Private coaching and the impact of the rural employment guarantee programme on it: Evidence from West Bengal, India

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Private coaching has gained substantial importance over the last few years in India. This is particularly pronounced in states like West Bengal where about 78 percent of the school going children opt to attend private coaching to secure better grades. However, under extreme financial hardships, it may not be possible for households to send their children for private coaching despite the desire. Using primary survey data from the Cooch Behar district of West Bengal, this paper attempts to explore the impact of participation of households in the rural employment guarantee programme and its extent on the decision to send the children for private coaching and the expenditure incurred on it. Our findings, derived from standard impact evaluation techniques as well qualitative evidence suggest that the programme had a significant impact of both the components. The findings emphasize on effective implementation through increased allocation of funds under the programme.

Keywords: MGNREGA, private coaching, tuition, endogeneity, impact evaluation, West Bengal

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Introduction

The set of Millennium Development Goals, formulated by the United Nations in 2000 envisioned reduction of extreme poverty and other time bound targets including gender equity, health and environment sustainability. One among these targets is set as achieving universal primary education, which states all children including boys and girls should be able to complete a full course of primary education.[1] As such, there has been widespread literature on provisions and access of education in various countries along with the expenditure on it and its effects (Lóapez and Valdés, 2000; McCowan, 2007; Lewin 2009; Drèze and Sen, 2013). One dimension of education that has been of importance is choice and expenditure on private coaching. This is especially relevant in developing countries as it is often argued that schools do not function efficiently in many of these countries and hence children have to depend on private tutors (Dongre and Tewary, 2014; Gangopadhyay and Sarkar 2014).

Dang and Rogers (2008) define private coaching as fee-based tutoring that is given to provide supplementary instruction to students in academic subjects that they study in the mainstream academic system. This system is relatively common in many developed and developing economies. For example, in Mauritius, private coaching is received by most of the senior secondary students. In Malaysia, about 83 percent of the students receive private coaching by the time they reach the senior secondary level in school. About 70 percent of students completing middle level in school in Japan opt for private coaching. The figures are even higher for students in South Korea as 83 percent of the primary level ones, 93 percent of the middle level ones and 88 percent of the high school ones choose to attend private coaching (Bray, 2007; Dang and Rogers, 2008; Kim and Lee, 2010; Bray 2011; Dongre and Tewary, 2014).

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[1] Please refer http://www.unmillenniumproject.org/goals/ (last accessed on Spetmebr 19, 2015)

Literature suggests that household factors which include income, education and area of residence act as important determinants for the demand of private coaching. It is found that children from households with higher income and residing in urban areas have are more likely to attend private coaching (Dang, 2007; Kim and Lee, 2010; Tansel and Bircan, 2006; Dongre and Tewary, 2014). It is also found that students studying in higher grades or appearing for competitive examinations have higher probability to opt for private coaching (Kim and Lee, 2010).

Parents and students themselves believe that private coaching would provide the necessary support to excel in highly competitive examinations and facilitate them to score higher grades in terms of educational outcomes. An academically weak student might not be able to cope with what is being taught in the school and would require personalized attention that private coaching would offer. For example, Baker et al. (2001) finds private coaching is used by low achievers significantly more than the high achievers in most of the countries participating in the Third International Mathematics and Science Studies (TIMSS). It is also believed that government schools, particularly in developing countries do not deliver the required quality education (Glewwe & Kremer, 2006; Chaudhury et al.; 2006). In such cases, parents might want their children to attend private schools. However they may not be available or may be too unaffordable. In such instances, parents might feel the need to supplement the school education with personal private coaching (Dang and Rogers, 2008; Banerjee and Wadhwa, 2013). Studies have also found that teachers in schools often shirk their responsibilities in school to increase the demand for private coaching and act as an additional source of income for them (Biswal, 1999; Glewee and Jayachandran, 2006).

This paper seeks to explore both, quantitatively and qualitatively the impact of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which is a public works programme implemented in rural India from 2005 on educational expenditures on private coaching in parts of West Bengal. Using primary survey data for 556 households, the paper aims to assess the impact of participation under the programme on the decision to send the children for private coaching and the expenditure incurred on it. More particularly, we attempt to examine if participation and extent of participation indicated by the number of days of work under MGNREGA and the earnings from it have an impact on the the decision to send the children for private coaching and the expenditure incurred on it. Using standard impact evaluation techniques, we find a significant and positive impact. The findings seem to be robust as we find similar results across all the possible permutation and combination of models and specifications. The qualitative results also corroborate with these estimates.

The structure of the paper is as follows. Section 2 gives a brief introduction to the programme, MGNREGA. The subsequent section gives an overview of the private coaching scenario in India and West Bengal. Section 4 discusses about the data used and the regression methodology. The section 5 explores the estimates obtained from the regression and contextualises it with qualitative evidences collected from the field. The last section discusses the results of the paper and provides the concluding remarks.

2. Features of MGNREGA

The MGNREGA was passed by the Indian Parliament on 23rd August 2005.[2] The Gazette of India defined it as "(a)n Act to provide for the enhancement of livelihood security of the

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[2] When the Act was passed, it was known as National Rural Employment Guarantee Act (NREGA). It has been renamed to MGNREGA in 2009.

households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto" (Government of India, 2005). Initially, it was implemented in 200 districts of the country. In April 1, 2007, it was extended to additional 130 districts. Since September 28, 2007, the programme covers all the rural parts of the country.

According to the salient features of the Act, all adult members of the rural household, willing to work under the programme have to register at the Gram Panchayat (GP).[3] Once the place of residence and age of the individuals is verified, a job card for every household is issued, which is mandatory for work to be provided. After the receipt of the job card, a written application has to be made to the GP or block office stating the time and duration of work. The work has to be provided within fifteen days of this application, failing which an unemployment allowance from the state has to be paid. State-wise wages are notified by the Government of India and have to be paid through banks/post offices on a weekly basis. Wages for men and women have been kept equal.

The works that are provided should also follow stipulated guidelines. It has to be within five kilometres radius of the village. If it is more than five kilometres, ten per cent extra wage has to be paid to meet the transportation and other costs. The Act also mandates at least one-third representation of women among the beneficiaries. The nature and choice of works are supposed to be decided mostly in open assemblies of the Gram Sabha (GS) and ratified by the GP.[4] To ensure higher benefits for the workers, use of contractors or machinery is prohibited under the

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[3] A GP is the primary unit of the three tier structure of the local self-government in rural India. It may consist of one or more than one village.
[4] A GS is the body of all individuals entered as electors in the electoral roll of the GP.

