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Intergenerational mobility in educational and occupational status:

Evidence from the U.S.

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Abstract: In this paper we take up Goldberger's (1989) suggestion to investigate intergenerational mobility using non-monetary measures. We use a newly released data set, the NELS, which allows us to investigate the contemporary intergenerational mobility in education and occupation in the United States. Our results from order logit models indicate strong evidence of intergenerational linkage in educational attainment and occupational status between parents' and their children. We allow for family background during adolescence and find supporting evidence for the child quality-quantity trade-off. Negative effects of non-intact family are also found. Racial differences in the patterns of intergenerational mobility are also highlighted in this study.

I. Introduction[1]

The question of how family background influences adult children's economic outcomes has been the focus of research by economists. Consequently, there is a large body of literature where the correlation of income and earnings across generations is estimated. Earlier studies are surveyed in Becker and Tomes (1986). More recent studies include Behrman and Taubman (1990), Peters (1992), Solon (1992), Mulligan (1997), Eide and Showalter (1999), Naga (2002) for the US; Bjorklund and Jantti (1997) and Couch and Dunn (1997) for Germany; Corak (1999) and Corak and Heisz (1999) for Canada; Atkinson (1981), Dearden et al (1997) for the UK; and Osterberg (2000) for Sweden. Most of this research is based on the model developed by Becker and Tomes (1986). In the model, parents are assumed to be altruistic and care about their children's welfare. Parents can pass on to their children endowments through heredity (genetic traits, cognitive ability) or family environment (family connection, attitude) that affects children's economic outcomes. In addition, parents can influence the economic outcomes of their children by purportedly investing in their children human capital. Because of market imperfections, some parents cannot invest in their children's education at the optimum points, which leads to persistence across generations in economic status, and the poor remains poor.

Previous studies have largely focused on intergenerational mobility in income and/or earnings.[2] A few have examined occupational mobility in the UK (Fiona 2000, Ermisch and Francesconi 2002). One of the reasons which explains partly why

[1] Dearden et al (1997) defines 'intergenerational mobility as having occurred if children occupy different positions in their generation's distribution of economic status than their parents did in their generation's distribution' (p 47).

[2] Very few studies have investigated the racial differential between races. Hertz (2002) reported that mobility pattern may differ dramatically by races.

earnings/income is often used as a measure of economic status is earnings/income provides a simple metric measure of intergenerational persistence, the correlation between the economic status of the two generations. On the other hand, economic status measured discretely, for example, as by occupational status attainment, provides a richer measure of intergenerational mobility but more difficult to summarise (Bowles and Gintis 2002).[3]

Instead of focusing on income and earnings as a measure of economic status, this paper analyses the intergenerational educational and occupational mobility in the United States. A proper understanding of the educational attainment and occupational linkage across generations is important in reducing social inequality and complements studies on intergenerational income and/or earnings mobility. Hence, our analysis will supplement the analysis on income and earning mobility. On the other hand, educational attainment and occupational status may also be better correlated with long-term economic status and therefore be a better measure of intergenerational linkage (Johnson 2002). In this aspect, Goldberger (1989) warns that by restricting attention to the monetary measures such as income or earnings, the literature on intergenerational mobility may 'understate the influence of family background on inequality' (p. 513). In this study, we take into account possible effects that emanate from family and racial background in explaining intergenerational mobility.

With a few exceptions, previous studies have focused almost exclusively on the intergenerational linkage between fathers and sons. In this paper, we used the NELS data set to investigate the intergenerational transmission of educational and occupational attainment for both sons and daughters. This will allow us to examine the transmission from father to son and daughter and from mother to daughter and

[3] Bowles and Gintis (2002) note that income is a more inclusive measure than earnings.

son. The paper is structured as follows. The next section sets out a framework of analysis and describe the data used in our analysis. Section III discusses estimation results, Section IV concludes.

