matter for available parental resources. We study the asymmetric relationship between parental income and child's earnings because we believe that

individual earned income better reflects offspring adult attainment than does offspring household income. We examine the robustness of our model to using offspring household income as the dependent variable in the robustness section.

Measurement error in parental income will lead to a downward biased estimate of β (Solon 1992). In our case, the U.K. estimate may be relatively more downward biased because of greater transitory variation in parental income than in the United States.[12]

However, classical measurement error in the dependent variable will not lead to any bias in the estimated β, as noted by Steven Haider and Solon (2006). But if measurement error is related to parental income, then its effects might be quite different. Haider and Solon note that income at young ages is likely to be a particularly poor measure of permanent income for the most educated members of the sample. If education and parental income are related, then this will lead to a downward biased estimate of intergenerational persistence. Again, our results will be most seriously affected if the magnitude of this bias is different across the two nations.

VI. ESTIMATION RESULTS

In table 2.3, we report the total βs measured as the elasticity of individual offspring earnings with respect to parental family income from estimates of equation (1). All of these estimates are highly statistically significant. For males, the U.S. β is .385, in the U.K., the elasticity for men is lower at .269. The finding of lower mobility in the United States is consistent with some (but not all) of the recent research on this topic (Blanden 2009).[13] The stark contrast between the U.S. and U.K. results for males is reduced when the intergenerational partial correlation is considered (.301 for U.S. and .275 for U.K.); it appears that some of the difference in β is due to the very rapid growth in male earnings inequality in the United States over the period of study.[14] The extent of persistence for women appears to be similar in the United States and United Kingdom

by both measures, although the partial correlation is much lower than the β owing to the wide dispersion of women's earnings in both nations.[15]

[Table 3 here]

Sequential Decomposition Analysis for Males

Tables 2.4 and 2.5 summarize our sequential decomposition analysis for U.S. and U.K. men, respectively. Column 1 includes only a single pathway—offspring education. This specification explains rather more of the observed persistence in the United States than in the United Kingdom, 56 percent compared to 35 percent; as β is larger in the United States, the absolute difference is even larger. In the second specification (column 2), we add the early marriage and early labor market attachment variables. These add very little to the explanation of persistence.[16] In the third specification (column 3), offspring occupation, health, and marriage at age thirty are included along with offspring labor market attachment in the late 20s. The additional labor market attachment variables have a similar relative impact in both nations, explaining 4 percent of β in the United States and 3 percent in the United Kingdom. The marriage and health variables have very little explanatory power. In both the United States and the United Kingdom, however, offspring occupation has a large and positive linkage between parental income and offspring earnings, explaining 20 percent of β in the United States and a quarter in the United Kingdom. Occupation is clearly correlated with education in both nations; the addition of offspring occupation reduces the share of persistence accounted for by education by 15 to 20 percentage points (57 percent to 36 percent) in the United States and from 35 percent to 20 percent in the United Kingdom.

Column 4 is our complete sequential analysis; offspring occupation at age thirty-four is added to the other pathway linkages. This additional linkage also accounts for an important portion of persistence, 12 percent in the United States and 21 percent in the United Kingdom. Again, some of this explanatory effect is working through education and occupation at age thirty, as the contributions of these variables fall. It is noteworthy that adding the offspring occupation linkages substantially increases the proportion of β explained by the model for the United Kingdom, whereas in the United States adding these linkages only marginally increases the total fraction of persistence that is explained. The addition of the offspring occupation linkages in the United States tends to absorb explanatory power that had been attributed to the education linkage, without contributing substantially to the overall level of persistence that is explained.[17]

In appendix 2.A1, we present the detailed estimates that lie behind these sequential decompositions for men. The first pair of columns indicates the λ coefficients from the series of regressions linking the pathway variables to log parental income. The second pair of columns presents the γ coefficients from the single regression of log offspring earnings on the set of included pathway variables (see equation 7). In the third pair of columns, we summarize the relative effect of these two linkages as the ratio of λ to γ (λ/γ); a ratio greater than unity indicates that the parent income-offspring pathway linkage (λ) dominates the earnings payoff from offspring pathway effect (γ).[18] The final columns show the percentage of β explained by each pathway variable, as summarized in tables 2.3 and 2.4.

The greater contribution of the education pathway to explaining total β in the United States is primarily due to the greater "returns" to schooling in the United States relative to the United Kingdom. Parental income's influence on educational attainment is relatively similar across the two countries, as shown in the first two columns of the appendix 2.A1. However, the

earnings return to education in the second set of columns is much larger in the United States than the United Kingdom, particularly the returns for a college degree. This is seen in the appendix table by the markedly smaller (λ/γ) ratios of education variables in the United States relative to the United Kingdom.[19] The detailed estimates for the other pathway variables do not show a clear pattern.

In summary, for U.S. men, the linkage between parental income and offspring earnings is largely accounted for by the offspring-education pathway, whereas in the United Kingdom, offspring occupation plays a much stronger role. The difference in the strength of the education pathway is due to relative differences in the returns to education in the two countries rather than relative differences in the influence of parental income on educational attainment.

[Tables 4 and 5 here]

Sequential Decomposition Analysis for Females

Tables 2.6 and 2.7 summarize the sequential pathway results for women. In both countries, the pathway variables we analyze explain substantially more of total β for females than they do for males.[20] Also, as compared to that of males, the general pattern of effects of the different pathways for females is roughly similar in the two nations.

In both nations, the education-only specification (column 1) explains over one-half of the observed persistence. For males, only in the United States did education have this large explanatory effect. In moving from column 1 to column 2, the female decompositions suggest a large explanatory role for early labor market attachment, especially relative to the explanatory power of this linkage for males. In both nations, female offspring from higher-income families

tend to have a stronger early labor market attachment than those from lower-income families, and this tie with the world of work is reflected in their earnings in their mid-thirties. The third and fourth specifications (columns 3 and 4) indicate that part of this impact is because women from higher (relative to lower) income families also have stronger labor market ties in their late twenties and higher status occupations in their mid-thirties.

