

Long-Term Impacts of Alternative Approaches to Increase Schooling: Experimental Evidence from a Scholarship Program in Cambodia*

Felipe Barrera-Osorio[†]
Andreas de Barros[‡]
Deon Filmer[§]

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[†]Associate Professor of Education and Economics, Harvard University, Graduate School of Education. E-mail: felipe_barrera-osorio@gse.harvard.edu.

[‡]PhD Candidate, Harvard University, Graduate School of Education. E-mail: adebarros@g.harvard.edu.

[§]Lead Economist, World Bank. E-mail: dfilmer@worldbank.org.

1 Background/Context

How does additional schooling impact long-term life outcomes? According to the canonical human capital model, labor markets remunerate the skills acquired during the education process (Becker 2009). According to a signaling model (Arrow 1973; Spence 1973), education provides the market with a signal of individuals' higher abilities; as a result, the market pays for these skills. Both models predict positive effects from investment in education. At the same time, emerging research is showing that, in many settings, increased schooling has not meant increased learning, which is potentially limiting the market returns to education (Pritchett 2013; The World Bank 2017). There are, however, few studies in low-income settings that can isolate the impacts of schooling on skills accumulation.¹ Our paper aims to contribute to this evidence by presenting the causal long-term effects of a scholarship program which induced more schooling on cognitive, socioemotional, socio-economic status and well-being, and labor outcomes in a group of 21-year-old individuals who received the scholarship nine years earlier, in Cambodia.

2 Purpose/Objective/Research Question

This analysis presents causal evidence to address three questions. First, what are the long-term effects of the program on cognitive skills and socioemotional outcomes? Specifically, we investigate the impacts of (exogenously induced) additional exposure to schooling on these outcomes. Second, what are the long-term effects of the scholarships on socioemotional outcomes? In particular, we investigate whether socioemotional outcomes are co-produced with (or are complements to) cognitive outcomes. We can pursue the answer to this question because only the merit-based scholarship induced changes in cognitive skills after the first three years of the intervention (Barrera-Osorio and Filmer 2015); therefore, we can test whether we observe effects on socioemotional outcomes for this group only, for both treatment groups, or for neither group. Third, what are the long-term effects of the scholarships on well-being and labor market outcomes? Given that scholarships induced more schooling for all treated individuals, but only cognitive skills for some, we can investigate the channels through which this additional education might affect these outcomes.

¹Important exceptions are Duflo et al. (2017); Parker and Vogl (2018); Ozier (2016); Jakiela et al. (2015) and Friedman et al. (2011).

3 Setting

At the time of implementation, the program’s 207 schools represented all public schools in three of Cambodia’s rural provinces. These provinces were selected for having the highest drop-out rates in the upper primary grades (grades four to six), according to the country’s Education Management Information System.

4 Population/Participants/Subjects

Our sampling frame consists of 5,964 fourth-grade students (in the program’s 207 schools), who participated in the baseline eligibility assessment, in December 2008 and January 2009. Of those, 2,996 respondents were randomly selected for the first three-year follow-up survey, in 2011 (Barrera-Osorio and Filmer 2015). For this first follow-up, an additional 658 “replacement” students were randomly selected, in case students from the target group could not to be found. In the 2016 follow-up, we tracked all students who had participated in the 2011 study, a random subset of 140 respondents who had previously been found to be attriters, and all replacement students who were interviewed in 2011. Our 2016 sample thus includes 2,252 respondents.

5 Intervention/Program/Practice

In 2008, 207 schools in Cambodia were randomly allocated between two treatment arms (103 schools) and a control group (104 schools). In half of the treatment schools, students in grade four received a scholarship based on merit—high-performing students were selected using a baseline test of math and language skills—and fourth-graders in the remaining treatment schools received a scholarship based on poverty—students were selected using a poverty index, based on household and family socio-economic characteristics. Scholarships were given to recipients for three years, conditional on continued school participation and basic performance standards.

6 Research Design

In this Randomized Controlled Trial, we exploit the random allocation of schools, as described in Section 5. We present evidence on the study’s internal validity, with respect to sample balance and non-differential attrition.

7 Data Collection and Analysis

We collect outcome data through in-person interviews at the respondents’ residence, using handheld tablets. Secondly, to construct a variable reflecting intention-to-treat, we use the official government declaration of scholarship recipients. Third, we match each respondent to baseline data—application forms and baseline tests (collected in December 2008 and January 2009). Fourth, we construct a vector of additional control variables through administrative data on baseline school characteristics and through village-level data from Cambodia’s 2008 census.

We estimate a generic production function model:

$$Y_{t,i}^j = \beta_0 + \beta_1^j T_{0,i}^j + B\mathbf{X}_{0,i} + \mu_{t,i} \text{ for } j=\textit{merit} \text{ or } \textit{poverty} \quad (1)$$

where Y are outcomes such as educational attainment, cognitive skills, socioemotional skills, labor outcomes, or measures of well-being. Vector $\mathbf{X}_{0,i}$ includes a rich set of baseline characteristics at the school-, village-, and individual-level. All estimations include district-level fixed effects and allow for the clustering of standard errors within schools Abadie et al. (2017). Equation 1 estimates an intent-to-treat model, with β_1^j capturing the effect of offering the scholarship on outcomes Y .

8 Findings/Results

We find that both types of scholarships led to higher long-term educational attainment (about 0.21-0.29 grades), but only merit-based scholarships led to improvements in cognitive skills (0.11 standard deviations), greater self-reported well-being (0.18 standard deviations), and employment probability (3.4 percentage points). Neither type of scholarship increased socioemotional skills. The results also suggest that there are labeling effects: the impacts of the scholarship types differ even for individuals with similar characteristics.

9 Conclusion

Both types of scholarships led to more schooling, but only the merit-based scholarships had positive impacts on cognitive, well-being, and labor market outcomes. Neither of the two types of scholarships induced greater socioemotional skills. Two factors are important for interpreting these results. First, they are the marginal effect of increasing schooling by only about four additional months—although these

may be critical months, inasmuch the program induced individuals to finish primary education. But it is possible that some of the key impacts of schooling on socioemotional skills happen early on (when both the control and treatment groups were still in school) or later on in adolescence (when, for this population, both groups would have left school). Second, while attrition is neither especially high nor systematically different across the three groups of students, our relatively limited sample size may nonetheless have reduced the precision of the estimates. Our overall results present a complex picture, suggesting that demand-side interventions, such as scholarships, and their particular targeting approaches can have important long-term effects.

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