II. A framework of analysis and data description

The standard approach in the literature measure the intergenerational mobility by estimating the following equation for the relationship between a son's or daughter's economic status in family *i*, and the same measure of economic status for his or her parents

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

Usually, y^{child} is the child's long-run economic status or permanent income as an adult and y^{parent} is his/her parents' long-run economic status or permanent income during his/her adolescence. The coefficient β reflects how strongly children's economic status is associated with parental economic status.[4] There are two extreme cases of intergenerational mobility:

(i) If β is zero, there is a complete intergenerational mobility (regression to the mean), where children's and parental economic status are uncorrelated.

(ii) If β is unity, there is a rigid immobility, where children's economic status is completely determined by their parent's.

[4] If $y^{child} and\ ^{parent}$ are measured in logarithm, the coefficient β corresponds to the elasticity of the child's income with respect to his/her parents' income. In case of equal variances across generations, β represents the intergenerational correlation coefficient. In case of differing variances, the correlation coefficient can be estimated as $\rho = \beta(\hat{\sigma}^{parent} / \hat{\sigma}^{child})$ (Osterberg 2000, Bowles and Gintis 2002).

Early empirical studies on intergenerational mobility estimated equation (1) using OLS, where y^{child} and y^{parent} are measure of contemporary incomes. When ordinary least square is applied to equation (1) the estimate of β will be downward inconsistent. The main problem with estimating equation (1) is caused by errors-in-variable problem. This is because parents' and children's permanent incomes are typically unobserved and we could only instead observe some transitory income/earnings in one or several periods. It has been pointed out repeatedly by others that failure to address the measurement error problem will lead to biased (downward) estimate of the intergenerational mobility (e.g. Solon 1992, Zimmerman 1992, Deaden et al 1997, Naga 2002).

In recent studies, several approach have been suggested to deal with the problem of measurement errors. The first approach suggested by Solon (1992) and Zimmerman (1992) averages parents' income over several years to limit the effect of biases arising from measurement errors. The idea is that while we cannot observe the permanent income, we can use average income over some periods. As the number of periods gets larger, the inconsistency of this estimator diminishes (Solon 1992). However, Mazumder (2001) points out that due to data limitation most of applied work use only short time series average which can lead to flawed estimation results since transitory shock to earnings are highly serially correlated. The second approach estimates the intergenerational income elasticity by the use of instrumental variables method. Solon (1992) argues that this approach produces an upward-inconsistent estimate but provides an upper bound on the true intergenerational income mobility. This approach uses parents' education as an instrument. The idea is that the child's long-term economic status or permanent income is determined not only be parents' income but also by parents' education. The third approach uses parents' predicted income as a

proxy for permanent income (Dearden *et al* 1997, Naga 2002). This approach assumes that while permanent income is not observed, a model of the determination of parents' income is known to the researchers, which then can be used to estimate parents' permanent income.[5]

In our analysis, we focus on occupational and educational mobility, so y^{child} represents the occupational status or educational attainment of the son or daughter and y^{parent} is his/her parent's occupation status or educational attainment. One of the criticisms of previous studies is the difficulty with which to measure the long term economic status and/or permanent income of child and parents accurately. Usually, income is measured for a particular one-year period, which is too short.[6] The transitory variance of measured income may lead to bias in estimated coefficient of interest, the β. This has lead to a practice of averaging incomes for several years, but this is not always possible for every dataset. An alternative to the measure of income is the occupation status attainment, which has several advantages over income/earnings. First, educational attainment and occupational status is highly correlated with earnings/income (Nickell 1982, Johnson 2002), therefore providing a similar picture of intergenerational mobility. Secondly, educational attainment and occupational status are relatively stable over time (Nickell 1982, Ermisch and Francesconi 2002) and therefore is not likely to vary year by year as measured income or earnings does, thus less subject to year-by-year transitory shock. For example,

[5] For example, in the first stage regression Naga (2002) uses the following instruments: parents' education; whether parents are unskilled workers; south dummy; union; smoking; own house; health; ethnicity (white).

[6] Mazumder (2001) notes that income may be a less noisy measure of economic status than earnings, therefore using income rather than earnings may give a more accurate picture of intergenerational mobility. Similarly, we argue that occupational status attainment will be a less noisy measure of long term economic status than income.

recently Ermisch and Francesconi (2002) also focused on a measure of occupation mobility for the UK using the Hope-Goldhorpe score of occupational prestige.