In the final specification for females, about 75 percent to 80 percent of intergenerational persistence is explained by this set of sequential linkages in both the United States and the United Kingdom. The general finding for males that the linkage between parental income and offspring earnings is primarily accounted for by education in the United States and by occupation in the United Kingdom is also seen for females in the two countries, but the differences for females are not as large. Finally, while the full pathway effect of labor market attachment is relatively small for males (about 2 percent of total β in the United States and 6 percent in the United Kingdom), it is substantially greater for females in both countries. In both countries, more than 19 percent of total β for females is explained by this pathway. A strong relationship between offspring labor market attachment and family income and a large payoff to work combine to produce this pattern. It is reasonable to speculate that differences in the timing of childbearing for women from higher- and lower-income families account for the importance of this pathway.

[Tables 6 and 7 here]

B. Double Decomposition Analysis

In the results for the sequential decomposition analyses, the contribution of the offspring education pathway is likely to be understated. This is so because some portion of the joint effect

of family income on both education and occupation will be reflected in the estimated percentage of β explained that is attributed to occupation.

Tables 2.8 and 2.9 show the results of our double decomposition estimates. The first two columns of each table repeat the overall results on the percentage of β explained by the various pathways from the sequential decomposition, found in column 4 of tables 2.4 to 2.7. The remainder of the tables break down this pattern into the part of the effect of occupation that is not mediated by the relationship between parental income and education (the "direct effect" of occupation—$\delta_{occ}\gamma_{occ}$) and the part that is mediated by the relationship between parental income and education (the "indirect" effect of occupation—$\lambda_{ed}\varphi\gamma_{occ}$). (See equation 12.) This indirect effect reflects the extent to which children with higher family incomes obtain more education and therefore better jobs.

Again, there is a very stark division across gender lines. For the men, almost all of the explained β is working through the education mechanism in the United States; in total .201 of the .242 of explained β is through education either directly or indirectly through education's effect on occupation. While education has an important role to play in the United Kingdom, there is a much greater direct effect from parental income to the occupation variables. Just over half of explained β (.089 of .156) is directly or indirectly through education with the remaining portion almost entirely from occupation. For women, the magnitude of the indirect and direct effects is similar in both nations; around two-thirds of the explanatory power is mediated through education with one-third coming independently from the other pathways.

VIII. SOME ROBUSTNESS TESTS

The results we have presented are our preferred comparisons of IGM between the United States and United Kingdom, and of the mediating pathways from parental income to offspring earnings

that help us to perceive the underlying sources of intergenerational persistence. In addition to these results, we tested a number of other specifications and definitions; here we summarize some of these findings.

Measure of Income

As already discussed, the economics literature (as reviewed by Björklund and Jäntti 2009) has tended to concentrate on individual earnings as the primary measure of offspring's outcomes. However, total family income is perhaps more pertinent for living standards. Appendix 2.B1 reports estimates for both the intergenerational elasticity and correlation between family incomes across generations. For both men and women persistence is greater in the United States than the United Kingdom, and in the United States persistence is much greater for women than men.

Appendix 2.B2 reports the summary of the pathway estimation using family income. For these estimations we must take account of differences in the dependent variables; in the United Kingdom earnings and income are current weekly or monthly measures, whereas in the United States they are annual. This means that in the United Kingdom income is observed for more individuals than earnings. It also means that those who are not working at either of the survey dates will tend to have lower family incomes.[21]

The results for men are very similar when the model is estimated with family income rather than earnings. For women, though, much less of β is accounted for when family income is used; in the earnings model, about three-quarters if β is accounted for, whereas in the family income model only 51.7 percent (U.S.) and 60.6 percent (U.K.) of β are accounted for. Not surprisingly, the marriage pathway is more important for family income IGM than for earnings IGM, accounting for about 7 percent of beta. These results suggest the importance of marriage in

understanding income IGM for women. To take this work further we would want to include some variables that describe the human capital of partners.

Observations with Zero Earnings

The earnings variable is the average of earnings at age thirty and age thirty-four. In the results shown above, we only use earnings in years when there are positive earnings. A potential issue in evaluating the level of IGM for women is the number of observations reporting trivial amounts of earned income, particularly for the United States, where earnings are measured on an annual basis. We dropped both the bottom 1 percentile and the bottom 5 percent of earnings in the female samples, with virtually no effect on the total β. For the United Kingdom, the β fell from .340 to .333 and .300, respectively, with these changes; for the United States, the β changed from .349 to .312 and .326, respectively.

Measure of Occupation

The NS-SEC occupation code is matched to the U.K. data using occupation and information on managerial and supervisory duties; as it is designed to do. In the United States it was assigned based on three-digit occupation information. If there is error in the assignment of these codes, the coefficient estimates for occupation in the United States could be biased downward. In addition to errors in assignment, a second potential issue with using the NS-SEC for the United States is that it may not capture occupational differences as well in the United States as in European countries (see Erikson and Goldthorpe 1992).

One way to address these issues is to use the three-category classification of SEC code (rather than eight-category). This reduces the possibility of measurement error because while there may be incorrect assignment to the more narrowly defined categories, this would not be expected to be as much of an issue for the broader classification codes; however, using the

broader classification also eliminates information if the categories are correctly assigned. When the model is estimated using the three-category SEC occupation codes, the percentage of β accounted for by the occupation pathways in the United States falls (from 25.5 percent to 14.6 percent for men and from 31.4 percent to 25.1 percent for women).[22] For the United Kingdom, the magnitude of the changes is extremely similar (the proportion explained by occupation falls from 38 percent to 29 percent for men and from 42 percent to 37 percent for women); the implication is that any bias due to misclassification is approximately equal in both nations. While certainly not conclusive, this suggests that the relatively lower effect of the occupation pathway in the United States may not be driven by measurement error.

Education-Only Model

One of our core findings so far has been the importance of education in transmitting intergenerational inequality in the United States in contrast to the importance of occupation in the United Kingdom. One concern might be that the education variables are not strictly comparable across nations. If education is poorly measured in the United Kingdom, then again this could lead to an underestimate of the importance of education. To address this concern, appendix 2.2.C uses a more detailed breakdown of qualifications, which more adequately reflects the U.K. education system, and this increases the proportion of beta accounted for by education by less than one percentage point for each gender.

VIII. SUMMARY AND CONCLUSION

Our analysis has explored the linkages between parental and offspring economic position that lead to social persistence or immobility in a cross-national framework. Using harmonized U.S. and U.K. data and a common econometric model, we explore several pathways that link offspring to their parents' status—offspring education, labor market attachment, occupation,

marital status, and health status. For each of these pathways, we estimated both the tie between parental income and the pathway outcome (offspring education, labor market attachment, and so on) and the earnings payoff to the offspring of the attainment level achieved.

