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Family Background and Gender Differences in Educational Expectations

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Abstract

Socioeconomic outcomes of parents and their children are more correlated for sons than for daughters. This paper presents empirical evidence from Denmark that these gender differences result from different transmission mechanisms by separating the effects of parental education and income.

Keywords: educational expectations, intergenerational correlation, gender differences, socioeconomic background

JEL Codes: I20, J16, J62

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1. Introduction

Education and income of parents and their children are strongly correlated. Genetic mechanisms, socioeconomic resources and cultural capital have been used to explain this link (Bowles and Gintis 2002; Piketty 2000). Intergenerational correlations have been found to be lower for daughters than for sons (Bowles and Gintis 2002). The nature of this gender difference has not been fully explored - most studies either consider only sons and fathers or do not distinguish the gender of the child (see Bowles and Gintis 2002 for an overview).

In this paper, I explore whether different transmission mechanisms of socioeconomic outcomes for daughters and sons might explain some of the observed gender difference. Specifically, I investigate whether parental socioeconomic background measured by both parental income and education has different effects on educational expectations of daughters and sons, using a unique data set from Denmark.

Parental education and income likely have different effects on children's educational expectations. More highly educated parents, for example, might place more emphasis on the importance of education and also have different attitudes and social values (such as about the importance of education for daughters) than less educated parents. Parents with higher incomes at any given educational level might place more importance on maintaining the achieved social status and income than parents with lower incomes.

At the same time, the effects of parental income and education on educational expectations might differ for daughters and sons. Gender roles have been found to be less strict for women, and women are more likely to make less conventional choices (Valian 1999, Ch. 3, Trusty et al. 2000). If this is the case, then parental income should affect daughters' educational expectations less than sons'. The effect of parental education is ambiguous since higher parental

education (especially that of the mother) is correlated with less traditional attitudes towards gender, which has been found to lead to higher educational attainment (Vella 1994).

Consistent with the hypothesis that the effects of parental income and education differ for daughters and sons, I find that sons' educational expectations increase in the parental income quintile but that this is not the case for daughters. Parental education, and most importantly that of the parent of the same gender, is positively correlated with higher expected education of both daughters and sons. These results suggest that there are gender differences in the intergenerational transmission mechanisms of socioeconomic outcomes.

2. Data

This study uses three combined Danish data sets. Ability measures are drawn from the 2000 OECD Programme for International Student Assessment (PISA) of nationally representative ninth graders. The educational expectation measure is derived from answers to a survey in 2004, which re-interviewed the then 19 years old Danish PISA respondents. These records are matched to parental information from administrative records for the year 1998.

The outcome variable is educational expectation at age 19. Expectations on education reflect plans and intentions and as such are a better measure of parental influence than realizations. Educational expectations are defined as the highest of two different measures: 1) current or planned education in the near future, and 2) the minimum education required for the occupation the respondent expects to have at age 30. These two measures were combined since, although planned or current education is more clearly defined, it likely underestimates expected education. This is supported by the high number of respondents (about 25%) whose expected occupation requires a higher educational level than the one planned in the near future.

I distinguish three levels of educational expectations: low (high school, vocational training or less), medium (short- or medium-cycle education), and high (college or more).² Because of its frequency in the data, parental education includes one additional, lower educational level (basic – less than high school and vocational training) (omitted category in the estimation: this lowest level). Besides parental education, the quintile of the total taxable parental income is used to proxy the socioeconomic background of the family.³ Three measures of ability are used as control variables. Two measures are included as dummies for the level of agreement with the statements 1) “I’m good at most school subjects”, and 2) ”I get good marks in mathematics” (omitted category: agree somewhat). The third measure is a reading test score.⁴

The final sample size is 2,815, after 267 observations with missing information were dropped, most of these (230) because of missing information on one or both parents.

3. Results

To test the hypothesis whether parental socioeconomic background matters differently for educational expectations of daughters and sons, I estimate the following generalized ordered logit model of expected educational level, separately for daughters and sons (Williams 2006):

$$P(L_i > j) = \frac{\exp(\alpha_j + X_i\beta_j)}{1 + \exp(\alpha_j + X_i\beta_j)},$$

where $j = 1, 2$ is the ordered educational level (highest category omitted); L_i is the expected educational level of individual i ; α_j is a constant term; and X_i the vector of independent variables. Parameters are allowed to vary across thresholds for educational length when

² Short-cycle education is an additional training after a completed vocational training and qualifies for work as, for example, laboratory technician. Medium-cycle education requires a high school degree and qualifies for work as, for example, social worker.

³ Wealth is not observed in the data.

