

Do School Ownership and Incentive Mechanisms Affect Learning Outcomes? An Analysis from Rural India

Nitin Jain
Independent Researcher
India

Abstract

This paper analyzes the impact of enrollment in a private school and incentive mechanisms on the learning outcome (writing skills) in rural India. It adds to the extant research by adopting an instrumental variables approach. The findings reveal a significantly higher likelihood of superior learning outcomes for students studying in private schools and the no positive spill-over effect of incentives to enroll in government schools on the learning outcomes of their students. The empirical investigation addresses the issue of endogeneity using instrumental variables and control for district location, household- and individual-level factors. The findings are insightful for improving the learning outcomes of children in rural India.

1. Introduction

“The destiny of India is now being shaped in her classrooms”

- India Education Commission, 1964–66

Education is a key cog in the socio-economic wheel of a nation. There is a strong linkage between the educational achievements and socio-economic growth attained by a nation. This is even more critical for a populated, developing nation like India that lags behind on Vidya (education), which is influenced by factors like Veda (religion), Varna (caste), geographical location (rural vs. urban, across states), and gender, besides economic class. Equal schooling opportunities are especially important for girls. Education, via equal schooling opportunities for girls, correlates strongly with women’s choices later in life [1, p. 1].

According to [2], India has the highest number of illiterates in the world and every third illiterate in the world is Indian. There are glaring problems relating to dropping out of school, low levels of cognitive learning achievement, and low levels of participation by girls, tribal, and other disadvantaged groups [1, p. 4]. The contribution of primary schooling to economic development is much higher than it has been perceived [3, p. 167]. The economic segregation across public and private schools also indicates

potential caste segregation, as parents from a similar socio-economic background tend to choose similar types of schools for their children [4, p. 7]. Measures of psychosocial competencies such as self-efficacy, sense of inclusion, self-esteem and educational aspirations have been found to be correlated with caregiver’s education and school participation. These reflect life skills which play an important role in future socio-economic status [5]. Hence, it becomes important to ensure that quality education is accessible to all. The issues of limited access to, as well as poor quality of, education and teachers, and high drop-out, as well as repetition rates, have continued to be key concerns [6]. However, the issues that have received greater public attention in the past have been more related to the matter of educational power [7]. All these reasons make it compelling to examine primary schooling in India.

Most of the extant studies analyze learning outcomes using descriptive statistics or ordinary least squares regression or qualitative methods. Whereas this paper combines two strands of research – choice of school and the impact of government incentives – using an instrumental variable (IV) approach to control for endogeneity. Prior findings indicate that the private school advantage can largely be explained by self-selection [8]–[10]. This paper investigates whether private school students have better learning outcomes than their government school peers and whether there is a positive spill-over impact of incentive mechanisms (free uniforms and fees by the government) on learning outcomes of government school students. This analysis contributes to the research focusing on the privatization of primary education and the impact of government incentives on schooling outcomes in rural India.

The organization of the paper is as follows. It first gives an overview of the school education system in India. Thereafter, it analyzes the extant literature while identifying the areas where the literature can be enriched. Thereafter, it discusses the data, methodology, and results. The findings and conclusion on the key outcomes and prospective next steps comprise the last two sections of the paper.

2. Background and Literature Review

2.1. Private and Government Schools – Key Pointers

There has been a significant rise in the growth of private schools, probably due to the demand for education and the lack of adequate facilities [11] in government schools and their poor performance [12]. An important aspect of the analysis of the type of schooling on learning outcomes or returns to education is the decision to enroll in either a government or a private school. This decision is impacted by various social, economic, cultural and demographic factors, besides infrastructure and soft qualities of schools such as discipline, and uniforms. Therefore, a key challenge in comparing the private and government schools is in addressing this lack of randomness in school enrollment decisions.

[13] asserts that the education policy in a developing country like India has been focused on increasing the resource base and the accessibility of government schools even as the private fee-charging schools have been increasing at a substantial pace. According to [14, p. 783], access to public infrastructure attracts the establishment of private schools in a community even after controlling for other factors. While investigating the context of the operation of private schools in rural areas, [15, p. 54] explores the private school established as a supply-side phenomenon. These schools are more likely to be established in villages that have better infrastructure and more government services.