We analyzed these patterns for both men and women, and found a striking consistency across the key mechanisms that help explain intergenerational mobility in the two nations. In the United States, the pathway through offspring education is important, primarily because of the higher returns to education and skills. Education is less important in the United Kingdom for both genders, in spite of rapid growth in demand for highly educated workers in both nations (see Machin 2009, for a good review of various aspects of these differences; see Katz and Autor 1999, and Goldin and Katz 2008, on the United States). By contrast, we find that the linkage through occupation is substantially more important in the United Kingdom than in the United States for both genders.

Consistent with the higher returns to educational attainment in the United States, labor market attachment is a more important pathway in the United States than in the United Kingdom, especially for women. For both genders, health and marital status have relatively little explanatory power in understanding the linkage between parental income and offspring earnings.

The consistency of these education and occupation linkages across both genders suggests that structural factors related to cultural behaviors, labor market operation, and the characteristics of educational systems play a larger role in understanding and underpinning social mobility in these countries. Considerations related to issues of gender discrimination or glass-ceiling effects lose some of their salience in the face of this evidence. Having said this, however, we note that the linkage of parental to offspring status through attachment to market work is a more important explanation for female relative to male persistence, especially in the United Kingdom.

Our research findings are consistent with both evidence and conventional wisdom regarding the structure of, and policy concerns in, both the United States and the United Kingdom. In the United States, high and growing earnings inequality, driven largely by earnings increases among the highest educated and best trained U.S. workers, has driven up the rate of return to additional higher schooling. Youths gaining college degrees and earning these high wages are increasingly from the nation's higher-income families, raising the issue of equity and access in U.S. higher education. Similarly, the stagnation in college graduation rates in the United States is in large part due to the dropping out of students whose families find the high costs of attendance burdensome. These patterns increase the linkage between parental income and offspring earnings, and the level of intergenerational persistence. It is likely that the large explanatory power of the educational pathway found in our results, and especially the large payoff to schooling in our U.S. results, reflect these processes. [23]

In the United Kingdom, the close tie between social class and occupation—combined with an education system that is class oriented, is viewed by many as constraining the ability of qualified youths from lower-income families from securing the training necessary to enable them to gain entry into higher level and professional occupations—is discussed widely and accepted in much academic and popular literature.[24] This class and occupation structure is consistent with the dominant occupational pathway that we have documented.

If our evidence regarding the important roles of the education system in the United States and the structure of occupations/classes in the United Kingdom is correct, it suggests that policy approaches designed to increase social mobility should also differ between these two countries. Indeed, recent proposals in the two countries appear to reflect these quite different emphases. In 2009, the U.S. government proposed, and in 2010 passed, a broad policy initiative designed to

increase educational attainment from preschool to university, especially for youths from the bottom one-half of the income distribution. Income-conditioned subsidies for both university and community college attendance are a part of this policy package. In addition, states such as Georgia and Texas have led the way in an attempt to increase attendance and graduation for the highest-ranked secondary school graduates at their state institutions of higher learning, and have also focused on issues of access and graduation for lower-income students.

In the United Kingdom, a new report on fair access to professions (Panel on Fair Access to the Professions 2009) is recommending that greater attention be paid to professional (occupational) attainment and the social exclusivity of many high-esteem professions. The claim is that top jobs and professions have not only expanded, but have become more socially exclusive over the past several decades (Macmillan 2009).

In both countries, then, policymakers appear to be tailoring proposals that reflect the underlying process of intergenerational social mobility that our analysis has documented—stimulating educational attainment (college attendance and graduation) especially for youths from families with modest means in the United States, and opening up the occupational structure in the United Kingdom.

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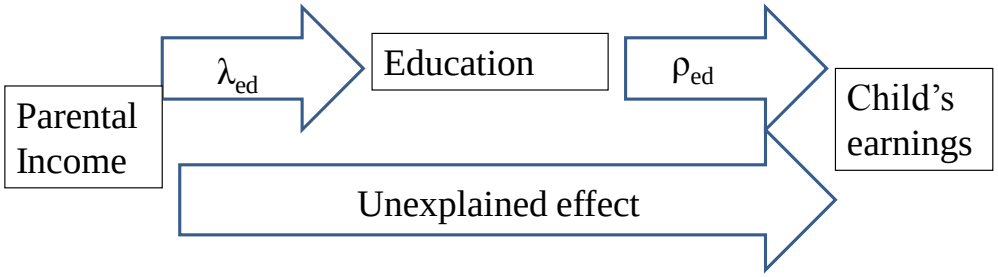
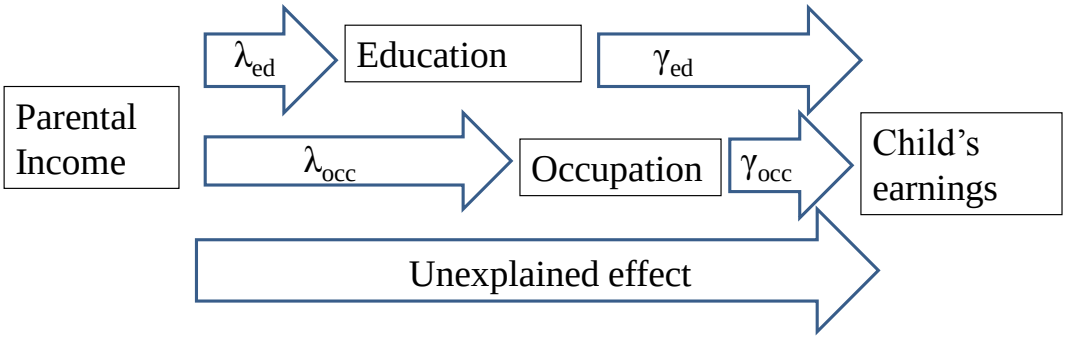
Figure 2.1: Pictorial Presentation of Our Models

