Does school Matter? Learning outcomes of Indonesian children after dropping out of school

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ABSTRACT

Indonesia has made significant progress in increasing educational attainment. Whether more years of schooling result in more learning, however, is uncertain and may often depend on long-run factors such as child ability and parental background. In this paper, I use data from the period around the Indonesian economic crisis of late 1990s to analyze how learning is affected by school dropout due to short-run budget constraints. I estimate a value-added model, taking advantage of the availability of test scores before and after dropout, in order to account for children selecting out of school based on ability. I further estimate an instrumental variables regression model to identify children who drop out because of resource constraints that bind during the crisis. The study finds economically and statistically significant negative effects of school dropout on mathematics scores (obtained through formal training) and a smaller effect on Raven’s scores (a general measure of cognition). These findings show the importance of insuring Indonesian children against income volatility because more schooling is associated with more learning even for these marginal children who drop out during a period of binding resource constraints.

1. Introduction

In developing countries, resource constraints are an important determinant of schooling decisions due to high opportunity costs and households’ inability to finance formal education. That is why the school construction program in Indonesia in the 1970s, which decreased distance travelled and thus reduced monetary and time costs of schooling, increased school attendance (Duflo, 2001). Similarly, abolishing school fees for primary school in Uganda led to dramatic increases in enrollment (Deininger, 2003). Resource constraints are also evident in that parents often fail to insure children against the effects of income shocks. Jacoby and Skoufias (1997) find that school attendance in rural India fluctuates during periods of idiosyncratic income shocks because financial market imperfections in rural India prevent households from borrowing against future income. Similarly, in Burkina Faso, income uncertainty due to frequent income shocks is associated with worse educational outcomes (Kazianga, 2012). Negative macroeconomic shocks in developing countries have also been shown to reduce enrollment and attendance rates (Ferreira & Schady, 2009).

While the effect of resource constraints on years of education may affect learning and skills. Hidrobo (2014) shows a decrease in vocabulary test scores for young children exposed to the economic crisis in Ecuador in 1999 while providing conditional cash transfers to poor students in Nicaragua and Malawi increases school attendance and improves mathematics and language test scores (Baird, McIntosh, & Ozler, 2011; Barham, Macours, & Maluccio, 2013). Yet, more investment and schooling is not necessarily associated with more learning for poor children. Heady (2003) finds that children in Ghana have lower test scores if they engage in child labor even if their schooling is not directly affected. Not only may poor children face other constraints on their time, but they may also have backgrounds that put them at a disadvantage. For example, Filmer and Schady (2009) study a scholarship program in Cambodia allocated to children at high risk of dropout and find no effects of extra schooling on their mathematics and vocabulary tests. The scholarship recipients did not do better on the tests even when they attended schools of higher quality, likely because the marginal children brought into school by the program had lower abilities.

This paper expands on this limited research and provides evidence for how learning is affected by school dropout due to short-run budget constraints. I use household panel data from the period of the Indonesian economic crisis in late 1990s to estimate the effect of missed schooling on the accumulation of skills learned in school, as well as on general cognition, of girls.
and boys between the ages of 7 and 15. I identify the effect of drop-out on test scores for the population of children who wouldn’t have dropped out had the economic crisis not occurred. I find that getting less education because of binding short-run budget constraints is associated with significantly lower mathematics and Raven’s scores.

In order to estimate the causal effect of dropping out, the reasons why children stop going to school need to be considered. In addition to resource constraints, child preferences and ability, school quality and returns to education may matter, too. In the standard human capital model, children and parents are forward-looking and view schooling as an investment with financial returns. However, Oreopoulos (2007) studies the impact of compulsory schooling laws in the US, Canada and the UK and shows that schooling decisions may not always be governed by investment motives. Rather, students may discount future benefits and non-pecuniary costs such as school distaste may influence their dropout decisions. Eckstein and Wolpin (1999) estimate a structural model of school progression and work choices in the US and find that high-school graduates are inherently different from high-school dropouts in terms of preferences. They also differ in terms of abilities and have comparative advantage at jobs done by nongraduates. Li, Poirier, and Tobias (2004) show that, on average, dropping out of high school in the US has a large negative effect on senior year math scores as students miss in-class learning. However, they find little difference between counterfactual test scores and observed test scores for dropouts, arguing that they would have benefited little from extra schooling. On the other hand, Cascio and Lewis (2006) and Brinch and Galloway (2012) show that the increase in education brought about by compulsory schooling laws in the US and Norway was associated with an increase in cognition.