Concerns have been raised on the inequity created by private schools [16]. To address this inequity, the RTE co-opts private schools for the delivery of education and at least 25 percent of seats in these schools are now provided to children belonging to disadvantaged backgrounds [17].

2.2. School Attendance and Continuation – An Overview

While school enrollment has shown an improvement in India, school drop-out rates are alarmingly high [18]. According to [19], many communities don't have a tradition of sending children to school, and there is very little peer pressure to do otherwise. These traditions co-exist with established social norms that endorse child labor and accept school dropouts. [20, p. 1372] identify the impact of socio-economic norms on two embedded issues. The first one, the *attribute effect*, is due to differences in the communities' endowment of "enrollment-friendly" attributes. While the other one, the *community effect*, is due to the differences in the communities' norms, translating a given attribute endowment into varying enrollment rates. Dropping-

out is not a self-induced decision; parental bonding and family responsibilities played a major role in determining drop-out behavior [18]. A key challenge is to build a balanced picture (a pluralist view) of school participation, which integrates different factors that influence it [21].

Using the National Sample Survey (NSS) data from 1983 to 2000, [22, pp. 255, 258] find that among the factors they considered, household per capita expenditure has the highest impact on children enrolling in school. Further, they assert that, for urban areas, under favorable conditions, the education difference between girls and boys narrows. [23, pp. 154–155] found a pro-male bias for the age-group 5-9 and 10-14 in enrollment in private schools. This could be driven by demand, i.e., cultural and gender norms in rural areas or supply constraints, i.e., lack of availability of single-sex schools for adolescent girls. [24] find that, at a younger age, the private school enrollment of boys and girls seems similar, but from age 10 onwards, gender gaps become significant and widen in urban areas. In rural areas, they find the gender gap to be persistent throughout age groups.

2.3. Learning Outcomes – How to Improve them?

The most glaring crisis in India's primary education relates to learning. In the absence of any standardized tests until secondary level board exams at grades X and XII, this endemic problem of inadequate learning remains hidden [25]. Government schools are unable to provide even the most elementary skills [26] and the "process" variables in rural-based private schools are superior compared to their government counterparts [13].

[27, p. 56] analyzes the IHDS data to examine the inequalities within social groups reflected in the test scores in reading, writing and arithmetic assessment and asserts that the assessment should also include the degree of inequality in the distribution of achievements between children in that group. [28, p. 4] examines the potential link between the medium (language) of instruction and student performance in English and Mathematics and finds that students in English medium schools scored lower than students at other schools. Using survey data from representative samples of two Indian states – Uttar Pradesh and Madhya Pradesh – [29, p. i] find private school students perform better than their government school peers even after controlling for school and student-level observed characteristics.

In a nutshell, the extant studies mostly focus on the enrollment of children and the impact of socio-economic groups on their enrollment. With the passage of time, the emphasis needs to be shifted to learning outcomes and not just enrollment. Also, the studies generally consider the impact of demand-side on the decision to choose a private school. Only a few

studies such as [15], [30], [31] discuss the impact of supply of private schools, and the spill-over impact of incentive mechanisms or infrastructure-related factors at the village level on learning outcomes.

3. Data

This study analyzes the India Human Development Survey (IHDS) for 2011 [32]. This survey covers 42,152 households, 204,569 individuals, 4,267 schools across 1,501 villages and 34 states and union territories for both rural and urban India. Its advantage is that it documents variation in the daily lives of Indian households as the society undergoes a transition. The provision of household data, as well as village-level data, facilitates modeling using the proportion of private schools at the village level. Unfortunately, IHDS does not have similar aggregate-level data for any urban area, so the analyses are limited to rural India only. This data compares well with other national surveys and captures diverse demographic, social, economic and religious characteristics and is used in the extant literature. The students being analyzed for their learning outcomes are in the age-group of 8-11 and attend school up to middle level, i.e., up to grade 8.