Act. Further, the operational guidelines say that the wage expenditure to material expenditure ratio should be 60:40. The worksites should have basic facilities like crèche, drinking water and shade. In terms of cost sharing, the Government of India bears 100 per cent wage cost of manual labour and 75 per cent cost of the material expenditure.[5]

There exist considerable literature studying the welfare impacts of MGNREGA. Deininger and Liu (2013) find that significant increase in protein and energy intake among participants of the programme in Andhra Pradesh. A number of studies have found that the programme has been influential in reducing poverty and enhancing welfare (Imbert & Papp, 2014; Klonner and Oldiges 2014). Several scholarships have also reported increase in wages, bargaining power and empowerment for women with the inception of MGNREGA (Dev, 2011; Khera & Nayak, 2009). Das (2015a) shows significant reduction in short-term migration due to implementation of MGNREGA. In terms of education, Afridi et al. (2012) documents the positive impact of female participation under the programme on educational outcomes of the children. However, none of the studies to our knowledge examines the impact of MGNREGA on the decision to send the children for private coaching and the expenditure incurred on it. This paper attempts to assess this impact.

Private Coaching in India and West Bengal

The latest report by the Ministry of Statistics and Programme Implementation on a household survey conducted by the National Sample Survey Organization (NSSO) in January to June 2014 confirms "Taking private coaching classes individually or in a group, at home or at any other place, by a single or more tutors for different reasons has become a present day issue"

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[5] For more detailed information on the 100-days programme, refer Dey *et al.* (2006)

(Government of India, 2015: pg. 19). It finds that about 25 percent of the students in India depend on private coaching. At primary level, 23 percent of the male students and 20 percent of the female students opt for private coaching. However at higher levels of education, this increases to 38 percent and 35 percent for male and female students respectively. In this light, a recent study by Azam (2015) finds that the demand for private coaching in India is relatively inelastic at each levels of schooling which implies that private coaching is a necessary good in the household consumption basket.

Interestingly, the number of students attending private coaching is among the highest in India. In terms of percentages, West Bengal comes just after Tripura with about 78 percent of the students depending on private coaching. At primary level, more than 71 percent of male students and 62 percent of the female students are sent for private coaching respectively. However, at the secondary and higher levels of education, about 90 percent of the students opt for private coaching. Interestingly, the proportion of female students sent for private coaching in West Bengal is higher for this level of education than that for the male students.

The NSSO report in 1998 also gives similar findings. It is found that 45 percent of the total educational expenditure for children under the age 5 to 24 years for an average household is spent on private coaching in West Bengal as against only 10 percent in all-India (Gangopadhyay and Sarkar, 2014). All these facts indicate the predominance of private tuition in West Bengal when compared to other states of the country. This implies that parents in West Bengal put considerable importance to private coaching and may perceive it as a way for their children to excel in terms of educational qualification. Our own survey, the details of which are presented in the next section shows that more than 53 percent of the sampled households reported that the

money received through participation in MGNREGA has been spent on private coaching for their children among other things like food and clothing.

Data and Variables

The data used in this field survey has been collected from a primary field survey, conducted in the Cooch Behar district of West Bengal from January to April, 2012 in two of its blocks-Haldibari and Cooch-Behar-I. Cooch Behar district is situated in the north-eastern part of West Bengal and is bounded by the state of Assam in the eastern part and Bangladesh in the southern part. In terms of person-days generated by the programme in 2010-11, Cooch Behar-I was among the best performing block in the district along with Mathabhanga-II and Tufanganj-II blocks. Haldibari block, on the other hand was among the worst performing block with average person-days of less than 8.5 days (Figure 1).

From each of these two blocks, two GPs were chosen randomly. From the Haldibari block, Dakhin Bara Haldibari GP and Devanganj GP were chosen and from Cooch Behar-I block, Dawaguri GP and Falimari GP were selected. The GPs chosen from Haldibari block are ruled by the Left-front parties and those in the Cooch Behar-I block are ruled by the Trinamool Congress. The approximate locations of these four GPs are shown in Figure 2. From these four GPs, 556 households have been interviewed.

The household questionnaire that was posed to 556 households consisted of a number of questions including information on the socio-economic and demographic characteristics of the household and its members including their age, education, main occupation and marital status. It gathers information on the caste, religion, possession of Below Poverty Line (BPL) cards, issued by the government along with amount of land cultivated and housing conditions. The survey also

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asked questions on MGNREGA including possession of the job card and participation in the programme in the years 2010 and 2011. The information on the number of days of work in the years, 2011 and 2010 and the wages received under the programme were collected through the household job cards and then validated from the MGNREGA website. It also collects information on awareness level of the basic entitlements of the programme.

Further we collect data on educational expenditure of all the members of the household, who go to educational institutes for studying. Besides the expenditure for school fees and stationeries, the monthly expenditure on private coaching for each of these members have been asked. Apart from this, the survey incorporated questions on the daily local earnings of the main-earner of the household as well as information on whether the head of the household participates in political meetings, rallies and campaigns. The survey was conducted after taking the verbal consent of the respondents. After the survey was over, qualitative questions on perception about MGNREGA, its usefulness, implementation deficiencies and its impact were asked. A small group discussion was also conducted after the completion of the main survey in a random village consisting of eight to twelve individuals (of both genders) from each of the four GPs. Open ended questions were administered regarding implementation of the programme along with a discussion on its impact in the village.

Outcome Measure: whether the child attends private coaching and expenditure on it

The unit of analysis of the paper is children between 6 to 18 years of age, who are studying in a school. We consider this age group as children in rural West Bengal typically starts going to school from the age of six years and passes out the higher secondary education by the age of eighteen years.

Since the main objective is to evaluate the impact of participation MGNREGA on private coaching, we take two variables related to private coaching: whether a child is sent for private tuition and logarithmic value of the expenditure on private coaching. The first variable is a dichotomous variable which is given the value of '1' if the child is sent for at least one private tutor and a value of '0' otherwise. The second variable takes the logarithmic value of the total monthly expenditure incurred for the child on private coaching.