Unconditional Model



Sequential Model



Double decomposition Model

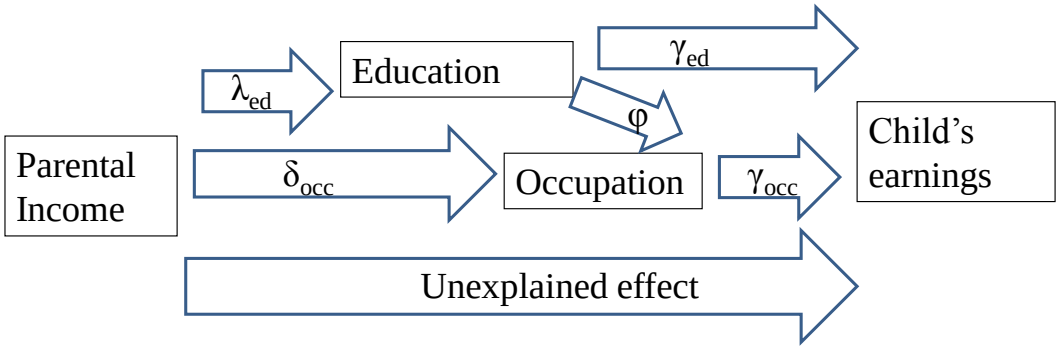


Table 2.1
Pathway Variables

	U.S. Data	U.K. Data
Education at age 30	High School Graduate Some College College Completion	O level or equivalent A level Degree or equivalent
Early marriage	Year of first marriage age 22 or younger	Year of first [f]marriage is before 1992
Labor Market (ages 22-25, ages 26-28)	Percent years working <500 hours and not attending school; Percent of years working 1,500+ hours or primary role is student	Percent of years where < 6 months are spent in full-time work or full-time education; Percent of years with 12 months full-time work or at least six months full-time education
Health at age 30	Excellent Poor or very poor	Excellent Poor or fair
Marriage	Married at age 30	Married at age 30
Occupation at age 30	7-category occupation code based on NS-SEC	7-category occupation code based on NS-SEC
Occupation at age 34	7-category occupation code based on NS-SEC	7-category occupation code based on NS-SEC

Table 2.2: Descriptive Statistics for Pathway Variables in Earnings Regressions

	US men	US women	UK men	UK women
At least High school grad/O levels	88.7%	91.2%	74.1%	75.5%
At least some college/A levels	53.0%	56.8%	43.7%	45.5%
Graduate college/Degree	29.1%	27.4%	23.4%	23.4%
Education missing	1.4%	1.3%	6.4%	3.3%
Married age 22 or less	31.3%	46.8%	5.4%	12.9%
Missing married at 22	17.3%	18.0%	5.2%	3.3%
Ages 22-25 No labor/educ.	22.9%	25.2%	5.8%	13.9%
Ages 22-25 Full-time work/educ.	64.5%	58.3%	88.1%	70.9%
Ages 26-29 No labor/educ.	7.5%	19.4%	2.8%	12.5%
Ages 26-29 Full-time work/educ.	84.5%	63.7%	71.5%	51.8%
Missing labor market info	2.3%	0.4%	6.2%	3.2%
Married at age 30	66.7%	63.5%	38.3%	47.5%
Missing married at 30	2.0%	0.3%	7.6%	4.0%
Health excellent at 30	34.2%	27.2%	33.2%	33.9%
Health poor (plus fair for U.K.) at 30	4.2%	7.1%	13.0%	11.7%
Health missing at 30	3.8%	1.9%	6.2%	3.2%
Higher managerial and professional at 30	16.3%	11.8%	15.4%	7.4%
Lower managerial and professional or higher at 30	40.0%	43.3%	45.7%	44.9%
Intermediate or higher at 30	49.0%	63.6%	55.6%	70.4%
Small employers and own account or higher at 30	58.9%	69.9%	56.6%	71.1%
Lower supervisory and technical or higher at 30	71.7%	72.2%	77.7%	77.9%
Semi-routine or higher at 30	85.9%	86.3%	88.2%	92.6%
Missing occupation at 30	12.5%	16.3%	9.2%	12.3%
Higher managerial and professional at 34	17.7%	9.7%	22.4%	12.8%
Lower managerial and professional or higher at 34	41.0%	41.2%	51.9%	49.9%
Intermediate or higher at 34	51.2%	63.9%	59.3%	70.5%

Small employers and own account or higher at 34	60.3%	69.6%	63.1%	72.3%
Lower supervisory and technical or higher at 34	73.9%	70.9%	81.1%	77.7%
Semi-routine or higher at 34	88.3%	86.9%	90.4%	94.1%
Missing occupation at 34	5.4%	10.7%	19.5%	22.9%
Sample size	647	801	3899	3766

Note: The means of the variables are the means of the observations that are not missing. This is appropriate because in the main analysis missing values are replaced with these mean values.

Table 2.3: Comparison of Individual Earnings Persistence across Countries

Panel 1: βs (elasticities)	U.S.	U.K.
Men	.385 (.047)	.269 (.016)
Women	.349 (.050)	.341 (.025)
Panel 2: Partial correlations		
Men	.301 (.037)	.275 (.017)
Women	.241 (.035)	.220 (.016)

Table 2.4: Sequential Models: U.S. Men

	(1)		(2)		(3)		(4)	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β								
Education	0.217	56.3	0.220	57.2	0.139	36.2	0.122	31.7
Early marriage			0.011	2.9	0.010	2.6	0.011	2.9
Labor Market Attachment, ages 22-25			-0.006	-1.7	-0.010	-2.6	-0.010	-2.5
Labor Market Attachment, ages 26-29					0.017	4.4	0.016	4.1
Marriage and health at 30					0.004	1.0	0.005	1.4
Occupation at 30					0.076	19.7	0.054	13.9
Occupation age 34							0.044	11.6
Explained β	0.217	56.3	0.225	58.4	0.235	61.3	0.242	63.0
Unexplained β	0.168	43.7	0.160	41.6	0.149	38.7	0.142	37.0
Total β	0.385		0.385		0.385		0.385	

Table 2.5: Sequential Models: U.K. Men

	(1)		(2)		(3)		(4)	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β								
Education	0.093	34.7	0.095	35.5	0.053	19.8	0.037	13.6
Early marriage			-0.0007	-0.3	-0.0003	-0.1	-0.004	-0.1
Labor Market Attachment, ages 22-25			0.013	4.7	0.007	2.7	0.008	2.9
Labor Market Attachment, ages 26-29					0.009	3.4	0.009	3.1
Marriage and health at 30					0.004	1.5	0.0034	1.3
Occupation at 30					0.065	24.2	0.044	16.5
Occupation age 34							0.057	21.1
Explained β	0.094	34.7	0.107	39.9	0.137	51.0	0.155	57.7
Unexplained β	0.175	65.3	0.162	60.1	0.131	48.6	0.112	41.9
Total β	0.269		0.269		0.269		0.269	