In addition, models of intergenerational income mobility developed by Becker and Tomes (1986) and Mulligan (1997) suggest non-linearity in the intergenerational transmission of income. Richer parents may have higher propensity to invest in their children's human capital than poorer parents do, and therefore the effect of parents' income on children's income may be different for those at the bottom and those at the top of the children's income distribution. Low-income family may also face credit constraint and may not be able to borrow funds for their child's education. Bowless and Gintis (2002) argue that the intergenerational correlation is a single average measure and may be unilluminating about the probabilities of economic success conditional on being the child of poor-, rich- or middle-income parents' and distinct transmission mechanism may be at work at different points of the income distribution. Focusing on educational and occupational attainment, we can capture this mechanism by allowing the intergenerational transmission coefficient to vary between occupational groups and educational attainment categories.

As briefly mentioned above, Becker and Tomes (1986) identified two routes through which intergenerational mobility exists: (i) inheritance of endowment and (ii) the propensity of parents to invest in their children's human capital. This suggests to us that we should control for children's and their parents' education in the intergenerational mobility model. In addition, we hypothesize that family background "factors" during adolescence might influence the transmission. In particular, family structure and the number of siblings may have substantial influence on the intergenerational mobility. First, the family structure, two-parent family may have

more resources and more likely to invest in their children education than single parent family. Second, the child quality-quantity trade-off suggests that with a large number of children, the family's resources will be spread out with more individuals (Becker 1991, Hanusheck 1992). This leads us to estimate the following empirical equation

$$y_i^{child} = \alpha + \beta y_i^{parent} + \eta R_i + \varepsilon_i \qquad (2)$$

where R_i is a vector of child characteristics and his family characteristics during his adolescence.

Our analysis uses longitudinal data drawn from the newly released US National Educational Longitudinal Studies (NELS), which follows individuals since they were 8th grade students in 1988 till they were in the labour market in 2000. This data set contains not only information on educational attainment and occupational status of the individual but also that of their father's and mother's. An advantage of the NELS is that the information on parental occupational status attainment is obtained from the parents themselves, therefore limiting the problem of recall.

As pointed out by Corak and Heisz (1999), Mazumder (2001), most of previous research for the US has used the PSID and NLS, both of which result in relatively small sample data and suffer from considerable attrition when constructing intergenerational samples. This analysis uses the NELS to produce a new estimate of the transmission of income inequality across generations. To our knowledge, none of previous studies has used the NELS, so our results from the NELS can be considered as a new result. NELS is also able to provide the data that are more recent and therefore provide a better reflection of contemporary family life.

For occupational status, we observe 5 occupation rankings for both the child and his/her parents: (i) unskilled/semi-skilled $(y = 0)$; (ii) skilled manual $(y = 1)$; (iii) skilled-nonmanual $(y = 2)$; (iv) managerial $(y = 3)$; and (v) professional $(y = 4)$. For educational attainment we observe the following ranking for the US: (i) less than high school education $(y = 0)$; (ii) high school education $(y = 1)$; (iii) some college education $(y = 2)$; (iv) college education $(y = 3)$; and (v) postgraduate education $(y = 4)$. We believe that with the type of educational attainment and occupational rankings it is appropriate to model both of these outcomes with ordered logit specification.

III. Results[7]

In order to facilitate the interpretation of the coefficients estimated for ordered logit models, we follow Green (2002) to report both the ordered logit estimates and the marginal effects that are presented in Tables 1-4. Results from the intergenerational transmission of education and occupational link across generations are discussed first. Then we discuss the effects of family circumstances during child's adolescence on his/her future educational attainment and occupational status.

a. Intergenerational transmission of education:

As indicated in Tables 1 and 2, a strong pattern of transmission of education across generations exists. We also find evidence of non-linearity in the intergenerational transmission of education. The estimated coefficients are statistically significant for both males and females, and increasing as the levels of father's and mother's

[7] To allow for the possibility that mobility among the different educational and occupational categories may not necessarily occur in an ordinal fashion, we have also estimated multinomial logit models. The results we get do not change in any meaningful way. Results of the multinomial logit specification are available upon request.

