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Gender, productive ability and the perceived returns to education: Evidence from rural India

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HIGHLIGHTS

- We collected data on perceived returns to education in India.
- We find a significant gender gap in perceived returns.
- We model and analyze the pattern of heterogeneity in perceived returns.
- We uncover the salience of different types of ability for boys versus girls.

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ABSTRACT

Recent research has established the importance of perceived (as opposed to actual) returns as a determinant of educational investments. We analyze data from India to highlight gender disparities in the perceived returns to education and the salience of productive characteristics.

1. Introduction

In the developing world, education represents one of the most important long-term investments a household can make for its children. Underinvestment is common, and is not gender-neutral: In 2007, the gross enrollment rate of men in tertiary education in India was only 15.5%, while that of women was even lower, 10.8% (World Bank Education Statistics). While the literature has traditionally emphasized the effect of economic and social constraints on schooling investments, recent evidence indicates that the extent to which households are aware of the true returns to education is limited (Jensen, 2010; Nguyen, 2008). At a time when the returns to education are expanding rapidly, for boys as well as girls, systematic biases in expectations may constitute an important barrier to investment.

As yet, though, we know little about how gender factors into perceptions of educational returns. In rural India, for many decades, social norms have circumscribed the role of women, and in particular their labor force participation subsequent to marriage. As a result, households may have had little incentive to actively gather accurate information about the returns to education for women. Whether recent increases in the returns to female education (Azam, 2012) and the advent of newer (and more socially acceptable) job opportunities for women (Jensen, 2012) have significantly altered those incentives is a question of considerable interest.[1]

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[1] One can imagine a process of "passive" learning, in which individuals incidentally learn about the returns to a particular investment via conversations with network neighbors et al.; this information may be inaccurate due to peculiarities in the way information diffuses and the kinds of information that are

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Table 1
Expected returns to education.

	10th	12th	Diploma	BA	Masters	Engineer	Doctor
Boys	880.15	1984.42	5812.37	7999.29	12229.97	15944.30	20216.85
	(811.30)	(1444.21)	(3119.92)	(3908.20)	(6777.30)	(6483.38)	(8376.81)
Observations	195	196	195	193	195	196	194
Girls	833.74	1651.86	5425.30	6780.50	11212.08	13330.25	17711.12
	(1321.17)	(1197.25)	(2892.88)	(2659.52)	(6591.25)	(6179.61)	(8101.21)
Observations	160	160	160	160	159	161	161
p-value: Boys = Girls	0.685	0.020	0.230	0.001	0.156	0.000	0.005

Notes: The figures represent sample average returns (in rupees) to each level of education. The expected return to each level is calculated as the difference between the expected earnings for that level and the expected earnings conditional on completing 8th standard. The average expected earnings conditional on completing 8th standard are 1908.38 rupees and 1506.84 rupees for boys and for girls respectively. Standard deviations are in parentheses. The p-value corresponds to the test of the null hypothesis that the average returns are equal for boys and girls.

Using survey data that we collected in three villages in rural India in 2008, we provide a first look at how households perceive educational returns for their daughters. We interviewed households to elicit their subjective beliefs about the future labor market earnings of each of their children. These beliefs were elicited as earnings densities, conditional on each of a set of hypothetical educational attainments.

The data reveal two distinct gender differentials. First, there is a significant gender gap in the perceived returns to education. Second, there is substantial heterogeneity in the perceived returns to education, even among siblings within the same household. We show that this heterogeneity is related to perceptions of (child-specific) productive ability, of which there are multiple dimensions that parents are able to differentiate between. The perceived heterogeneity in returns exhibits an interesting pattern: The returns to lower (i.e., below college) levels of education are significantly more heterogeneous for girls than for boys, but the opposite is true in the case of returns to higher levels of education. We estimate a simple model of learning to show that, consistent with the pattern of heterogeneity in returns, parents only appear to take cognizance of "high-level" ability in the case of boys, and "low-level" ability in the case of girls. We discuss these results and their implications further in Section 4.

2. Data

We collected data in three villages in South and West India in 2008: Dokur in the Telangana region in Andhra Pradesh, and Kalman and Shirapur in the Solapur district in Maharashtra. These three villages were selected in 1975 by the International Crop Research Institute of the Semi-Arid Tropics (ICRISAT) as part of their Village Level Studies (VLS) program to represent (albeit not statistically) the semi-arid tropics in India.[2] We resurveyed 339 ICRISAT-VLS households. Only one individual was interviewed in each household — the main decision maker with regard to the education of the individuals up to the age of 25 years (in most cases this was the father).

The survey included questions on household composition, income, wealth, employment, education, marriage related practices and social norms. In this paper, we analyze the information elicited on perceived returns to education. We elicited current beliefs regarding the returns to education for each child, conditional on each of a set of levels of educational attainment, but unconditional on the nature of the employment. It is important to emphasize that these are hypothetical returns, and are irrespective of the actual educational investment plans of the household. To obtain a density function of future earnings we used a method based on Dominitz and Manski (1996) and Lybbert et al. (2007). We first elicited the minimum and maximum earnings the respondent imagined the child would earn after finishing a particular schooling milestone (on a monthly basis). During this exercise, the respondent was asked to imagine the various options possible, i.e., various types of employment, including self-employment, and various locations where the child might live in the future, anticipating migration. Then, we made three boxes, evenly distributed between this minimum and maximum and asked the respondent to use 20 stones (each stone representing a 5% probability) and place the stones in the three boxes, with more stones into the boxes representing the event they consider more likely to happen, i.e., essentially to form an earnings density function (see also Delavande et al., 2011a,b). This question was repeated for the various levels that the child still had ahead of him/her, including 8th standard, 10th standard, 12th standard, diploma, Bachelor's degree, engineering degree, medical doctor's degree, and Master's degree. Thus, for a child currently enrolled in 11th standard, one was asked to reconstruct the density function for 12th standard, diploma, bachelors, engineering, medical doctor, masters, but not for 8th or 10th standard (i.e. earnings are not elicited for all levels of education, unless the child is yet to complete 8th standard). Sample sizes are therefore unequal across educational categories.

Not all households were able to answer the earnings question for all levels of educational attainment. We restrict the analysis to households that were able to construct earnings densities for each of the levels of attainment for at least one of their children. We also limit the analysis sample to only include children up to the age of 18 (the age of high-school completion). This leaves us with a sample of 208 boys and 174 girls.

3. Analysis

3.1. The returns to education and the male premium

We begin by examining the expected returns to education and the male premium on the labor market. For each individual, we define the return to each level of education as the difference between the expected earning corresponding to that level and the expected earning corresponding to the lowest category, i.e., 8th standard completion. Table 1 presents the average expected returns for each level of education, separately for boys and girls. Note that the sample sizes are slightly smaller than the full sample because returns are only defined for children for whom we know earnings conditional on completing 8th standard.

The results show that expected returns increase significantly with the level of educational completion for both boys as well as girls: A female college graduate is expected to earn about 6780

diffused. When the information obtained in this way suggests a sufficiently large return to investment, however, an individual may then undertake a systematic attempt to gather more accurate information.

[2] For an overview of the ICRISAT-VLS program see Singh et al. (1985) and Walker and Ryan (1990).