Based on the extant literature and my own knowledge, a wide set of controls have been considered. These include age, grade, medium of instruction, household highest education, district, caste category, religion, household economic factors such as income and per capita consumption. Since the models control for the medium of instruction, and household income, these to an extent capture the impact of school infrastructure also. The underlying premise is that richer and more educated households are more likely to send their children to better schools. To facilitate a more detailed analysis, discrete categories of age have been chosen instead of treating it as a continuous variable. Some of the controls such as time spent on household chores – collecting water, fuel from outside, etc. – had a lot of missing observations, so they could not be used.

4. Methodology

The choice of a school is not a random selection. There are observable and unobservable factors that impact the decision to enroll in a particular school and hence, the learning outcome of a student. For example, students may choose the school based on their motivation, ability, parent's characteristics, and other unobservable/ quasi-observable factors. Therefore, to have a clear understanding of the impact of the school type on the learning outcomes of the students, either the students should be allocated randomly to different schools or endogeneity should be treated to address the selection bias.

This paper considers the decision to join a private/government school to be a rational one and not a random event wherein an ordinary least square (OLS) regression or a propensity score matching (PSM) would have sufficed. In the absence of this random allocation to schools, the IV regression approach has been explored by using appropriate instruments for the endogenous variables – the decision to enroll in a private or a government school in this case. IV regression can be used to obtain consistent estimators in the presence of omitted variables and also solve the errors-in-variables problem, under certain assumptions [33, p. 512].

The PSM and OLS models give inconsistent estimates in the presence of endogeneity. Most of the control variables in these models determine the demand for private schools. Therefore, IV is more appropriate for our case than OLS regression, probit or propensity score matching (PSM).

This analysis is conducted in two phases. In the first one, the true impact of attending a private school on the writing assessment of 8-11-year-olds is identified using the supply of private schools (middle-level) in a village as the instrumental variable. This analysis targets those who could afford to enroll in a private school if the supply of these improves. The instrumental variable is at the village level. For the second analysis, the same controls are used as the first one. The treatment variable is the decision to enroll in a government school. Here the IVs are incentive mechanisms – free uniforms and fees by the government. Their impact on the decision to enroll in a government school is analyzed. Therefore, here the compliers are a different sample as compared to those in the first analysis. This analysis helps to ascertain if there is a positive spill-over effect of these incentives on the students' performance. The model equations have been given below.

$$\text{Learning Outcome} = B_0 + B_1 (\text{Treatment}) + B_2 (\text{Controls}) + \varepsilon \quad (1)$$

$$\text{First Stage: } \widehat{\text{Treatment}}_i = \alpha_i IV_i + u_i \quad (2)$$

$$\text{Second Stage: } \text{Dependent}_i = \beta_i \text{Controls}_i + \gamma_i \widehat{\text{Treatment}}_i + \varepsilon_i \quad (3)$$

$$\text{Reduced Form: } \text{Dependent}_i = \delta_i \text{Controls}_i + \eta_i IV_i + \theta_i \quad (4)$$

5. Analysis

Before delving into the empirical analysis, descriptive statistics were analyzed on key metrics to get a better understanding of the data. Because of space restriction, only a brief overview of these is provided here. In summary, private school enrollment data indicates inequity based on gender, caste, and income. Girls, as well as those from the socio-

economically backward classes, have a higher likelihood of studying in government schools and have a lower likelihood of positive learning outcomes as compared to boys and those from the general caste or brahmins since the latter tend to study in private schools. This seems to imply that private schools further entrench inequality in a society that is already hampered by social and economic stratification. These findings are in accordance with those in the extant literature (see for example, [34, p. 429]). Given below are the results for the OLS, PSM and IV iterations for both analyses.