education increase. An interesting result is the estimated effects of educational transmission are generally stronger for father than mother, for both males and females. For example, a son whose father having a university degree is 22 percentage points more likely to have a university degree than the one whose father has no qualification. The corresponding effect of mother's education level on son's level of education is only 14 percentage points. For females, the effect of mother's education on daughter's education level is generally found to be stronger than the corresponding effect for males, but is still smaller than that of father's. This is clear from both estimated order logit coefficients and the derived marginal effects.

b. Occupational link across generations:

We find strong evidence of intergenerational transmission of occupational status attainment for both males and females. The estimation results in Tables 3 and 4 also indicate evidence of non-linearity. The intergenerational link in occupational status becomes stronger as one moves from lower skill occupation to higher skill occupation.

Interestingly, the link between father and son and daughter is found to be stronger than that of mother and son and daughter. While the estimated coefficients for father's occupation status is strong and statistically significant at all levels of skill, the estimated coefficients for mother's occupational status are only significant at higher end of the skill spectrum. Another aspect worthy of note is that the occupational correlation between father and daughter and son is almost three times that between mother and daughter and son. The corresponding estimated marginal effects are also stronger for father than for mother. This finding is consistent with what we find for the intergenerational educational link.

In addition, the link between father and son in occupational status is found to be stronger than that between father and daughter. Similarly, the link is stronger between mother and daughter than between mother and son. This finding is suggestive of gender aspiration within a family.

c. The effects of family structure and size:

In the introduction, we suggest the child quality-quantity trade-off and the potential effects of family structure during one's adolescence may have one the educational and occupational transmission across generation. In this paper, we find supporting evidence of the child quantity-quality trade-off as well as the negative effects of non-intact family structure on child's future educational and occupational status.

For males, while the presence of one or two siblings within the family during adolescence does not do any harm, having three or four siblings lowers one's future education attainment as well as occupational status. For females, the present of her siblings seems not to cause much harm to her education only until the number of siblings exceeds three, but to her occupation when the number exceeds one. Children from non-intact family are found to have lower educational attainment and occupational status for both males and females.

d. Racial dimension of mobility:

The racial dimension of intergenerational educational and occupational correlation is another interesting result we have. As can be seen from tables 1 and 2, there is a strong racial pattern in intergenerational correlation of educational attainment for both sons and daughters. What is even more striking is that there is a strong reverse pattern of correlation for children from Black, Hispanic and American Indian families. This

finding suggest that children from minority families are less likely to experience an upward mobility in terms of educational attainment, compared with children from white families. Children from Asian families, on the other hand, are found to experience an upward mobility in educational attainment.

The pattern of intergenerational correlation in occupation, on the other hand, shows a marked difference vis-à-vis that of the intergenerational correlation in educational attainment. As can be seen from tables 3 and 4, race is found to be important in the intergenerational correlation of occupational status for Black and Asian men/sons only. There is also a reverse pattern of correlation for Blacks, as is the case in the intergenerational correlation of educational attainment. Considering daughters, the importance of race in explaining intergenerational correlation in occupational attainment is found to be specific only to Asians who are found to have an upward mobility in occupational attainment.

IV. Conclusion

The primary purpose of this paper has been to estimate the intergenerational mobility in occupational status and educational attainment across generations. The statistical analysis has been based on a recently released dataset, the NELS, which helps providing contemporary picture of intergenerational mobility in the US. Instead of focusing on income or earning measures, we follow Goldberger's suggestion (1989) to use non-monetary measures of economic status to study the intergenerational mobility. We find that children's economic status, as measured by occupational status and educational attainment is clearly influenced by their parents' education and occupation status. Father's education and occupational status are found to have stronger persistence than that of mother. We also find non-linearity in the

transmission mechanism for both education and occupation. Controlling for family background during adolescence, we also find evidence supporting the child quality-quantity trade-off and the negative effect on future educational attainment and occupational status of non-intact family. Race is also found to offer some explanation in the intergenerational correlation of educational and occupational attainment.