⁴ This variable, called “wlearn”, is provided by the OECD within the PISA data set, and is divided by 100.

statistical tests rejected the null of equality at the 5% level; equality is imposed otherwise. As mentioned earlier, the independent variables include dummies for the parental income quintile, measures of ability, and dummies for parental education (in the second specification only).

The results are shown in Table 1. Note that for the variables whose effect differs by educational level two odds ratio are shown: the left one is the odds ratio of expecting an education higher than the lowest level and the right one the odds ratio of expecting the highest education compared to a lower level.

Table 1 about here

When not controlling for parental education, I find that the parental income quintile affects daughters' choices (column 1) less than sons' (column 3). The odds of expecting an education higher than the lowest level are 40.6% higher for a daughter in the fifth income quintile than in the third. For sons, these odds are 112% higher, and are also higher when comparing a son in the fourth income quintile with one in the third.

These effects disappear for daughters once I control for parental education. Daughters in the fourth income quintile have now smaller odds of expecting the highest education compared to a lower one. For sons, the effects decrease but remain economically and statistically significant. Such decrease is expected since income quintile and parental education are positively correlated. Compared to a son in the third income quintile, sons in the fourth and fifth income quintile have odds of expecting a higher education that are about 50% higher.

With respect to the other independent variables, I find that higher maternal education is more important for daughters and higher paternal education for sons,⁵ probably because the parent of the same gender acts as a role model for the child (Valian 1999). Not surprisingly, the ability measures are positively correlated with expected education (coefficients not shown).

To assess the magnitude of the effect of parental income on children's expectations, Table 2 shows the predicted probabilities of expected educational level for an average son for two different income quintiles: the third and the fifth. For daughters (results not shown), these probabilities are not statistically different, but for sons moving up these two income quintiles has a large effect: it decreases the predicted probability of expecting the lowest educational level by 10.16%-points (20.16%) and increases the predicted probability of expecting the highest level by 9.22%-points (31.21%).

Table 2 about here

4. Discussion

The results presented above suggest that there are different mechanisms for the intergenerational transmission of socioeconomic outcomes: one in education and one in income. Both daughters' and sons' educational expectations increase in parental education, and these effects are stronger between mothers and daughters and between fathers and sons. Daughters' expectations are not affected by parental income but sons' expectations are to a significant degree. Further research is needed to disentangle possible explanations. One possibility is that parental education influences children's educational expectations directly by creating a reference point (in the sense that

⁵ Wald tests show a joint statistically significant difference in coefficients of daughters and sons of 5.5% for paternal education (first equation only) and 14.6% for maternal education. Individual tests reveal that statistical significance is greater at higher parental educational levels.

parents serve as a role model), while parental income influences educational expectations of children through the transmission of values, such as the importance of social status or high income. This is consistent with the hypothesis that girls face less rigid gender roles than boys.

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Table 1: Generalized Ordered Logit Model of Educational Expectation

(Odds Ratios shown)

Educational Expectation	Daughters				Sons			
	(1)		(2)		(3)		(4)	
	>Low	>Middle	>Low	>Middle	>Low	>Middle	>Low	>Middle
Income quintile								
1st	0.769		0.837		1.217		1.326	
	(-1.59)		(-1.06)		(1.12)		(1.59)	
2nd	0.802		0.868		0.799		0.829	
	(-1.45)		(-0.91)		(-1.29)		(-1.06)	
4th	1.273	0.851	1.083	0.713*	1.725***		1.489**	
	(1.35)	(-0.94)	(0.44)	(-1.89)	(3.26)		(2.33)	
5th	1.406**		1.104		2.118***		1.509**	
	(2.15)		(0.58)		(4.51)		(2.31)	
Mother's education								
Low			1.230*				1.220	
			(1.65)				(1.49)	
Medium			1.813***				1.297*	
			(4.21)				(1.70)	
High			3.366***				1.303	
			(3.24)				(0.71)	
Father's education								
Low			1.102				1.047	
			(0.79)				(0.35)	
Medium			1.263				1.645***	
			(1.37)				(2.75)	
High			1.057	1.779**			2.630***	
			(0.19)	(2.19)			(3.94)	
Ability measures	yes		yes		yes		yes	
Log Likelihood	-1458.02		-1437.21		-1263.53		-1246.22	

Robust Z-statistics in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level. A single coefficient is shown if odds are not statistically different at the 5% level at different levels of the dependent variable. N=1,428 (daughters) and 1,387 (sons).

Table 2: Predicted Probabilities of Educational Level

Education	Frequency	Predicted Probability of an average son		
			In 3 rd income quintile	In 5 th income quintile
Low	47.00%	45.83%	50.40%	40.24% **
Medium	16.81%	20.68%	20.06%	21.01%
High	36.18%	33.49%	29.54%	38.76% **

***, **, and * represent statistical difference at the 1%, 5%, and 10% level, compared to the column on the left.