Table 2.6: Sequential Models: U.S. Women

	(1)		(2)		(3)		(4)	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β								
Education	0.194	55.7	0.163	46.8	0.094	27.0	0.087	24.9
Early marriage			0.019	5.5	-0.007	-1.9	-0.008	-2.2
Labor Market Attachment, ages 22-25			0.078	22.4	0.032	9.1	0.031	9.0
Labor Market Attachment, ages 26-29					0.06	17.3	0.054	15.5
Marriage and health at 30					-0.004	-1.0	-0.003	-0.8
Occupation at 30					0.077	22.1	0.059	17.0
Occupation age 34							0.050	14.4
Explained β	0.194	55.7	0.260	74.7	0.253	72.6	0.272	77.8
Unexplained β	0.155	44.3	0.088	25.3	0.096	27.4	0.077	22.2
Total β	0.349		0.349		0.349		0.349	

Table 2.7: Sequential Models: U.K. Women

	(1)		(2)		(3)		(4)	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β								
Education	0.175	51.5	0.158	46.4	0.075	22.0	0.054	15.8
Early marriage			0.003	0.7	-0.002	-0.6	-0.001	-0.4
Labor Market Attachment, ages 22-25			0.054	15.7	0.007	2.0	0.007	2.0
Labor Market Attachment, ages 26-29					0.061	18.0	0.057	16.8
Marriage and health at 30					-0.0003	-0.1	-0.001	-0.3
Occupation at 30					0.097	28.6	0.070	20.6
Occupation age 34							0.071	21.0
Explained β	0.175	51.5	0.214	62.8	0.203	70.0	0.257	75.5
Unexplained β	0.163	48.5	0.127	37.2	0.138	30.0	0.083	24.5
Total β	0.341				0.341		0.341	

Table 2.8: Double Decomposition Using Education Pathway—Men

	Total Effect ($\lambda\gamma$)		Effect Through Education ($\lambda_{ed}\varphi\gamma$)		Direct Effect ($\delta\gamma$)	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β U.S.						
Education	0.122	31.7%	0.122	31.7%		
Early marriage	0.011	2.9%	0.006	1.5%	0.005	1.4%
Labor Market Attachment, ages 22-25	-0.010	-2.5%	-0.008	-2.2%	-0.001	-0.4%
Labor Market Attachment, ages 26-29	0.016	4.1%	0.008	2.0%	0.008	2.1%
Marriage and health at 30	0.005	1.4%	0.006	1.5%	-0.001	-0.2%
Occupation at 30	0.054	13.9%	0.037	9.6%	0.016	4.3%
Occupation age 34	0.045	11.6%	0.030	7.9%	0.014	3.7%
Explained β	0.242	63.0%	0.201	52.2%	0.041	10.6%
Unexplained β	0.142	37.0%				
Total β	0.385	100.0%				
Explained Components of Total β U.K.						
Education	0.037	13.6%	0.037	13.6%		
Early marriage	-0.0004	-0.1%	-0.0002	-0.1%	-0.002	-0.1%
Labor Market Attachment, ages 22-25	0.008	2.9%	-0.0007	-0.2%	0.008	3.1%
Labor Market Attachment, ages 26-29	0.008	3.1%	0.001	0.4%	0.007	2.7%
Marriage and health at 30	0.0034	1.3%	0.0021	0.5%	0.001	0.8%
Occupation at 30	0.044	16.5%	0.0241	9.0%	0.020	7.5%
Occupation age 34	0.057	21.1%	0.0272	10.1%	0.029	11.0%
Explained β	0.156	58.3%	0.0893	33.2%	0.067	25.0%
Unexplained β	0.112	41.7%				
Total β	0.269					

Table 2.9: Double Decomposition Using Education Pathway—Women

	Total Effect		Effect Through Education		Direct Effect	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β U.S.						
Education	0.087	24.9%	0.087	24.9%		
Early marriage	-0.008	-2.2%	-0.005	-1.3%	-0.003	-0.9%
Labor Market Attachment, ages 22-25	0.031	9.0%	0.001	0.4%	0.030	8.5%
Labor Market Attachment, ages 26-29	0.054	15.5%	0.041	11.8%	0.013	3.7%
Marriage and health at 30	-0.003	-0.8%	0.001	0.3%	-0.004	-1.2%
Occupation at 30	0.059	17.0%	0.027	7.7%	0.032	9.3%
Occupation age 34	0.050	14.4%	0.020	5.6%	0.031	8.8%
Explained β	0.271	77.8%	0.172	49.3%	0.099	28.4%
Unexplained β	0.077	22.2%				
Total β	0.349	100.0%				
Explained Components of Total β U.K.						
Education	0.054	15.8%	0.054	15.8%		
Early marriage	-0.001	-0.4%	-0.0007	-0.2%	-0.0006	-0.2%
Labor Market Attachment, ages 22-25	0.007	2.0%	0.0021	0.6%	0.005	1.4%
Labor Market Attachment, ages 26-29	0.057	16.8%	0.039	11.4%	0.018	5.4%
Marriage and health at 30	-0.001	-0.3%	0.0015	0.4%	-0.002	-0.7%
Occupation at 30	0.070	20.6%	0.037	10.8%	0.033	9.8%
Occupation age 34	0.071	21.0%	0.037	10.7%	0.035	10.3%
Explained β	0.257	75.5%	0.169	49.6%	0.091	25.9%
Unexplained β	0.083	24.5%				
Total β	0.341					