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Table 1: Educational mobility – Male

	Ordered logit coefficients (Std. errors)	Marginal effects (Standard errors)				
		Y=1	Y=2	Y=3	Y=4	Y=5
Father high school	0.122	-0.004	-0.026	0.004	0.024	0.003
	(0.082)	(0.003)	(0.018)	(0.003)	(0.016)	(0.002)
Father some college	0.485***	-0.015***	-0.105***	0.012***	0.097***	0.012***
	(0.092)	(0.003)	(0.020)	(0.002)	(0.019)	(0.003)
Father college gradu	1.092***	-0.029***	-0.234***	0.008***	0.221***	0.034***
	(0.102)	(0.002)	(0.020)	(0.003)	(0.020)	(0.005)
Father masters/PhD	1.529***	-0.036***	-0.315***	-0.007	0.302***	0.057***
	(0.109)	(0.003)	(0.019)	(0.005)	(0.019)	(0.007)
Mother high school	0.202**	-0.007**	-0.043**	0.007**	0.039**	0.004*
	(0.082)	(0.003)	(0.018)	(0.003)	(0.016)	(0.002)
Mother some coll.	0.479***	-0.015***	-0.104***	0.012***	0.095***	0.011***
	(0.094)	(0.003)	(0.021)	(0.002)	(0.019)	(0.003)
Mother college grad	0.695***	-0.020***	-0.151***	0.013***	0.140***	0.018***
	(0.106)	(0.003)	(0.023)	(0.002)	(0.022)	(0.004)
Mother masters/phd	0.916***	-0.024***	-0.198***	0.008***	0.187***	0.028***
	(0.122)	(0.003)	(0.025)	(0.003)	(0.025)	(0.005)
Sibling (=1)	0.038	-0.001	-0.008	0.001	0.007	0.001
	(0.108)	(0.004)	(0.023)	(0.004)	(0.021)	(0.002)
Sibling (=2)	-0.014	0.001	0.003	-0.001	-0.003	0.000
	(0.110)	(0.004)	(0.023)	(0.004)	(0.021)	(0.002)
Sibling (=3)	-0.458***	0.019***	0.092***	-0.021***	-0.082***	-0.008***
	(0.120)	(0.006)	(0.023)	(0.007)	(0.021)	(0.002)***
Sibling (=4)	-0.380***	0.016***	0.078***	-0.017***	-0.069***	-0.007***
	(0.119)	(0.006)	(0.024)	(0.006)	(0.021)	(0.002)
Parent-partner famil	-0.574***	0.026***	0.113***	-0.028***	-0.101***	-0.010***
	(0.082)	(0.005)	(0.015)	(0.005)	(0.013)	(0.001)
Father only family	-0.822***	0.044***	0.146***	-0.046***	-0.132***	-0.012***
	(0.200)	(0.015)	(0.026)	(0.013)	(0.026)	(0.002)
Mother only family	-0.443***	0.019***	0.089***	-0.021***	-0.079***	-0.008***
	(0.087)	(0.004)	(0.016)	(0.005)	(0.015)	(0.001)
Black	-0.414***	0.018***	0.083***	-0.020***	-0.074***	-0.007***
	(0.101)	(0.005)	(0.019)	(0.006)	(0.017)	(0.002)
Asian	0.495***	-0.015***	-0.108***	0.011***	0.100***	0.013***
	(0.105)	(0.003)	(0.023)	(0.001)	(0.022)	(0.003)
Hispanic	-0.364***	0.015***	0.074***	-0.017***	-0.066***	-0.007***
	(0.085)	(0.004)	(0.017)	(0.005)	(0.015)	(0.001)
American Indian	-0.989***	0.057***	0.165***	-0.057***	-0.152***	-0.013***
	(0.263)	(0.022)	(0.027)	(0.017)	(0.030)	(0.002)
Cut-off point 1	-2.726					

	(0.131)	
Cut-off point 2	0.643	
	(0.121)	
Cut-off point 3	1.338	
	(0.122)	
Cut-off point 4	4.350	
	(0.144)	
No. Observations	5413	
Log-likelihood	-6149	
Chi-square	1242	