5.1. Impact of Supply of Private Schools on Learning Outcomes

The underpinning hypothesis is that private school students have a higher likelihood of a successful learning outcome as compared to their same-age-group government school peers. Further, it is hypothesized that the selection bias is negative, i.e., the confounding factors worsen the probability of learning outcomes. This is plausible as those who study in private schools generally come from an educated and economically better background while those studying in government schools may not have a conducive study environment in their community, household or school. The first-stage, second-stage, and reduced-form models as given in equations (1), (2) and (3) are customized as below.

$$\begin{aligned} \text{Probability (Joining a Private School)}_i = & \\ \text{Controls}_i + & \\ \text{Proportion of Private (Middle) Schools in Village} + & \\ u_i & \quad (4) \end{aligned}$$

$$\begin{aligned} \text{Probability (Writing a Paragraph)}_i = & \\ \text{Controls}_i + & \\ \text{Probability of Joining a Private School} + \varepsilon_i & \quad (5) \end{aligned}$$

$$\begin{aligned} \text{Probability (Writing a Paragraph)}_i = & \\ \text{Controls}_i + & \\ \text{Proportion of Private Schools in Village} + \mu_i & \quad (6) \end{aligned}$$

As seen from the OLS, PSM and IV results in table 1 below, the probability for successfully writing a paragraph (learning outcome) increases if the student is from a private school as we move from OLS to IV estimates. This indicates a negative selection bias as the probability for a private school student (as compared to a government or other school) to write a paragraph rises from 17.5% (OLS) to 77.62% (IV).

Table 1. Comparison of treatment variable (CS4_Pvt) on the learning outcomes for OLS, PSM, IV

| Treatment | OLS | PSM | IV 2SLS |
|--------------------------------|----------|----------|---------|
| Enrollment in a Private School | 0.175*** | 0.194*** | 0.776** |

Note: * - Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

To validate the instrument, the test for endogeneity is found to be significant at a 10% level (p-value = 0.0659). The F-statistic of the first stage is 12.3, which is higher than the threshold of 10 used in the extant literature but not very high. The ratio of standard errors of the treatment variable in the IV and OLS model is 17.2, which indicates that the IV may not be very strong. The reduced form model has a significant estimate for the instrument and strengthens the rationale for using the supply of private (middle-level) schools as an instrument here.

The above results show that there is negative selection bias, and the impact of private schooling on learning outcome is indeed significantly positive as compared to that of government and other schools (convent, and madrasa). This adds value to the existing research on the debate around the importance of private versus government schools. The IV approach result, which yields a truer and more consistent estimate than the OLS or PSM one, aligns with those who assert that government schools lack quality and need appropriate reforms to raise their standards of education.

5.2. Impact of Incentive Mechanisms on Learning Outcomes in Government Schools

The underpinning hypothesis of this analysis is that government school students have a lower likelihood of a successful learning outcome as compared to their same-age-group private school peers. Further, it is hypothesized that the selection bias is positive, i.e., the confounding factors improve the probability of learning outcomes. This is plausible as those who study in government schools generally come from less educated and more economically deprived backgrounds. The first-stage, second-stage, and reduced-form models as given in equations (1), (2) and (3) are customized as below.

$$\begin{aligned} \text{Probability (Joining a Government School)}_i = & \\ \text{Controls}_i + & \\ f(\text{Fee by Government, Free uniform}) + u_i & \quad (7) \end{aligned}$$

$$\begin{aligned} \text{Probability (Writing a Paragraph)}_i = & \\ \text{Controls}_i + & \\ \text{Probability of Joining a Government School} + & \\ \varepsilon_i & \quad (8) \end{aligned}$$

$$\text{Probability (Writing a Paragraph)}_i = \text{Controls}_i + f(\text{Fee by Government, Free uniform}) + \mu_i \quad (9)$$

As seen from the OLS, PSM and IV results in table 2 below, the probability for successfully writing a paragraph (learning outcomes) decreases if the student is from a government school.