Main variable of analysis and other independent variables

The main variable of analysis in the paper revolves around participation of the household in MGNREGA and its extent. Accordingly we take three variables with regards to this: participation in the programme in 2011, logarithmic value of the total number of days of work by the household in 2011 and the logarithmic value of the annual income earned by the household from the programme in 2011. The first variable is a dichotomous variable which is given the value of '1' if any member from the corresponding household of the child has participated in MGNREGA in 2011 and '0' otherwise. The second and third variable, which captures the extent of participation, totals the number of days of work and annual income earned by the household and takes its logarithmic value.

To control for the confounding factors that may affect the decision of sending the children for private coaching and expenditure incurred on it, we have incorporated a number of other independent variables (controls) in the regression exercise. To categorise the households by social group and religion, we use dummies for caste and Muslim households. The categorical variable for caste is coded into three categories-"Scheduled Caste/Scheduled Tribes" (SC/ST), "Other Backward Castes" (OBC), and "Upper Castes" (UC; taken as reference) which represents

meaningfully the Indian social dynamics along caste lines.[6] Since Islam forms the other major religion of the survey area apart from Hinduism, dummies are incorporated for Muslim households with Hindus as the reference group.[7]

A number of variables are used to capture the economic condition of the household. Area of land cultivated and number of livestock are included because they are among the best indicators of wealth status in rural areas. House types are categorised as "non-cemented", "semi-cemented" and "fully cemented" and are used as separate dummies to assess the economic condition of the household. A dummy like "whether the household possess Below Poverty Line (BPL) card" is also incorporated. Further, the main occupation of the household is added to capture its financial health. Demographic variables like age of the household head and his/her education, the gender and the ratio of working age female individuals in the household to the household size are used as well. Child level factors like his/her age, the square of the age and the gender are incorporated in the model. The square of the child's age is taken to accommodate for non-linear association of attending private coaching and the expenditure on it with the age. To control for the GP level invariant factors, GP fixed effects dummies are included in the models. To control for the village (sub-GP level hamlets or group of hamlets) level heterogeneities, standard errors are clustered at village level in the regressions.

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[6] It may be noted that the SCs and STs along with the OBCs have suffered from severe social exclusion and discrimination from historical times and lag behind the upper castes in the different indicators of welfare. (Deshpande, 2011).

[7] Hindu is the majority religious group in the Indian population and is taken as the reference category. Muslim is the largest group among the religious minorities.

4. Estimation Methodology

To develop a model to estimate the Average Treatment Effect (ATE) of participation in MGNREGA on the decision to send the children for private coaching, a simple probit regression of the latter on the former can yield unbiased estimates, after controlling for all the other underlying factors. The measure of impact can be determined by the regression coefficient for the variable, participation under MGNREGA. However, the estimates would be unbiased if the process of participation is random and exogenous to the decision of sending the children to private coaching or if it can be conditioned solely on the observable characteristics that are included in the regression as control variables. This is a strong assumption to make under many circumstances. It is highly likely that there are unobservable variables which may be instrumental in affecting both, participation in MGNREGA as well as private coaching decisions for the children. For example, a very enthusiastic or motivated household may choose to participate in the programme as well as send the children for private coaching. Since we are unable to measure the variables that can indicate the levels of enthusiasm or motivation, we would not be able control for these unobservable factors. This would lead to the classic case of the omitted variable bias or the endogeneity problem (Angrist & Pischke 2009; Greene 2008). To get unbiased estimates which would control for this endogeneity, instrument variable regression and bivariate probit regression is used.[8]

More formally, to measure the impact of participation under MGNREGA on whether the child is sent to private coaching, we assume the following function:

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[8] Please refer to Khandekar, Koolwal and Samad (2010) for an excellent overview of most of the methodologies available.

$$Y_i = \alpha + \beta X_i + \gamma D_i + \varepsilon_i \tag{1}$$

where Y_i is the binary variable that indicates if the child is sent to private coaching. X_i is the vector of control variables, as discussed earlier and D_i is the primary variable of interest, indicating if the household participated in MGNREGA in the year, 2011. This is a dichotomous and endogenous variable as discussed earlier.

However, there are no available regression methodologies, which can model binary or count variable with endogenous binary variable (Angrist, Victor & Analia, 2010; Mont & Nguyen, 2013; Das 2015a). Thus we give a linear structure to the endogenous variable and make use of linear instrumental variable regression to estimate the model. The "*ivprobit*" command in STATA 12 version gives the required estimates. If equation (1) represents the second stage model with D_i as the endogenous variable, then the first stage equation is as follows:

$$D_i = \delta + \phi C_i + \eta Z_i + v_i \tag{2}$$

where C_i is a vector of exogenous variables which affect participation in MGNREGA by household, i and Z_i is the vector of instruments, which are highly correlated with the participation in the programme but uncorrelated with the error term, ε_i. If participation decision is exogenous, D_i should be uncorrelated with the unobservable error term, ε_i. However, if $Cov(D_i, \varepsilon_i) = \rho \neq 0$ due to unobservable variables as already discussed, participation under MGNREGA is endogenous.

Bivariate probit simultaneous equation estimation is also used as an alternative methodology, which estimates the probability of household participation in MGNREGA and

then estimates this equation jointly with the model to estimate the probability of a student being sent for private coaching.[9] Bivariate probit model estimates ρ and hence allows testing for endogeneity of the participation variable to the outcome variable. If $\rho = 0$ then we cannot reject the null hypothesis of exogeneity and simple probit estimation would gauge the impact without any bias. However, if $\rho \neq 0$, then there is endogeneity in the system and bivariate probit estimation provide consistent estimates of the actual impact.

To find the impact of participation under MGNREGA on the expenditure on private coaching incurred on the children, we use simple Ordinary Least Squares (OLS). To control for the possible endogeneity as discussed earlier, we also use the Treatment Effects model, which estimates the average causal effect of a dichotomous variable (here, participation in MGNREGA) on an outcome variable (here, the expenditure on private coaching for the children) by using a two-step consistent estimator or full maximum likelihood estimator (Ashenfelter, 1978).