Appendix 2.A1: U.S. and U.K. Men, Detailed Decomposition Results

	Parent Income Influence on Factor (λ)		Return to Factor (γ)		Ratio (λ / γ)		Decomp. of total β: Percent Variation Explained	
Factors	U.S.	U.K.	U.S.	U.K.	U.S.	U.K.	U.S.	U.K.
High school grad/O levels	0.095 (.020)	0.148 (.013)	0.187 (.084)	0.040 (.018)	0.51	3.73	4.6%	2.2%
Attend college/A levels	0.304 (.030)	0.211 (.015)	0.061 (.070)	0.024 (.019)	4.95	8.61	4.9%	1.9%
Graduate college/Degree	0.239 (.027)	0.181 (.013)	0.357 (.073)	0.142 (.022)	0.67	1.27	22.2%	9.5%
Education total							**31.7%**	**13.6 %**
Ages 22-25 No labor/educ.	-0.002 (.019)	-0.034 (.006)	0.079 (.124)	-0.193 (.067)	-0.03	0.17	0.0%	2.4%
Ages 22-25 Full-time work/educ.	-0.032 (.017)	0.019 (.007)	0.297 (.133)	0.063 (.050)	-0.11	0.30	-2.5%	0.5%
Ages 26-29 No labor/educ.	-0.015 (.012)	-0.016 (.004)	-0.093(.204)	-0.241 (.072)	0.17	0.07	0.4%	1.4%
Ages 26-29 Full-time work/educ.	0.025 (.016)	0.011 (.004)	0.568 (.144)	0.416 (.059)	0.04	0.03	3.7%	1.6%
Labor market attachment total							**4.5%**	**6.0%**
Married age 22 or less	-0.156 (..026)	-0.022 (.007)	-0.072 (.063)	0.016 (.030)	2.17	-1.34	2.9%	-0.1%
Married at age 30	-0.008 (.030)	0.016 (.015)	0.061 (.063)	0.074 (.014)	-0.13	0.21	-0.1%	0.4%

Health poor	-0.010 (.012)	-0.022 (.010)	-0.426 (.132)	-0.042 (.037)	0.02	0.53	1.1%	0.4%
Health excellent	0.068 (.030)	0.062 (.015)	0.022 (.055)	0.022 (.015)	3.06	0.10	0.4%	0.5%
Marriage and Health total							**4.3%**	**1.2%**
Occupation 2 or better at 30	0.089 (.022)	0.089 (.011)	0.086 (.099)	0.055 (.022)	1.04	1.62	2.0%	1.8%
Occupation 3 or higher at 30	0.156 (.029)	0.204 (.015)	-0.063 (.106)	0.105 (.025)	-2.49	1.94	-2.6%	8.0%
Occupation 4 or higher at 30	0.191 (.029)	0.211 (.015)	0.416 (.132)	-0.052 (.077)	0.46	-4.05	20.7%	-4.1%
Occupation 5 or higher at 30	0.169 (.029)	0.208 (.015)	-0.374 (.117)	0.070 (.075)	-0.45	2.98	-16.4%	5.3%
Occupation 6 or higher at 30	0.168 (.026)	0.148 (.012)	0.213 (.109)	0.114 (.026)	0.79	1.30	9.3%	6.3%
Occupation 7 or higher at 30	0.085 (.020)	0.069 (.010)	0.040 (.107)	-0.040 (.029)	2.13	-1.74	0.9%	-1.0%
Occupation at age 30 total							**13.9%**	**16.5 %**
Occupation 2 or better at 34	0.116 (.023)	0.129 (.012)	0.217 (.094)	0.183 (.021)	0.53	0.71	6.5%	8.8%
Occupation 3 or higher at 34	0.176 (.030)	0.182 (.014)	-0.047 (.101)	0.171 (.030)	-3.76	1.07	-2.1%	11.5%
Occupation 4 or higher at 34	0.192 (.031)	0.172 (.014)	0.157 (.127)	-0.096 (.053)	1.22	-1.79	7.9%	-6.0%
Occupation 5 or higher at 34	0.209 (.030)	0.173 (.014)	-0.062 (.115)	0.013 (.048)	-3.35	13.02	-3.4%	1%
Occupation 6 or higher at 34	0.191 (.027)	0.114 (.011)	0.115 (.105)	0.170 (.030)	1.66	0.67	5.7%	7.2%
Occupation 7 or higher at	0.094 (.020)	0.049 (.008)	-0.121	-0.070	-0.77	-0.70	-3.0%	-1.3%

34		(.107)	(.034)	
Occupation at age 34 total			**11.6%**	**21.1 %**
Total Percent Variation Explained			**63.1%**	**58.3 %**

Note: The omitted, comparison factor for each categories are: high school dropout/no O levels, part-time worker, occupation=7, and health good/very good. As discussed in the text, the categorical variables are coded as "at least" high school, etcetera. Standard errors are in parentheses.

Appendix 2.A2: U.S. and U.K. Women, Detailed Decomposition Results

	Parent Income Influence on Factor (λ)		Return to Factor (γ)		Ratio (λ / γ)		Decomp. of total β: Percent Variation Explained	
Factors	U.S.	U.K.	U.S.	U.K.	U.S.	U.K.	U.S.	U.K.
High school grad/O levels	0.099 (.016)	0.143 (.014)	0.036 (.102)	0.029 (.022)	2.74	4.89	1.0%	1.2%
Attend college/A levels	0.250 (.026)	0.209 (.016)	-0.022(.066)	0.113 (.023)	-11.44	1.85	-1.6%	6.9%
Graduate college/Degree	0.218 (.024)	0.195 (.013)	0.406 (.076)	0.134 (.026)	0.54	1.46	25.4%	7.6%
Education total							**24.9%**	**15.8 %**
Ages 22-25 No labor/educ.	-0.101 (.022)	0.082 (.012)	-0.139(.114)	-0.147 (.047)	0.73	0.54	4.0%	-1.4%
Ages 22-25 Full-time work/educ.	0.050 (.018)	0.031 (.007)	0.341 (.122)	-0.057 (.035)	0.15	-1.44	4.9%	-0.7%
Ages 26-29 No labor/educ.	-0.066 (.017)	-0.044 (.008)	-0.210(.136)	-0.440 (.044)	0.31	0.10	4.0%	5.7%
Ages 26-29 Full-time work/educ.	0.066 (.021)	0.046 (.010)	0.605 (.098)	0.820 (.036)	0.11	0.06	11.5%	11.1%
Labor market attachment total							**24.5%**	**18.8 %**
Married age 22 or less	-0.148 (.025)	-0.079 (.009)	0.051 (.063)	0.025(.026)	-2.90	-1.98	-2.2%	3.4%