Table 2: Educational mobility – Female

	Ordered logit coefficients (Std. error)	Marginal effects (standard errors)				
		Y=1	Y=2	Y=3	Y=4	Y=5
Father high sch.	0.199***	-0.007***	-0.042***	0.003***	0.040***	0.006***
	(0.072)	(0.002)	(0.015)	(0.001)	(0.015)	(0.002)
Father some coll.	0.572***	-0.017***	-0.120***	0.001	0.116***	0.020***
	(0.083)	(0.002)	(0.017)	(0.002)	(0.017)	(0.004)
Father college gra.	1.041***	-0.026***	-0.209***	-0.017***	0.208***	0.044***
	(0.096)	(0.002)	(0.017)	(0.005)	(0.018)	(0.006)
Father master/phd	1.590***	-0.034***	-0.295***	-0.048***	0.293***	0.085***
	(0.107)	(0.002)	(0.015)	(0.007)	(0.015)	(0.010)
Mother high sch.	0.234***	-0.008***	-0.050***	0.003***	0.047***	0.007***
	(0.072)	(0.002)	(0.015)	(0.001)	(0.015)	(0.002)
Mother some coll.	0.650***	-0.019***	-0.136***	0.000	0.132***	0.023***
	(0.083)	(0.002)	(0.017)	(0.002)	(0.017)	(0.004)
Mother college gr.	0.925***	-0.024***	-0.188***	-0.012***	0.186***	0.038***
	(0.101)	(0.002)	(0.019)	(0.005)	(0.019)	(0.006)
Mother mast/phd	0.943***	-0.023***	-0.190***	-0.016***	0.189***	0.040***
	(0.118)	(0.002)	(0.021)	(0.006)	(0.022)	(0.007)
Sibling (=1)	0.106	-0.004	-0.023	0.002	0.021	0.003
	(0.105)	(0.004)	(0.022)	(0.002)	(0.021)	(0.003)
Sibling (=2)	-0.070	0.002	0.015	-0.001	-0.014	-0.002
	(0.106)	(0.004)	(0.023)	(0.002)	(0.021)	(0.003)
Sibling (=3)	-0.107	0.004	0.023	-0.002	-0.021	-0.003
	(0.114)	(0.004)	(0.024)	(0.003)	(0.022)	(0.003)
Sibling (=4)	-0.443***	0.017***	0.093***	-0.013***	-0.085***	-0.011***
	(0.112)	(0.005)	(0.023)	(0.005)	(0.021)	(0.003)
Parent-partner fa	-0.536***	0.022***	0.111***	-0.019***	-0.102***	-0.013***
	(0.073)	(0.004)	(0.014)	(0.004)	(0.013)	(0.002)
Father only family	-0.683***	0.033**	0.136***	-0.031**	-0.123***	-0.015***
	(0.210)	(0.013)	(0.037)	(0.014)	(0.033)	(0.003)
Mother only family	-0.373***	0.015***	0.078***	-0.012***	-0.072***	-0.009***
	(0.078)	(0.004)	(0.016)	(0.003)	(0.014)	(0.002)
Black	-0.160	0.006*	0.034	-0.004	-0.031	-0.004*
	(0.087)	(0.003)	(0.018)	(0.003)	(0.017)	(0.002)
Asian	0.606***	-0.017***	-0.126***	-0.003	0.124***	0.022***
	(0.102)	(0.002)	(0.020)	(0.003)	(0.021)	(0.005)
Hispanic	-0.447***	0.018***	0.093***	-0.015***	-0.086***	-0.011***
	(0.078)	(0.004)	(0.016)	(0.004)	(0.014)	(0.002)
American Indian	-0.998***	0.055***	0.185***	-0.053***	-0.168***	-0.019***
	(0.212)	(0.017)	(0.029)	(0.016)	(0.028)	(0.003)

Cut-off point 1	-2.687	
	(0.123)	
Cut-off point 2	0.398	
	(0.113)	
Cut-off point 3	1.203	
	(0.113)	
Cut-off point 4	4.094	
	(0.130)	
No. Observations	6046	
Log-likelihood	-7238	
Chi-square	1492	