We also assess the impact of extent of participation in MGNREGA indicated by the number of days of work and annual income earned by the household from the programme in 2011. Assuming the number of days and annual earnings to be exogenous to the decision of opting for private coaching for children and expenditure on it, we can simply run a probit and Ordinary Least Squares (OLS) regression respectively, treating the number of days of work and income to be continuous. However dropping this assumption for reasons already discussed, we run a tobit regression on the number of days of work and annual earnings. This is because

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[9] Bivariate probit for impact evaluation has been used by Evans and Schwab (1995), Chen et. al. (2005) and Das (2015)

number of days and earnings is censored at the lower level of 0 as we do not observe these variables for households, which did not work under the programme. We then use the estimates to run probit and OLS regressions to determine if the extent of participation has any impact on the decision to send the children for private coaching the expenditure incurred on it. To test for endogeneity of the regressors, we include the residuals obtained from tobit regressions along with the actual number of days and annual earnings in the second stage probit and OLS regression. If the coefficients of the residuals are found to be statistically significant at 1 percent or 5 percent level, the variable should be treated as endogenous (Ravallion & Wodon, 2000). It should be noted that in these regressions, the dependent variables are log (number of days of work + 1) and log (annual earnings + 1). 1 is added to the actual value to make sure that the dependent variable is assigned the value 0 for households that have not worked in MGNREGA. It can be assumed that adding 1 to the actual days of work and earnings and then taking the logarithmic value as the dependent variables would not change the estimates substantially and the broad results would remain same.

Results

Descriptive Statistics

Table 1 lists the variables used in the regression and then presents basic mean/proportion statistics for these variables for the children from the sampled household and then for those children, who (i) did not attend private coaching and (ii) attended private coaching. We find that out of 601 children in the age group 6-18 years, 387 children opted for private coaching suggesting that over 64 percent of the children attends private coaching. The average monthly expenditure on tuition for each child is just over Rs. 194.

It is found that among the sample of children, who attended private coaching, about 50 percent of households participated in MGNREGA in 2011. However for children who did not opt for private tuition, less than 48 percent worked under the programme. Though this implies that participation under MGNREGA might have an impact on the children being sent for private coaching, the difference is not statistically significant. However, for those, who attended private coaching, the average number of days of work under the programme for the corresponding households is just below 19 days in 2011. However for those who did not opt for tuitions, the average is 13.3 days. The difference between these two groups is about 5.5 days and is also statistically significant at 5 percent level. The difference in annual income between these two groups comes out to be more than Rs. 812, however this is found to be significant not at 5 percent level but at 10 percent.

The descriptive statistics by and large says that there might be some impact of the programme for households to send their children to private tuitions. Yet, nothing concrete can be said as the results are not robust and opting for private coaching depends on various factors other than participation in MGNREGA. Hence, we choose to perform regression analysis using standard impact evaluation techniques.

In terms of other statistics, mean age of the children attending private coaching is significantly higher than those not attending. Hindu children tend to opt for tuitions more often than not when compared to Muslims. Children from households whose main occupation is agricultural labour do not go for private coaching as often as the others. This is expected because agricultural labourer households are generally poorer and may not be able to afford the cost of private coaching. For similar reasons, we find children with non-cemented houses and less cultivated land tend to opt lesser for private tuitions.

[Table 1 here]

Regression results

The first set of regressions that have been used is to assess the impact of household participation in MGNREGA in 2011 on the decision to send the children in the household for private coaching. As discussed, we use probit regression along with bivariate probit and probit model with endogenous regressors. As required in these models, at least one identifying variable that affects the dependent variable in the first equation should not affect the dependent variable in the second equation. The idea is to have a variable, (Z in equation 2) that is theoretically and conceptually related to participation in MGNREGA but not related to the decision of sending the children to private tutor. The proposed identifying variables that have been used are (i) a dummy to indicate if the household supports the ruling political party and (i) a dummy of whether the household head attends political meetings and rallies.

Regarding the first proposed instrument, to affirm the political affiliation, we asked some indirect questions like – (i) "do you support the policies proposed by the new party that has come to power in the state?"; (ii) "do you appreciate the rule of the political party that had been in power for the last 34 years?"; and (iii) "do you have faith in the stronger political leaders (names of the leaders) of the older and the new party". The political affiliation of the respondent was generally revealed after detailed discussions through these questions. Yet, 16 out of the 556 households surveyed did not reveal any strong preference for the opposition or the ruling party. So when this instrument is made use in the regression children from these 16 households would get dropped from the analysis. To validate the distribution of political affiliation in our sample, we use data from the 2013 rural panchayat elections in West Bengal, the result of which came

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out on July 29, 2013. In our sample, it is only in the Devanganj GP that we found the proportion of households, which support the opposition party, is higher than those affiliated with the ruling party. In all the other GPs, proportion of households supporting the ruling political party is higher. The election results also show that the opposition party won in the Devanganj GP but in all the other GPs, the ruling party were the winners. This finding lends support to the data used for the household political affiliation as an instrument in the study.

All the two proposed variables are likely to be correlated with participation under the programme but are most unlikely to be associated with the decision to attend private coaching and expenditure on it. Qualitative evidence from the field suggest that participation of household head in political meetings and rallies develops a political network within the village and hence can majorly determine whether the household would get work under the programme. Because of non-attendance in political meetings due to daily work, many households reported not receiving work from the local authorities. However, political network is highly unlikely to influence the migration decision especially the younger individuals, who are more likely to migrate.

Political affiliation also has substantial role to play in allocation of benefits to households. Studies and qualitative evidence from the field survey suggest that households supporting the ruling political party not only have higher probability of receiving work but they also receive more benefits from MGNREGA (Maiorano, 2014; Das, 2015b; Das and Maiorano, 2015). Probit and OLS regression to estimate the probability of a child attending private coaching and the expenditure on it respectively on these two identifying variables with and without the other controls show that the variables are not instrumental in determining the decision of a household to send their children to private tutors. The estimates are shown in table 2. We also run regressions to find if participation in MGNREGA and the number of days of work

and the annual income from the programme is correlated with political affiliation and attendance of household head in political meetings and rallies. Probit regression when the dependent variable is dichotomous (participation in MGNREGA in 2011) is used and OLS regression when the dependent variable is continuous (log of number of days of work and annual earnings from MGNREGA in 2011) is applied. Table 3 presents the results of the regressions used. Across all these three models, the two instruments are found to be significantly and positively associated with all the three variables related to MGNREGA (at 1 percent level of significance). This implies that households, supporting the local ruling political party along with those whose heads attend political meetings and rallies are more likely to participate in MGNREGA and work for more days and earn more in comparison to others.