Married at age 30	0.073 (.027)	0.010 (.016)	-0.198(.069)	-0.084 (.018)	-0.37	-0.11	-4.1%	-0.2%
Health poor /fair	-0.030 (.010)	-0.034 (.010)	-0.223 (.141)	0.028 (.027)	0.14	-1.19	1.9%	-0.3%
Health excellent	0.049 (.024)	0.045 (.015)	0.095 (.061)	0.018 (.018)	0.51	2.52	1.3%	0.2%
Marriage and Health total							**-3.0%**	**3.1%**
Occupation 2 or better at 30	0.075 (.017)	0.068 (.008)	0.034 (.111)	0.155 (.037)	2.18	0.44	0.7%	3.1%
Occupation 3 or higher at 30	0.195 (.025)	0.179 (.015)	0.311 (.084)	0.153 (.024)	0.63	1.17	17.4%	8.1%
Occupation 4 or higher at 30	0.193 (.024)	0.161 (.014)	0.131 (.134)	0.221 (.110)	1.47	0.73	7.2%	10.5%
Occupation 5 or higher at 30	0.181 (.023)	0.156 (.014)	-0.365 (.238)	-0.150 (.114)	-0.50	-1.05	-19.0%	-6.9%
Occupation 6 or higher at 30	0.176 (.022)	0.116 (.013)	0.090 (.222)	0.132 (.041)	1.95	0.88	4.5%	4.5%
Occupation 7 or higher at 30	0.098 (.098)	0.044 (.008)	0.220 (.114)	0.106 (.040)	0.45	0.41	6.2%	1.4%
Occupation at 30 total							**17.0%**	**21.6%**
Occupation 2 or better at 34	0.087 (.016)	0.080 (.010)	0.283 (.117)	0.124 (.032)	0.31	0.64	7.0%	2.9%
Occupation 3 or higher at 34	0.216 (.025)	0.150 (.014)	-0.087 (.080)	0.213 (.027)	-2.49	0.71	-5.4%	9.4%
Occupation 4 or higher at 34	0.220 (.024)	0.142 (.013)	0.188 (.138)	0.074 (.079)	1.17	1.93	11.9%	3.1%
Occupation 5 or higher at 34	0.189 (.024)	0.140 (.013)	0.013 (.295)	0.003 (.086)	14.97	47.45	0.7%	0.1%

Occupation 6 or higher at 34	0.183 (.023)	0.114 (.012)	0.003 (.280)	0.115 (.047)	59.71	0.99	0.2%	3.9%
Occupation 7 or higher at 34	0.120 (.018)	0.038 (.007)	0.002 (.104)	0.144 (.046)	75.94	0.26	0.1%	1.6%
Occupation at 34total							**14.4%**	**21.0 %**
Total Percent Variation Explained							**70.3%**	**75.5 %**

Note: The omitted, comparison factor for each categories are: high school dropout/no O levels, part-time worker, occupation=7, and health good/very good. As discussed in the text, the categorical variables are coded as "at least" high school, etcetera. Standard errors are in parentheses.

Appendix 2.B1: Comparison of Family Income Persistence across Countries

Panel 1: βs (elasticities)	U.S.	U.K.
Men	.355 (.042)	.294 (.020)
Women	.472 (.035)	.280 (.018)
Panel 2: Partial correlations		
Men	.315 (.038)	.240 (.016)
Women	.437 (.033)	.240 (.015)

Appendix 2.B2: Offspring Family Income

	U.S. Men		U.K. Men		U.S. Women		U.K. Women	
	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β	Part of Total β	Percent of Total β
Explained Components of Total β								
Education	0.116	30.4%	0.027	9.3%	0.101	20.8%	0.043	15.4%
Early marriage	0.024	6.4%	0.001	0.3%	-0.004	-0.8%	-0.001	-0.5%
Labor Market Attachment, ages 22-25	-0.002	-0.5%	0.012	4.1%	0.019	4.0%	0.021	7.4%
Labor Market Attachment, ages 26-29	0.011	3.0%	0.011	3.6%	0.020	4.2%	0.007	2.4%
Marriage and health at age 30	0.003	0.7%	0.077	2.6%	0.033	6.8%	0.021	7.3%
Occupation at age 30	0.034	8.8%	0.036	12.3%	0.045	9.3%	0.032	11.4%
Occupation at age 34	0.043	11.3%	0.042	14.1%	0.036	7.4%	0.023	8.1%
Employment at ages 30 and 34			0.033	11.3%			0.026	9.1%
Explained β	0.229	60.0%	0.169	57.7%	0.251	51.7%	0.169	60.6%
Unexplained β	0.153	40.0%	0.124	42.3%	0.234	48.3%	0.111	39.6%
Total β	0.381		0.294		0.485		0.280	

Appendix 2.C: Robustness Check on U.K. Education Measure

	Parental Income Influence on Factor (λ)		Return to Factor (γ)		Ratio (λ / γ)		Percent Variation Explained	
Alternative education measures	Men	Women	Men	Women	Men	Women	Men	Women
Low academic qualifications (below O level)	.071 (.010)	.073 (.011)	-.001 (.052)	-.082 (.074)	-71.5	-0.90	-0.03%	-1.8%
Low vocational qualifications (below O level equiv)	.094 (.011)	.090 (.011)	.125 (.057)	.183 (.080)	0.75	0.49	4.4%	4.8%
Vocational qualification (O level equiv)	.108 (.012)	.113 (.013)	-.025 (.041)	-.162 (.062)	-4.3	-0.70	-1.02%	-5.4%
O level qualification	.142 (.014)	.143 (.014)	.084 (.029)	.242 (.048)	1.69	0.59	4.4%	10.2%
Post-school level vocational qualification	.193 (.015)	.206 (.016)	.056 (.028)	.171 (.048)	3.46	1.21	4.0%	10.4%
A level	.208 (.015)	.209 (.016)	.095 (.035)	.065 (.057)	2.18	3.30	7.4%	4.02%
Degree level vocational qualification	.185 (.015)	.202 (.015)	-.020 (.034)	.137 (.048)	-9.40	1.48	-1.4%	8.1%
Degree	.179 (.013)	.195 (.013)	.268 (.025)	.380 (.037)	0.67	0.51	17.8%	22.8%
Education total							**35.6%**	**52.2%**

[1] Otis Duncan and Robert Hodge (1963) and Peter Blau and Otis Duncan (1967) were among the first to explore the dynamic process of social mobility, using U.S. census data to link parental and offspring status through education and work. Duncan, David L. Featherman, and Beverly Duncan (1972) and Featherman and Robert M. Hauser (1978), also employing census data, estimated increasingly complex models, including more extensive family background variables (family size and race), intervening variables (for example, intelligence and motivation), and outcome variables (for example, education and income). Finally, William H. Sewell and Hauser (1975) and numerous subsequent studies used data from the Wisconsin Longitudinal Study (a longitudinal probability survey of 9,000 seniors in Wisconsin high schools in 1957) to study these relationships. This literature is reviewed in Robert Haveman (1987).

