



# Does access to secondary education affect primary schooling? Evidence from India



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## ABSTRACT

This paper investigates if better access to secondary education increases enrollment in primary schools among children in the 6–10 age group. Using a household level longitudinal survey in a poor state in India, we find support for our hypothesis. Using recent methods developed to assess the impact of omitted variable bias on the estimated coefficient, we show that correction for a bias emanating from endogenous placement of schools leaves our conclusions unchanged. Moreover, the marginal effect is larger for poorer households and boys (who are more likely to enter the labor force). We also provide some suggestive evidence that this effect may be quite widespread in India.

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## 1. Introduction

The Millennium Development Goals Report (2015) published by the United Nations shows that despite significant progress in primary school enrollment in developing countries, 57 million children still remain out of school.<sup>1</sup> While access to primary schooling has improved substantially, high dropout rates are still a critical problem.<sup>2</sup> In India, the major public policy initiatives like *Sarva Shiksha*

*Abhiyan* (Education for All), the provision of a midday meal, free textbooks, uniforms etc. aim to universalize elementary education and reduce disparity across regions, gender and social groups. In this context, two suggestions have been popular: to reduce the access barrier through the provision of community-based primary schools; and to improve the quality of schools in terms of physical infrastructure, teacher quality etc. This paper raises a third issue: Does the possibility of continuation into higher levels of schooling affect primary schooling outcomes? In particular, we seek to investigate the effect of access to secondary education on primary school participation.

Although the importance of access to schooling in determining educational outcomes has been well recognized in the literature, most of it is on access to primary schooling and its effect on children (Duflo, 2001; Duraisamy, 2002; Filmer, 2007; Glick & Sahn, 2006; Orazem & King, 2007). This literature examines the linkage between schooling outcomes at a particular level with access to that

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<sup>1</sup> [http://www.undp.org/content/dam/undp/library/MDG/english/UNDP\\_MDG\\_Report\\_2015.pdf](http://www.undp.org/content/dam/undp/library/MDG/english/UNDP_MDG_Report_2015.pdf).

<sup>2</sup> Key Indicators for Asia and the Pacific (2015) published by the Asian Development Bank reveals that in South Asia, the proportion of pupils starting grade 1 who reach the last grade of primary was only 62.2 percent in 2011 (<http://www.adb.org/sites/default/files/publication/175162/ki2015.pdf>).

level of schooling. In this paper, we look at the backward linkage between post-primary schooling access and outcomes at the primary level. In doing so, we add to a far smaller list of studies that acknowledge the importance of access to post-primary schooling in determining outcomes at the primary level (Lavy, 1996 on Ghana; Hazarika, 2001 on Pakistan; Burke and Beegle, 2004 on Tanzania; Vuri, 2008 on Ghana and Guatemala; Lincove, 2009 on Nigeria). Almost all these studies use cross-sectional data and implicitly assume that school placement is exogenous. This paper relies on a longitudinal data set and can better account for time invariant household level heterogeneity. Moreover, we explicitly test and give credence to Lavy's (1996) argument that placement of secondary schools is not endogenous to household level characteristics.

The main idea of our paper is that households may perceive education investment as lumpy; that significant economic returns require continuation to at least a secondary school – households may find it worthwhile to educate their children only if they can reach that level. In light of this, better access to a post-primary school represents reduction in the cost of post-primary schooling and increases the possibility of continuation into higher levels of schooling. In doing so, it can become an important determinant of primary school participation. Our argument is supported by recent evidence that returns to education are highest at the secondary and post secondary levels (Colclough, Kingdon, & Patrinos, 2010; Kingdon, Patrinos, Sakellariou, & Soderbom, 2008; Schultz, 2004). The convex shape of the education-income relationship is also found in the context of India (Duraisamy, 2002; Kingdon, 1998; Kingdon & Unni, 2001).<sup>3</sup> Some other studies show that while the actual rate of return to primary schooling is high, parents believe that the first few years of schooling have lower returns than in the later years (Banerjee & Duflo, 2011; 2005). Since the decision of investment in the human capital of children is crucially linked to the perceived economic returns to education (Jensen, 2010; Manski, 1993; Nguyen, 2008), therefore, this provides a plausible background for explanation of our results.

While the literature on primary schooling access is well developed, the literature on secondary schooling access is less so.<sup>4</sup> A few exceptions are the studies by Muralidharan and Prakash (2013) on the impact of an incentive to provide bicycles to girls going to secondary schools on their enrollment, and by Pitt, Rosenzweig, and Gibbons (1993) on the effects of secondary schools on enrollment of children aged 10–14. This literature interprets the provision of schools as a decrease in 'distance cost'. However they focus on the current cost of schooling.

Andrabi, Das, and Khwaja (2013) point out to another mechanism that may link secondary schooling access and primary schooling. They posit that secondary schools may

create private school teachers in the future, hence affecting primary schooling outcomes in the future. This is inherently a long run mechanism: their paper looks at data 17 years apart. In this paper the mechanism we explore is much more short term and hence completely different.

This study is based on a longitudinal survey on households residing in 43 villages in Uttar Pradesh, a state in India. The main issue that potentially confounds our analysis is when secondary schools open up as a response to increasing demand for schooling. An exploratory analysis of what determines better access to secondary schools finds that baseline village level demand signals correlate weakly with access to secondary schools. The general conclusion of our analysis is that poorer villages benefit from the development of a larger region which attracts new secondary school. The most significant determinant of opening up of new secondary schools is the baseline distance to secondary school itself: new schools tend to locate near places which did not have a secondary school before. Thus, there is a convergence in secondary school access. This paper therefore argues that given this environment and results, endogeneity of secondary school location based on village level demand is less of a concern in this context.

Using a fixed effects regression model, this paper finds that there is indeed a positive effect of better access to secondary education on primary school enrollment and attendance. This result is put to robustness checks. To provide further proof that endogeneity of schooling access does not drive our results, we use methods developed by Altonji, Elder, and Taber (2005) and Oster (2013) to show that our estimates are unlikely to suffer from omitted variable bias. The results also do not change even after we account for additional trends based on baseline characteristics. Moreover, the impact of secondary schooling does not affect primary enrollment through sibling externality. To elaborate, we show that the results are not different when one takes into account elder siblings who go to secondary or higher schools.

We find that the effect hypothesized is heterogeneous: the effect is higher for poorer households and for boys (who are more likely to enter the labor force). Stratifying the sample by age cohorts, the paper finds significant effects on the enrollment of younger children and on both enrollment and attendance of older children. Besides, transport infrastructure enhances the effect of secondary school access on primary schooling in remote villages. Using a nationally representative survey for India (National Sample Survey 2007–08), we also provide some suggestive evidence that this effect may be quite widespread.<sup>5</sup>

The paper is organized as follows: Section 2 gives a background on Indian schooling system. Section 3 describes the data used for our analysis. Section 4 explores the relation between changes in secondary schooling

<sup>3</sup> This growing literature is in contrast with the earlier studies which suggested that returns to education were concave (Psacharopoulos, 1994; Psacharopoulos & Patrinos, 2004).

<sup>4</sup> Various studies find that a reduction in the distance to primary school improves enrollment, reduces dropout and improves test scores (Bommier & Lambert, 2000; Brown & Park, 2002; Burde & Linden, 2012; Handa & Sudhanshu, 2002).

<sup>5</sup> Our study relates very well to the recent policy environment in India, where the Ministry of Human Resource Development has developed a framework for universalization of access to and improvement of quality at the secondary stage. Following *Sarva Shiksha Abhiyan*, a national mission on *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA), or universalization of secondary education, has been set up.

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