As far as other control variables are concerned, SC/ST households are found to get more benefits out of MGNREGA in 2011 compared to the general households in terms of participation in MGNREGA and the extent of participation. Muslim households also are found to be significantly associated with these benefits relative to the Hindu households. Further, households with the main occupation as agricultural and non-agricultural labourer and self-employment are more likely to receive work under MGNREGA but the association is not as strong when it comes to extent of participation indicated by the number of days of work and earnings.

[Table 2 here]

[Table 3 here]

We also perform the tests for underidentification and overidentification of the endogenous regressors and to find if the instruments are valid or not. This is done regressing both the indicators of private coaching: attendance in coaching and the expenditure on it

separately on participation under MGNREGA in 2011, the number of days of work and annual earnings from it along with other controls as listed in table 1. We use the *ivreg2* command in the software package, STATA for this purpose. Table 4, 5 and 6 presents the results from these tests for the three indicators of MGNREGA participation. The Angrist-Pischke first stage chi-squared test is performed under the null hypothesis that the endogenous regressor is unidentified. We found a P-value of zero for all the three cases. This confirms that we can reject the null at 1 percent level indicating that the regressor is identified. The LM test for under-identification is also performed and we found that the regressor is not underidentified (P-value=0) for all the three cases. We then perform the Cragg-Donald weak identification test of the instruments and found that the instruments are strong. Weak identification may arise when there is a weak correlation between the endogenous regressors and the chosen instruments. In that case, estimators may not be robust to the instrument-variable regressions. The Cragg-Donald Wald F statistic for all the models are found to give a value, which is higher than the Stock-Yogo weak ID test critical values.[10] The Sargan-Hansen statistics for these models also show a p value more than 0.05 suggesting that the null hypothesis that the instruments are valid cannot be rejected. Hence, we can say that the instruments are not over-identified.[11] These tests indicate that the instruments chosen are identified, strong and valid for all the models. However, in all the three cases, the P-value of the endogeneity test, whose null hypothesis is that the specified endogenous regressor is exogenous, is higher than 0.05, which suggest that we cannot reject the null. Hence, it is concluded that the variables, participation under MGNREGA in 2011, the number of days of

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[10] Please refer Staiger, Douglas and Stock (1997) for details.

[11] These tests are done using the ivreg2 command in STATA, which assumes a linear structure to the endogenous variable as well as the outcome variable.

work and the annual earnings can be treated as exogenous while estimating the decision to send the children of the household for private coaching and the expenditure on it.

[Table 4 here]

[Table 5 here]

[Table 6 here]

Table 7 shows the regression results to gauge the impact of participation under MGNREGA in 2011 on the decision to send the children for private coaching. Assuming exogeneity of participation under the programme, we run a probit regression. To control for the possible endogeneity, as discussed we use the bivariate probit regression and probit regression with endogenous regressor (*ivprobit* command in STATA). Interestingly as shown in table 4, the bivariate probit regression and probit regression with endogenous regressor results show that the Wald test with the null hypothesis of the ρ value (which determines the covariance of the error terms of the two equations) to be zero cannot be rejected. Hence, treating participation under MGNREGA as exogenous, we focus on the probit regression results. It is found that participation in the programme significantly increases the likelihood of the children from the households to go for private coaching indicating that the programme had an independent impact, controlling for other observable and unobservable factors. In terms of other controls, children from the Muslim households and those with BPL cards are less likely to attend private tuition probably implying that the financial implications for private coaching may be too tough for these households to afford. Interestingly, age of the household head has a negative and significant association with attendance in private coaching for the children.

[Table 7 here]

We now try to assess the impact of participation under the MGNREGA on the expenditure on private coaching incurred by the households on their child. For this purpose, assuming exogeneity of the independent variable, we run OLS regression. Dropping the assumption of exogeneity, we apply the treatment effects model (*treatreg* command in STATA). Again, as found in table 4, the Wald test gives a P-value of more than 0.8 suggesting that the regressor is exogenous. Hence, concentrating on the OLS estimates, we find that participation in the programme has an independent positive and significant impact on the expenditure on private tuition for the children, controlling for other factors. As found in table 7, children from Muslim and BPL card holding households spent less on private coaching and so does households with non-cemented houses. Age of the household head is found to have a negative and significant correlation with expenditure on private coaching for the children.

[Table 8 here]

In the next set of regression, we estimate the impact of the extent of participation under MGNREGA indicated by the number of day of work and annual earnings from the programme in 2011 on the decision to send the children of the household for private coaching. Qualitative evidence from the Dawaguri GP of the Cooch Behar-I block where implementation of the programme has been relatively better when compared to the other three GPs, suggest that the participants of the programme have used the money received on various avenues. Interviews with many households reveal that apart from food and clothing, they have used the earnings in funding for educational cost of their children which majorly includes private tuition. They also reported that if MGNREGA had not been implemented in the village, they would have no option but to not send their children to tutors. They even said that at times, they would have also thought not sending them to school and making them work as child labour.

Since number of days of work and earnings is a censored variable, we run a tobit regression on the number of days and annual earnings from MGNREGA and then use the estimates to run probit regressions to find their impact on the decision to send the children for private coaching. The results from the regressions are presented in table 9 and 10. The tobit estimates for the number of days of work under the programme by households and the earnings from it are given in the first column of both the tables respectively. Since number of days is a count variable, the dependent variable in this case is log (Number of days of work+1). This ensures that when the household did not work, the dependent variable remains 0. For annual earnings too, to avoid the same problem, we use log(annual earnings+1).

[Table 9 here]

[Table 10 here]

The households from lower caste (SC/ST and OBC) and Muslims are found to work for more days in MGNREGA in 2011 and earn significantly more from the programme. Households having the major source of earnings from occupations other than regular wage work significantly more and hence earn more from the programme. As expected, richer households in terms of cultivated land work significantly lesser in MGNREGA (at 1 percent level). As far as the instruments are concerned, households supporting the local ruling political party and those, who heads attend political meetings and rallies are significantly associated with higher number of days of work and more income from the programme than others (again at 1 percent level).