How long children stay in school also depends on the quality of schooling and perceived returns to education. For example, Hanushek, Lavy, and Hitomi (2008) study dropout behavior in Egypt and show that high-achieving students are more likely to stay in school than low-achieving students. Conditional on their skills, however, students attending schools of lower quality are more likely to drop out of school and complete fewer grades. Glewwe and Jacoby (1994) further show that the effect of school quality on child achievement of Ghanaian children is both through improved learning rates and increased school attainment. Case and Deaton (1999) use data from South Africa during the apartheid when Black families had limited residential mobility and school resources were controlled centrally. They show that pupil-teacher ratios had significant effects on school enrollment and achievement. One of the reasons why school quality affects the dropout decision may have to do with the expected returns to schooling. A recruitment intervention in India made job opportunities for women more salient and accessible and increased enrollment in school for younger girls and enrollment in training programs for older girls (Jensen, 2012). Similarly, students in the Dominican republic who were provided with information about the higher than perceived returns to secondary school stayed in school longer (Jensen, 2010).

If students who drop out differ from those who don’t in unobserved factors such as ability or motivation, the ordinary least squares (OLS) estimates of the effect of school interruption on achievement will be biased. Therefore, I use a value-added model, controlling for past mathematics test scores in order to account for any time-constant unobservables that govern both past and present test scores as well as the schooling decision. A more general approach to account for endogeneity in the dropout decision is to use an instrumental variables model. I take advantage of the fact that the Indonesia Family Life Survey data spans the period of the Indonesian economic crisis of late 1990s. I use age and gender-specific differences in predicted and observed non-enrollment rates in the year of the crisis as the source of identifying variation. These serve as exogenous instruments for the individual decision to drop out of school.

Next, I provide some background on the Indonesian context in which this study takes place. Then I describe the data used for this analysis. In Section 4, I present the empirical specification. Section 5 contains information on the sample construction and variable definitions, while Section 6 discusses the instrument choice. Section 7 presents the findings from the various analyses that quantify the effect of school dropout on learning achievements and cognition. Section 8 includes robustness analyses. Section 9 concludes.

2. Background

Indonesia is the fourth most populous country in the world with 250 million people, spread on thousands of islands. A lower-middle-income country, it has GDP per capita of $3500 in current USD, less than 7% of US GDP per capita. For a period of 20 years starting in the 1970s, Indonesia experienced a rapid economic growth, following a change in the political leadership and liberalization of the economy. Using foreign aid and oil revenues, the government invested heavily in infrastructure and social programs. The proportion of the population living under poverty fell from 40.1% in 1976 to 11.3% in 1996 (Lanjouw, Pradhan, Saadah, Sayed, & Sparrow, 2001). Between 1973 and 1979, the government constructed more than 61,000 primary schools, raising enrollment rates of primary school students from 69% to 83% (Duflo, 2001).

In late 1990s as the East Asian Financial Crisis spread, Indonesia’s economic and social progress was halted. Thailand’s financial crisis and currency devaluation in the summer of 1997 rapidly spread to the countries of the region. While Indonesia’s currency was volatile in 1997, most Indonesians were only affected in the beginning of 1998 when the rupiah sharply declined after a government budget announcement. In 1998, inflation reached 80% but prices of basic goods increased between 100% and 400%, while real wages fell by 40% (Setiawan, 2000). The timing and magnitude of the economic shock were largely unexpected and households struggled to smooth consumption. Faced with liquidity constraints, households sold assets (such as gold) and decreased nonfood consumption, including spending on health and education (Frankenberg, Smith, & Thomas, 2003). Frankenberg, Thomas, and Beegle (1999) show that school dropout rates in 1998 increased for all income quartiles and for children in both urban and rural areas. Children in the lowest income quartile, however, were affected more than those in the other quartiles. Similarly, young children (7–12) in rural areas experienced higher increases in dropout rates than young children in urban areas, while older children in urban areas saw higher dropout rates than their counterparts in rural areas.

The educational system in Indonesia is characterized by three schooling levels – primary school for ages 7–13, then three years each for junior high school and senior high school. In 1994, mandatory school going age was increased to 15 years. Yet, while primary school enrollment is almost universal, junior high school enrollment in 1997 was only 72.2%, while senior high school enrollment was less than 50% (Lanjouw et al., 2001). Repetition, especially during primary school, is fairly common with 14.2% of students in grade one and 4.5% of those in grade five of primary school repeat- ing the grade in 1993 (Jones & Hagui, 2001). After each year, students take state exams and their performance determines placement in higher-level schools. School attendance usually requires an annual registration fee, as well as monthly fees. Even in public schools, where annual registration fees have been abolished, parents are expected to pay monthly fees (Suryadarma, Suryahadi, Sumarto, & Rogers, 2006).
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