Table 3: Occupational mobility – Male

	Ordered logit coefficients (Std. error)	Marginal effects (standard errors) Y=1	Y=2	Y=3	Y=4	Y=5
Mother professional	0.353***	-0.035***	-0.045***	-0.002	0.021***	0.061***
	(0.085)	(0.008)	(0.011)	(0.002)	(0.005)	(0.016)
Mother manager	0.278**	-0.027***	-0.035**	-0.001	0.016***	0.047**
	(0.112)	(0.010)	(0.014)	(0.002)	(0.006)	(0.020)
Mother skill non-manual	0.068	-0.007	-0.008	0.001	0.004	0.011
	(0.057)	(0.006)	(0.007)	(0.001)	(0.004)	(0.009)
Mother skilled manual	0.047	-0.005	-0.006	0.000	0.003	0.007
	(0.134)	(0.014)	(0.017)	(0.001)	(0.008)	(0.022)
Father professional	0.973***	-0.081***	-0.119***	-0.031***	0.045***	0.186***
	(0.083)	(0.006)	(0.010)	(0.007)	(0.003)	(0.018)
Father manager	0.768***	-0.067***	-0.096***	-0.018***	0.039***	0.143***
	(0.082)	(0.006)	(0.010)	(0.005)	(0.003)	(0.017)
Father skilled non-manual	0.457***	-0.044***	-0.058***	-0.003	0.026***	0.079***
	(0.071)	(0.006)	(0.009)	(0.002)	(0.004)	(0.013)
Father skilled manual	0.313***	-0.031***	-0.040***	0.000	0.019***	0.053***
	(0.072)	(0.007)	(0.009)	(0.002)	(0.004)	(0.013)
Sibling (=1)	0.029	-0.003	-0.004	0.000	0.002	0.005
	(0.099)	(0.011)	(0.012)	(0.001)	(0.006)	(0.016)
Sibling (=2)	-0.037	0.004	0.005	-0.001	-0.002	-0.006
	(0.101)	(0.011)	(0.013)	(0.002)	(0.006)	(0.016)
Sibling (=3)	-0.360***	0.043***	0.044***	-0.011**	-0.023***	-0.053***
	(0.109)	(0.014)	(0.013)	(0.005)	(0.007)	(0.015)
Sibling (=4)	-0.381***	0.045***	0.046***	-0.011**	-0.024***	-0.056***
	(0.108)	(0.014)	(0.012)	(0.005)	(0.007)	(0.015)
Parent-partner family	-0.198***	0.023**	0.024**	-0.004*	-0.013**	-0.030***
	(0.074)	(0.009)	(0.009)	(0.002)	(0.005)	(0.011)
Father only family	-0.095	0.011	0.012	-0.002	-0.006	-0.015
	(0.172)	(0.020)	(0.021)	(0.004)	(0.011)	(0.026)
Mother only family	-0.039	0.004	0.005	-0.001	-0.002	-0.006
	(0.078)	(0.009)	(0.010)	(0.001)	(0.005)	(0.012)
Black	-0.280***	0.033***	0.034***	-0.008*	-0.018***	-0.041***
	(0.091)	(0.012)	(0.011)	(0.004)	(0.006)	(0.013)
Asian	0.525***	-0.048***	-0.066***	-0.009	0.029***	0.095***
	(0.098)	(0.008)	(0.012)	(0.005)	(0.004)	(0.020)
Hispanic	-0.033	0.004	0.004	0.000	-0.002	-0.005
	(0.075)	(0.008)	(0.009)	(0.001)	(0.005)	(0.012)
American Indian	-0.276	0.033	0.033	-0.009	-0.018	-0.040
	(0.222)	(0.029)	(0.025)	(0.011)	(0.014)	(0.030)
Cut-off point 1	-1.648					
	(0.108)					
Cut-off point 2	-0.205					

	(0.104)	
Cut-off point 3	1.021	
	(0.105)	
Cut-off point 4	1.708	
	(0.107)	
No. Observations	5372	
Log-likelihood	-8180	
Chi-square	452	