[2] 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 (Mazumder 2005). Evidence on the relative position of these two nations is mixed, though most studies (for example, Blanden 2009; Bjorklund and Jäntti 2009) rank the United States as slightly less mobile than the United Kingdom.

[3] Research also suggests that the United States has the least income mobility from the bottom quintile, with 42 percent of sons from this lowest parental category ending up in the same quintile (Jäntti et al. 2006). The United Kingdom and United States do not differ appreciably from Denmark and Sweden in the mobility of sons in the middle quintiles. However, in both the United Kingdom and United States, sons who begin in the top quintile are less likely to emigrate to the lowest quintile, compared to the Scandinavian countries.

[4] From OECD Web site: http://stats.oecd.org/Index.aspx?DatasetCode=CSP2009.

[5] Jonsson et al. contrast two schools of thought in the social mobility literature; a graduation approach, which regards socio-economic status as essential for inheritance, and a "big-class" approach where it is the broad occupation group that is transmitted. Our measure of occupational status is of the "big-class type."

[6] In our estimation, the pathway variables are specified as categorical; for ease of exposition, we write them here as continuous variables.

[7] We included in our sample all individuals with at least one observation of parental income and at least one observation of adult earnings. A total of 8,992 of the BCS observations have information on individual earnings at ages 30 or 34, and 13,503 have information on parental income at offspring ages 10 or 16. See Blanden (2005) for more information on the data and the impact of attrition and missing variables. We do not distinguish between one- and two-parent families in measuring parental economic position. In future work, we plan to use family income adjusted for needs, which will better reflect the position of one- and two-parent families.

[8] According to the ISCED code, these differentiations reflect similar educational attainment in the two countries (see tables 1 and 2 at: http://www.oecd.org/dataoecd/11/18/2765339.xls).

[9] The NS-SEC classification codes are shown in Appendix A. The PSID three-digit occupation codes were converted to the NS-SEC by manually comparing each of the three-digit occupation codes with the criteria for the NS-SEC codes. We are thankful to Lawrence

Miller for his assistance in converting the data. The NS-SEC is based broadly on the Goldthorpe social class schema; see David Rose and David J. Pevalin (2005).

[10] Due to the nature of our data the categorical variables are defined as "at least high school," "at least some college," and "college" (with the same approach used for occupation). If exclusive dummies were used this would lead to ambiguity in the expected relationship between parental income and the middle categories, for example, those with high school education are well educated compared to those with no high school but poorly educated compared to those with "some college" or "completed college."

[11] We exclude these variables because they are not available in the PSID. However, some measures of this type are available in the BCS and were considered by Blanden, Paul Gregg, and Macmillan (2007), who show that most of the effects of cognitive and non-cognitive abilities are minimized once education is included in the analysis.

[12] The British Cohort Study asks parents to provide information on the "combined gross income of the child's mother and father" on either a weekly or monthly basis; in the U.S. PSID, income is captured by adding up all sources of reported income from the previous year.

[13] In their explicit international comparison, Bernt Bratsberg et al. (2007) find mobility in the United States to be lower than in the United Kingdom. This is supported by the literature reviews of Blanden (2009) and Björklund and Jäntti (2009). Corak (2006) reads the literature differently, ranking the countries the other way round, although the difference is not great.

[14] As noted by Blanden, Gregg, and Macmillan (2010), the impact of measurement error is different across the two measures of persistence; *r* will be less downward biased by measurement error in parental income than is β, but *r* will be downward biased by measurement error in the child's earnings.

[15] Oddbjørn Raaum et al. (2007) find a similar pattern across the United States, United Kingdom, and Nordic countries; although there are differences in the extent of mobility in men's earnings, mobility for women's earnings are rather similar.

[16] In the United States, the mediating relationship with early labor market attachment has an unexpected negative relationship between parental income and offspring full-time labor market work. The relationship through early marriage is also negative for U.K. men.

[17] Moving from the column 1 to the column 4 specification increases the explained portion of persistence from 56 percent to 63 percent; in the United Kingdom, the increase is from 35 percent to 58 percent.

[18] In a rough way, the ratio provides some insight into the "'meritocracy with equal opportunity' versus aristocracy'" debate. A ratio greater than unity suggests that the opportunity to acquire human capital (broadly defined) rather than a large labor-market payoff to human capital is primarily what causes persistence.

[19] The country differences in returns to schooling are consistent with findings in George Psacharopoulos and Harry Patrinos (2004), although we should add one caveat: if life-cycle bias as described by Haider and Solon (2006) is more pronounced in the United Kingdom than in the United States, this could lead to a lower estimate of the returns to education there.

[20] As noted, unlike for males, the levels of intergenerational persistence are similar between the countries for females (β = .349 in the United States, and .341 in the United Kingdom).

[21] Unless this difference is accounted for, it will be picked up in the missing occupation category and counted as "unexplained variation." To overcome this problem, we include employment at the two survey dates as an additional pathway for the United Kingdom.

[22] The overall percentage of β explained falls from 63.0 percent to 59.5 percent for men and from 77.8 percent to 74.5 percent for women in the United States. In this specification, while occupation accounts for a lower percentage of β, the portion accounted for by education increases relative to the base model (from 31.7 percent to 39.0 percent for men and from 24.9 percent to 26.5 percent for women), indicating that a portion of the education pathway effects are through occupation opportunities within these broader occupation codes, particularly for men. The other pathways remain largely unchanged. Full results are available from the authors upon request.

[23] The growth in earnings inequality in the United States, with the top earners becoming increasingly distant from the central part of the earnings distribution is oft noted in the United States (see Haveman 1996; Burtless 1990). The concentration of college enrollment and graduation on youths from higher-income families in the United States is also well documented (see Haveman and Kathryn Wilson 2006; Haveman and Timothy Smeeding 2006).

[24] Recently, Conservative party shadow secretary of state for education stated that his party would not seek to increase the number of grammar schools, stating the "uncomfortable truth that our schools are entrenching social advantage." In reporting on his speech, *The Telegraph* noted that his position reflected a belief that social persistence is also due to "prejudice or discrimination from the privileged

classes, who conspire to ensure that those who are not part of their group will find it almost impossible to break into it." This position, the newspaper stated, is widely shared (*The Telegraph*, "There's No Way Up," May 20, 2007, available at: http://www.telegraph.co.uk/news/uknews/1552095/Theres-no-way-up.html [accessed December 4, 2009]).