Table 2. Comparison of treatment variable (CS4_Govt) on the learning outcomes for OLS, PSM, IV

| Treatment | OLS | PSM | IV 2SLS |
|------------------------------|-----------|-----------|-----------|
| Enrollment in a Govt. School | -0.16 *** | -0.183*** | -0.263*** |

Note: * - Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

As before, the same validity tests are performed on the instruments – free uniforms and fee waiver by the government. These tests indicate the instruments are strong. The F-statistic of the first stage is 453 and the ratio of the standard error of the OLS and IV second stage is 1.83, which indicates a strong power for the IVs. The treatment is endogenous at a 1% significance level and the instruments have a strong causal relationship with the treatment. The over-identifying restrictions indicate the null hypothesis can't be rejected (p-value ~ 0.58 for Sargan χ^2 and ~ 0.55 for Basman χ^2). The reduced form model also shows a significant estimate for the instrument.

The second analysis highlights a positive selection bias and the impact of government schooling on learning outcomes is indeed significantly negative as compared to that of private and other schools. This adds value to the existing research on this topic through the IV approach, as this is the right causal estimate. This analysis also adds to the research that emphasizes the government needs to focus on the quality of education now as enrollment-related incentives like free uniform and fee waiver by the government do not seem to be sufficient for ensuring quality learning.

6. Discussion

Even more than seventy years after gaining independence and with a population reaching the 1.35 billion-mark, universal education remains an elusive and urgent goal for India. While the promise of education as a means of societal transformation is one of the key factors for the increase in governmental initiatives over the years, the results in terms of quality and reach of school education and learning outcomes are far from acceptable. Surveys like the National Sample Survey Organization (NSSO), the

Young Lives Survey (YL), the India Human Development Survey (IHDS), etc. have made it possible for researchers to surface useful insights for policymakers and practitioners to improve the quality as well as the reach of education. All these have motivated conducting an exhaustive review of the extant literature on school education in India over the past four decades. There is a growing focus in the extant research as well as in policy on the quality of schooling since this determines the future trajectory in terms of educational, intellectual, and economic attainment of not just an individual but the society as a whole. Education is in fact considered one of the core functions to lead to an egalitarian society [12, p. 708]. One of the many changes in the post-liberalization era (1991 onwards) in India is the surge in private schooling [35, p. 1]. These schools are perceived to be much better and hence, considered as the first step to rising in life. However, a key challenge is to isolate the true effect of private schooling on students' performance from other factors that may influence the outcome.

The compliers for both analyses are different. For the first one, the compliers include those who can afford private schools and would enroll in these once their supply is increased, while for the second analysis, the compliers include those who would enroll in a government school if they are provided incentives – free uniforms and fee waivers by the government. The former group is economically better off while the latter needs an economic boost to bring them into the education mainstream.

There are a few limitations to this study. Given the focused nature of this analysis, it is applicable to only rural areas of India with at least one government school. Villages without any school have not been considered. The instrument for the first analysis is not strong. It is difficult to prove that the exclusion restriction criterion is met empirically for the IV algorithm. However, this study relies on its strong theoretical underpinning related to the exclusion restriction for both analyses. It is assumed that the writing score is a good measure of a student's cognitive ability, and the instruments don't have a covariance with the error term of the second-stage model. The results may vary if other forms of assessment like arithmetic or extra-curricular activities are considered.

The results indicate a significant private-government school gap, which varies with context. A significant determinant of this gap is the supply of private schools, which in turn would depend upon the infrastructure of the village that would influence the establishment of these private schools in the village. The analysis of the spillover impact of incentive mechanisms shows that these incentives need to be strengthened to improve the quality of learning, as that is what matters more – mere enrollment in a

government school due to incentives is not sufficient for learning.

A key strength of this paper's methodology is its replicability. One of the next steps could be to analyze a regression discontinuity design (RDD) analysis to identify respective income thresholds for each of the compliers and also relating them with inter-generational effects as well as dropout cases. This is expected to yield insightful results which contribute to the growing debate on the privatization of the schooling system in India and marginalization of government school students as well as those belonging to the Scheduled Caste (SC), Scheduled Tribe (ST), and Other Backward Classes (OBC) categories. An important policy-related area of research could be around the percolation of benefits accorded to the socially and economically backward sections – do these benefits only help the “creamy layer” within these sections? Last but not least, pertinent research could also identify the issues plaguing the government schools and their corrective mechanisms.