To find the impact of the extent of participation in MGNREGA on the decision of the household to send their children to private coaching, we use the log of number of days of work and annual earnings as an explanatory variable in the probit regression along with the residuals

obtained from the tobit model above. The results are presented in the second column of table 9 and table 10. If extent of participation in MGNREGA is endogenous to the decision to send the children for private coaching, the residuals should be significantly associated with it. However, the coefficient of the residual comes out to be indistinguishable from zero in both the models indicating that there is no endogeneity problem and simple probit regression would be sufficient to gauge the impact. Estimates from the probit regression without residuals are also presented in both the tables.

We find that extent of MGNEGA participation by the household have a significant impact on the decision to send their children for private coaching. The children from households, who have worked for higher number of days in the programme and have earned more, are significantly likely to opt for private tutors (at 5 percent level), controlling for other observable and unobservable factors. It should be noted that in the specification that uses the residuals as independent variable, number of days of work and earnings continue to show a significant and positive impact. In terms of other controls, as one would expect, children from households holding BPL cards are less likely to attend private coaching. Age of the household head continues to have a negative and significant association with the probability of the children to opt for private tutors.

Further, we now evaluate the impact of the extent of participation in MGNREGA indicated through the days of work and earnings on the expenditure incurred on private coaching on the children. We use the estimates of the residuals as obtained from the tobit regressions used for table 9 and 10 in the OLS regression of the expenditure on private coaching as an independent variable. Table 11 gives the estimates of the regressions on the log of number of days of work and annual earnings with and without residuals. The coefficient of the residuals in

both the cases comes out to be indistinguishable from zero indicating that the regressors can be exogenously treated. In the regression without residuals as an independent variable, extent of household MGNREGA participation in terms of days of work and earnings have a significant and positive impact on expenditure on private coaching for their children. Notably, this result is persistent even when we keep the estimates of the residuals as an independent variable.

[Table 11 here]

To complement these findings, we use local polynomial smoothing regression to estimate the expenditure on private coaching for the children over the distribution of the log of number of days of work and annual earnings from MGNREGA in 2011.[12] The estimates are plotted and presented in Figure 1 and 2. It is found that there is a definite positive trend of both the plots indicating that households working and earning more under MGNREGA tend to spend more on private tuition for their children.

[Figure 1 about here]

[Figure 2 about here]

In all the possible permutations and combinations, we find implementation of MGNREGA in the village have a significant and positive effect on the households to send their children for private coaching and also incur a considerable cost on the same. The qualitative evidence from the field survey also indicate the same. When asked about the perception of the villagers about MGNREGA, they reported that the programme certainly improved their lives in terms of more earning opportunities locally which in turn reduced the likelihood to migrate outside for work and increased income. Apart from diversified non-vegetarian food items and

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[12] For more on the methodology, refer Fan and Gijbels (1996).

clothes, they said that the money received from the programme have been used for educational purpose of the children including private coaching. For example, Mr. XYZ (name changed for anonymity), an agricultural labourer from the Dawaguri GP has three children, one male child of 10 years and two daughters of 12 and 15 years. Three years earlier, when MGNREGA was not implemented in the village, he was not able to send the son and the younger daughter for tuitions though he felt the need for it. Now that he has worked for over seventy days in 2011 as well as 2010, he is able to send all his three children for coaching. However in the GPs of Haldibari block, where MGNREGA has not been implemented well, things are not as over-whelming. For example, Mr. ABC (name changed for anonymity), a father of two daughters (9 years and 12 years) working as a farmer in 1.5 acres of land laments that with the income he has, he is unable to spend enough for the education of his daughters. Despite continuously asking for work under MGNREGA, he got six days to work in 2010 and none in 2011. With no proper source of income especially in the lean agricultural season, he is unable to send his daughters for private coaching.

Discussions and Conclusion

Private tuition has gained substantial importance over the last few years in developing countries and India has not been an exception. This is particularly pronounced in states like West Bengal where about 78 percent of the school going children opt to attend private coaching to supplement the education received from school and secure better grades. However, under extreme financial hardships, it may not be possible for households to send their children for private coaching despite the desire. Using primary survey data on 556 households collected from the Cooch Behar district of West Bengal, this paper attempts to explore the impact of participation of households in MGNREGA, a public works programme implemented in India

since 2006 on the decision to send the children for private coaching and the expenditure incurred on it.

Our quantitative results derived from standard impact evaluation econometric methodology suggest that participation of households under MGNREGA has resulted on the children, being more likely to attend private coaching. These households also tend to spend more on private coaching due to participation under the programme. We also find extent of participation captured by number of days of work and earnings to significantly affect the decision of the households to send their children for private coaching. It is also found that when households work more under MGNREGA and earn more from it, the expenditure on private coaching for the children increases significantly. Qualitative evidence from the field survey also corroborate these empirical findings.

Ample number of studies have shown considerable impact of MGNREGA on several welfare indicators, our study being one among them. Yet, glaring problems have engulfed the programme probably making it less attractive (Mukhopadhyay et al., 2015). Rationing of job seekers, delay in wage payments and quality of assets constructed under the MGNREGA have been among the major bottlenecks on implementation of the programme. Hence it becomes important for the policy makers to improve effective implementation of the programme and one way to ensure this is by increasing budgetary allocation for the programme. Over the last few years, the allocation in real terms has been decreasing and this has led to clientelistic disbursal of jobs under MGNREGA (Das and Maiorano, 2015). Given the very positive welfare impact of the programme as reported by an overwhelming majority of the studies, it is important that enough resources is allocated to fix these bottlenecks and improve implementation of the

programme, that has been the key for better human development outcomes among the rural households.

References

Afridi, F., Mukhopadhyay, A., & Sahoo, S. (2012). Female labour force participation and child education in India: the effect of the national rural employment guarantee scheme. Working paper. Oxford: Young Lives.

Angrist, J.D. and Pischke, J.S. (2009). Mostly harmless econometrics: an empiricist's companion. New Jersey: Princeton University Press.

Angrist, J.D., Victor, L. And Analia, S. (2010). Multiple experiments for the causal link between quantity and quality of children. Journal of Labor Economics, 28(4), 773-823.