Table 4: Occupational mobility – Female

	Ordered logit coefficients (Std. error)	Marginal effects (standard errors)				
		Y=1	Y=2	Y=3	Y=4	Y=5
Mother professional	0.460***	-0.038***	-0.016***	-0.056***	0.019***	0.091***
	(0.085)	(0.006)	(0.003)	(0.012)	(0.003)	(0.018)
Mother manager	0.303***	-0.026***	-0.011***	-0.036**	0.013***	0.059**
	(0.112)	(0.009)	(0.004)	(0.015)	(0.004)	(0.023)
Mother skill non-manu.	0.086	-0.008	-0.003	-0.009	0.004	0.016
	(0.057)	(0.005)	(0.002)	(0.006)	(0.003)	(0.010)
Mother skilled manual	0.249*	-0.021*	-0.009*	-0.029	0.011*	0.048*
	(0.125)	(0.010)	(0.004)	(0.016)	(0.005)	(0.025)
Father professional	0.763***	-0.058***	-0.024***	-0.102***	0.027***	0.158***
	(0.082)	(0.005)	(0.003)	(0.013)	(0.002)	(0.019)
Father manager	0.721***	-0.055***	-0.023***	-0.096***	0.026***	0.148***
	(0.079)	(0.005)	(0.003)	(0.013)	(0.002)	(0.018)
Father skilled non-man	0.307***	-0.027***	-0.011***	-0.035***	0.014***	0.059***
	(0.070)	(0.006)	(0.002)	(0.009)	(0.003)	(0.014)
Father skilled manual	0.294***	-0.026***	-0.010***	-0.033***	0.013***	0.056***
	(0.072)	(0.006)	(0.002)	(0.009)	(0.003)	(0.014)
Sibling (=1)	-0.180	0.017	0.007	0.017	-0.009	-0.032
	(0.103)	(0.010)	(0.004)	(0.009)	(0.005)	(0.018)
Sibling (=2)	-0.223*	0.022*	0.008*	0.020**	-0.011*	-0.040**
	(0.105)	(0.011)	(0.004)	(0.009)	(0.005)	(0.018)
Sibling (=3)	-0.270**	0.027**	0.010**	0.023***	-0.013*	-0.047**
	(0.111)	(0.012)	(0.004)	(0.008)	(0.006)	(0.018)
Sibling (=4)	-0.421***	0.044***	0.016***	0.033***	-0.021***	-0.072***
	(0.109)	(0.013)	(0.004)	(0.006)	(0.006)	(0.017)
Parent-partner family	-0.230***	0.023***	0.009***	0.020***	-0.011***	-0.040***
	(0.071)	(0.008)	(0.003)	(0.005)	(0.004)	(0.012)
Father only family	-0.589***	0.069***	0.024**	0.029***	-0.031***	-0.091***
	(0.201)	(0.029)	(0.009)	(0.003)	(0.011)	(0.026)
Mother only family	-0.257***	0.026***	0.010***	0.021***	-0.013***	-0.044***
	(0.075)	(0.008)	(0.003)	(0.005)	(0.004)	(0.012)
Black	-0.021	0.002	0.001	0.002	-0.001	-0.004
	(0.084)	(0.008)	(0.003)	(0.008)	(0.004)	(0.015)
Asian	0.271***	-0.023***	-0.010***	-0.031**	0.012***	0.052**
	(0.097)	(0.008)	(0.003)	(0.013)	(0.004)	(0.020)
Hispanic	-0.086	0.008	0.003	0.008	-0.004	-0.015
	(0.072)	(0.007)	(0.003)	(0.006)	(0.004)	(0.013)
American Indian	-0.186	0.019	0.007	0.016	-0.009	-0.032
	(0.209)	(0.023)	(0.008)	(0.014)	(0.011)	(0.034)
Cut-off point 1	-2.042					
	(0.113)					

Cut-off point 2	-1.595	
	(0.111)	
Cut-off point 3	0.681	
	(0.109)	
Cut-off point 4	1.250	
	(0.109)	
No. Observations	5955	
Log-likelihood	-7862	
Chi-square	334	