7. Conclusion

This paper analyzes an important aspect of the education system in rural India. Students who attend private schools might be systematically different from those who attend government schools on observable as well as unobservable ways. Therefore, it is important to address this endogeneity. Unfortunately, the majority of the extant studies don't correct for the endogeneity issue. Thus, this analysis contributes empirically to the literature.

As the findings indicate, there is a significant difference in the learning outcomes of private and government school students even after controlling for selection bias. This is critical to understand because selecting the school type would have a long-term impact on the earnings of an individual, which when aggregated at the state or national level would impact the overall growth and development of the nation. Therefore, this inquiry into the relative effectiveness of diverse types of schools is of considerable importance from a policy perspective to ensure parity and quality in imparting effective education to all.

8. References

[1] S. Mehrotra and R. Srivastava, “Elementary Schools in India: Producing Human Capital to Unleash Human Capabilities and Economic Growth?” in *Universalizing Elementary Education in India: Uncaging the Tiger Economy*, Oxford University Press, 2005.

[2] P. K. Jha, Ed., *Public Provisioning for Elementary Education in India*. New Delhi, India; Thousand Oaks, Calif: SAGE Publications, 2008.

[3] C. Colclough, “The impact of primary schooling on economic development: a review of the evidence,” *World*

Development, vol. 10, no. 3, pp. 167–185, Mar. 1982, doi: 10.1016/0305-750X(82)90008-0.

[4] S. Bhattacharya, A. Dasgupta, K. Mandal, and A. Mukherjee, “Understanding the ‘Sorting Hat’: The role of family and caste network in school choice decision,” *The Education Support Program*, p. 36, 2015.

[5] S. Dercon and P. Krishnan, “Poverty and the psychosocial competencies of children: evidence from the young lives sample in four developing countries,” *Children Youth and Environments*, vol. 19, no. 2, pp. 138–163, 2009.

[6] R. C. Mishra, “Research on education in India,” *Prospects*, vol. 29, no. 3, pp. 335–347, 1999.

[7] D. B. Rosenthal, “Educational Politics and Public Policymaking in Maharashtra, India,” *Comparative Education Review*, vol. 18, no. 1, pp. 79–95, 1974.

[8] A. Chudgar and E. Quin, “Relationship between private schooling and achievement: Results from rural and urban India,” *Economics of Education Review*, vol. 31, no. 4, pp. 376–390, Aug. 2012, doi:10.1016/j.econedurev.2011.12.003.

[9] K. Muralidharan and V. Sundararaman, “The Aggregate Effect of School Choice: Evidence from a Two-Stage Experiment in India,” *The Quarterly Journal of Economics*, vol. 130, no. 3, pp. 1011–1066, 2015, doi: 10.1093/qje/qjv013.

[10] A. Singh, “Private school effects in urban and rural India: Panel estimates at primary and secondary school ages,” *Journal of Development Economics*, vol. 113, pp. 16–32, 2015, doi: 10.1016/j.jdeveco.2014.10.004.

[11] A. H. M. Huisman, U. Rani, and J. Smits, “School characteristics, socio-economic status and culture as determinants of primary school enrolment in India,” 2010.

[12] J. Gouda, K. Chandra Das, S. Goli, and L. Maikho Apollo Pou, “Government versus private primary schools in India: An assessment of physical infrastructure, schooling costs and performance,” *International Journal of Sociology and Social Policy*, vol. 33, no. 11/12, pp. 708–724, Oct. 2013, doi: 10.1108/IJSSP-12-2012-0105.

[13] K. Muralidharan, “Public-Private Partnerships for Quality Education in India,” *Seminar*, no. 565, 2006.

[14] S. Pal, “Public infrastructure, location of private schools and primary school attainment in an emerging economy,” *Economics of Education Review*, vol. 29, no. 5, pp. 783–794, Oct. 2010, doi: 10.1016/j.econedurev.2010.02.002.

[15] A. Chudgar, “Variation in Private School Performance: The Importance of Village Context,” *Economic and Political Weekly*, vol. XLVII, no. 11, 2012.