Ashenfelter, O. 1978. Estimating the effect of training programs on earnings. Review of Economics and Statistics 6, 47–57.

Azam, M. (2015). Private tutoring: evidence from India. IZA DP No. 8770. Bonn: Institute for the Study of Labour.

Baker, David P., Akiba, Motoko, LeTendre, Gerald K., Wiseman, Alexander (2001). "Worldwide Shadow Education: Outside-School Learning, Institutional Quality of Schooling, and Cross-National Mathematics Achievement". Educational Evaluation and Policy Analysis, 23(1), pp 1-17.

Banerji, R., and Wadhwa, Wilma (2013). "Every Child in School and Learning Well in India : Investigating the Implications of School Provision and Supplemental Help." Chap. 5 in India

Infrastructure Report 2012: Private Sector in Education, edited by IDFC FOUNDATION, India: Routeledge, 2013

Biswal, Bagala (1999). "Private Tutoring and Public Corruption: A Cost-effective Education System for Developing Countries". The Developing Economies, 37(2): pp 222-240.

Bray, Mark (2007). "The Shadow Education System: Private Tutoring and Its Implications for Planners". Second edition, UNESCO: International Institute for Education Planning, Paris.

Chaudhury, Nazmul, Hammer, Jeffrey, Kremer, Michael, Muralidharan Karthik, and Rogers, F Halsey (2006). "Missing in Action: Teacher and Health Worker Absence in Developing Countries". Journal of Economic Perspectives, 20(1), pp 91-116.

Chen, Z., Yen, S.T. and Eastwood, D.B. (2005). Effects of food stamp participation on body weight and obesity. American Journal of Agricultural Economics, 87(5), 1167-1173.

Dang, Hai-Anh and F. Halsey Rogers (2008). "How to Interpret the Growing Phenomenon of Private Tutoring: Human Capital Deepening, Inequality Increasing, or waste of resources?". Policy Research Working Paper 4530, Development Research Group, The World Bank, Washington DC.

Dang, Hai-Anh (2007). "The Determinants and Impact of Private Tutoring Classes in Vietnam". Economics of Education Review, 26(6): 684-699.

Das, U. (2015a). Can the Rural Employment Guarantee Scheme Reduce Rural Out-migration: Evidence from West Bengal, India. Journal of Development Studies, 51(6): 621-641

Das, U. (2015b). Does Political Activism and Affiliation Affect Allocation of Benefits in the Rural Employment Guarantee Program: Evidence from West Bengal, India. World Development, 67, 202–217.

Das, U. And Maiorano, D. (2015). Is the MNREGA fund crunch making the programme clientelistic? Ideas for India. September 2. Available at http://www.ideasforindia.in/article.aspx?article_id=1497 (last accessed on September 15, 2015)

Deininger, K and Liu, Y. (2013). Welfare and poverty impacts of India‟s National Rural Employment Guarantee Scheme: Evidence from Andhra Pradesh (Discussion Paper 01289). International Food Policy Research Institute.

Deshpande, A. (2011). The grammar of caste. New Delhi: Oxford University Press.

Dev, S.M. (2011). NREGS and child well being (WP-2011-004). Mumbai: Indira Gandhi Institute of Development Research.

Dey, N., Drèze, J. And Khera, R. (2006). Employment guarantee: a primer. New Delhi: National Book Trust.

Dongre, A and Tewary, V. (2014). Impact of private tutoring on learning levels: Evidence from India. AI working paper series. Accountability Initiative. New Delhi: Centre for Policy Research

Drèze, J and Sen, A. (2013). An uncertain glory: India and its contradictions. Princeton University Press.

Evans, W.N. and Schwab, R.M. (1995). Finishing high school and starting college: do catholic schools make a difference. The Quarterly Journal of Economics, 110(4), 941974

Fan, J. and Gijbels I.(1996). Local polynomial modeling and its applications. Chapman and Hall.

Gangopadhyay, K. and Sarkar, A. (2014). Private investment in education: evidence across caste and religion from West Bengal. Economic and Political Weekly, 49(13): 44-52.

Glewwe, Paul & Jayachandran, Seema (2006). "Incentives to teach Badly? After-school Tutoring in Developing Countries". Mimeo

Glewwe, Paul & Kremer, Michael (2006). "Schools, Teachers, and Education Outcomes in Developing Countries." in Eric Hanushek and Finis Welch. (Eds). Handbook of the Economics of Education, North Holland.

Government of India (2005). The National Rural Employment Guarantee Act, 2005. Gazette of India, New Delhi: Ministry of Law and Justice. Available at http://nrega.nic.in/rajaswa.pdf (accessed on 30th August 2015)

Government of India (2015) Key indicators of social consumption in India-Education, 2014. National Sample Survey Office, New Delhi: Ministry of Statistics and Programme Implementation.

Greene, W.H. (2008). Econometric analysis. Prentice Hall: New Jersey.

Imbert, C. and Papp, J. (2014). Labor market effects of social programs: evidence from India"s employment guarantee. Paper presented in the conference on The MGNREGA in India: taking Stocks and Looking Ahead, Indira Gandhi Institute of Development Research, Mumbai, March 26-28

Khandekar, S., Koolwal, G.B and Samad, H.A. (2010). Handbook on impact evaluation: quantitative methods and practices. (Washington DC: The World Bank).

Khera, R. and Nayak, N. (2009). Women workers and perceptions of National Rural Employment Guarantee Act. Economic and Political Weekly, 64(43), 49-57.

Kim, Sunwoong and Lee, Ju-Ho. (2010). "Private Tutoring and Demand for Education in South Korea." Economic Development and Cultural Change, Vol. 58, No. 2, pp 259-296.

Klonner, S. and Oldiges, C. (2014). Can an employment guarantee alleviate poverty? evidence from India''s National Rural Employment Guarantee Act. Paper presented in the conference on The MGNREGA in India: taking Stocks and Looking Ahead, Indira Gandhi Institute of Development Research, Mumbai, March 26-18.

Lewin, K.M. (2009). Access to education in sub-saharan Africa: patterns, problems and possibilities. Comparative Education, 45(2): 151-174

Lóapez, R and Valdés, A. (2000). Fighting Rural Poverty in Latin America: New Evidence of the Effects of Education, Demographics, and Access to Land, Economic Development and Cultural Change, 49(1): 197-211

Maiorano, D. (2014). The politics of the Mahatma Gandhi National Rural Employment Guarantee Act in Andhra Pradesh. World Development, 58, 95-105.