[16] E. Hill, M. Samson, and S. Dasgupta, “Expanding the school market in India: Parental choice and the reproduction of social inequality,” *Economic and political weekly*, pp. 98–105, 2011.

[17] G. G. Kingdon, “The private schooling phenomenon in India: A review,” *The Journal of Development Studies*, pp. 1–23, 2020.

- [18] A. Choudhury, "Revisiting dropouts: Old issues, fresh perspectives," *Economic and Political Weekly*, pp. 5257–5263, 2006.
- [19] R. Wazir, "Getting children out of work and into school: MV Foundation," in *Getting children out of work and into school: MV Foundation*, vol. 1, New Delhi: UNDP, 2002.
- [20] V. K. Borooah and S. Iyer, "Vidya, Veda, and Varna: The influence of religion and caste on education in rural India," *Journal of Development Studies*, vol. 41, no. 8, pp. 1369–1404, Nov. 2005, doi: 10.1080/00220380500186960.
- [21] J. Dreze and G. G. Kingdon, "School Participation in Rural India," *Review of Development Economics*, vol. 5, no. 1, pp. 1–24, Feb. 2001, doi: 10.1111/1467-9361.00103.
- [22] S. Desai and V. Kulkarni, "Changing Educational Inequalities in India in the Context of Affirmative Action," *Demography*, vol. 45, no. 2, pp. 245–270, 2008, doi: 10.1353/dem.0.0001.
- [23] M. Azam and G. G. Kingdon, "Are Girls the Fairer Sex in India? Revisiting Intra-Household Allocation of Education Expenditure," *World Development*, vol. 42, pp. 143–164, 2013, doi: 10.1016/j.worlddev.2012.09.003.
- [24] M. Woodhead, M. Frost, and Z. James, "Does growth in private schooling contribute to Education for All? Evidence from a longitudinal, two cohort study in Andhra Pradesh, India," *International Journal of Educational Development*, vol. 33, no. 1, pp. 65–73, Jan. 2013, doi: 10.1016/j.ijedudev.2012.02.005.
- [25] R. Banerji, "Poverty and primary schooling: field studies from Mumbai and Delhi," *Economic and political weekly*, pp. 795–802, 2000.
- [26] A. V. Banerjee, R. Banerji, E. Duflo, R. Glennerster, and S. Khemani, "Pitfalls of participatory programs: Evidence from a randomized evaluation in education in India," *American Economic Journal: Economic Policy*, vol. 2, no. 1, pp. 1–30, 2010.
- [27] V. K. Borooah, *The progress of education in India*. New York, NY: Springer Berlin Heidelberg, 2017.
- [28] P. S. K. Nair, "Does Medium of Instruction Affect Learning Outcomes? - Evidence Using Young Lives Longitudinal Data of Andhra Pradesh, India," *The Education Support Program*, p. 40, 2015.
- [29] S. Goyal and P. Pandey, "How do Government and Private Schools Differ? Findings from two large Indian states," *South Asia Human Development*, World Bank, p. 56, 2009.
- [30] W. Wadhwa, "Are private schools really performing better than government schools?" *Annual Status of Education Report (Rural)*, p. 3, 2009.
- [31] A. Chudgar and B. Creed, "How does demand for private schooling vary across locations with different private school supply? Analysis of data from Rural India," Working paper, Michigan State University, USA, p. 34, 2014.
- [32] S. Desai and R. Vanneman, "India Human Development Survey-II (IHDS-II), 2011-12." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2018, doi: 10.3886/ICPSR36151.v6.
- [33] J. M. Wooldridge, *Introductory Econometrics: A Modern Approach*, 5th ed. Cengage Learning, 2013.
- [34] S. Mehrotra and P. R. Panchamukhi, "Private provision of elementary education in India: findings of a survey in eight states," *Compare: A Journal of Comparative and International Education*, vol. 36, no. 4, pp. 421–442, Dec. 2006, doi: 10.1080/03057920601024883.
- [35] R. French and G. Kingdon, "The relative effectiveness of private and government schools in Rural India: Evidence from ASER data," Institute of Education, London, 2010.