McCowan (2007). Expansion without equity: An analysis of current policy on access to higher education in Brazil. Higher Education, 53, 579-598

Mont, D. and Nguyen, C. (2013). Does parental disability matter to child education? evidence from Vietnam. World Development, 48, 88-107

Mukhopadhyay, A., Himanshu, & Sharan, M. R. (2015). NREGS in Rajasthan. Economic and Political Weekly. , February 5

Ravallion, M and Wodon, Q. (2000). Does child labour displace schooling? evidence on behavioural responses to an enrollment subsidy. Economic Journal, 110(462), 15875.

Staiger, Douglas., and Stock, J. H. (1997). Instrumental variables regression with weak instruments. Econometrica, 65(3), 557–586.

Tansel, Aysit and Fatma Bircan. (2006). "Demand for Education in Turkey: A Tobit Analysis of Private Tutoring Expenditures." Economics of Education Review, 25(3): 303-313.

Table 1: Descriptive statistics

Variables	Total	No private coaching	Attend private coaching	Difference
Main variables				
Expenditure on private coaching (in Rs.)	125.10		194.25	
Participated in MGNREGA in 2011 (P)	0.491	0.477	0.499	-0.022
Number of days worked in MGNREGA (2011)	16.89	13.26	18.81	-5.55*
Annual income from MGNREGA (2011) (Rs.)	2246.59	1715.17	2527.45	-812.28
Child characteristics				
Age	11.93	11.27	12.30	-1.03*
Age squared	154.86	138.84	163.71	-24.87*
Male child	0.48	0.46	0.48	-0.02
Female child	0.52	0.54	0.52	0.02
Household characteristics				
Caste				
General (P)	0.31	0.41	0.26	0.14*
SC/ST (P)	0.50	0.49	0.51	-0.03
OBC (P)	0.18	0.11	0.22	-0.12*
Religion				
Hindu (P)	0.69	0.59	0.75	-0.16*
Mulsim (P)	0.31	0.41	0.25	0.16*
Main occupation				
Regular wage (P)	0.04	0.05	0.04	0.02

Self-employed in agriculture (P)	0.25	0.19	0.29	-0.10*
Agricultural labour (P)	0.24	0.30	0.21	0.09*
Non-agricultural labour (P)	0.27	0.29	0.27	0.02
Self-employed (P)	0.11	0.12	0.11	0.01
Others (P)	0.08	0.05	0.09	-0.04
Not a BPL card holder (P)	0.33	0.29	0.36	-0.07
BPL card holder (P)	0.67	0.71	0.64	0.07
Housing Conditions				
Fully Cemented (P)	0.19	0.13	0.22	-0.09*
Semi-cemented (P)	0.20	0.15	0.23	-0.07*
Non-cemented (P)	0.61	0.71	0.55	0.16*
Land cultivated (acres)	1.87	1.49	2.08	-0.59*
Age of the head	44.44	45.44	43.88	1.57
Education of the head				
Illiterate (P)	0.20	0.14	0.24	-0.09*
Primary and middle (P)	0.67	0.77	0.62	0.15*
Secondary and above (P)	0.12	0.08	0.14	-0.06*
Male head (P)	0.97	0.97	0.96	0.02
Female head (P)	0.03	0.03	0.04	0.01
Ratio of working age female members to household size	0.31	0.29	0.32	-0.03*
Instruments				
Do not support the ruling party (P)	0.38	0.33	0.41	-0.08

Supports the ruling party (P)	0.29	0.29	0.29	0.00
Do not attend political meetings and rallies (P)	0.52	0.52	0.51	0.01
Attend political meetings and rallies (P)	0.48	0.48	0.49	-0.01
Number of observations	601	214	387	173

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Notes: For the variables given with a "(P)", the figures give the column proportion that is they represent the proportion of the particular characteristic in the respective groups-attended private coaching or did not attend. For others, the mean is given for that group. * significant at 5% level.

Table 2: Estimates of the decision to send the children for private coaching and the expenditure
incurred on it on the instruments used (with and without controls)

	Decision to attend private coaching (Probit)		Expenditure on private coaching (OLS)	
	Without controls	With controls	Without controls	With controls
Supports the ruling political party	0.330	-0.001	0.109	0.075
	(0.174)	(0.178)	(0.322)	(0.274)
Attend political meetings and rallies	0.007	0.113	0.029	-0.193
	(0.143)	(0.163)	(0.272)	(0.262)
N	588	588	588	588
R-squared	0.0001	0.179	0.001	0.242

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Notes: None of the variables are significant at the specified levels. The figures not in parenthesis
are the coefficients and the ones in parenthesis are the robust standard errors. The details of the
regression with all the controls can be provided on request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Estimates of participation in MGNREGA and extent of participation

	Worked in MGNREGA	Days worked in MGNREGA	Annual income from MGNREGA
Household characteristics			
Caste (Ref. General)			
SC/ST	0.777**	0.604**	1.557**
	(0.277)	(0.207)	(0.514)
OBC	0.582*	0.536	1.170
	(0.288)	(0.283)	(0.646)
Religion (Ref. Hindu)			
Muslim	0.780**	0.737**	1.779**
	(0.288)	(0.250)	(0.574)
Main occupation (Ref. regular wage)			
Self-employed in agriculture	2.202***	0.820*	2.485*
	(0.624)	(0.384)	(1.108)
Agricultural labour	1.850**	1.048*	2.704*
	(0.596)	(0.405)	(1.115)
Non-agricultural labour	1.746**	0.697	2.165*
	(0.586)	(0.357)	(1.033)
Self-employed	1.577**	0.512	1.696
	(0.528)	(0.353)	(1.010)
Others	1.318*	0.405	1.149
	(0.599)	(0.459)	(1.258)
BPL card holder	0.103	0.042	0.248
	(0.196)	(0.152)	(0.435)
Housing (Ref. fully cemented)			
Semi-cemented	0.454	0.262	0.753
	(0.273)	(0.205)	(0.604)
Non-cemented	0.412	0.352	0.811
	(0.279)	(0.215)	(0.623)
Land cultivated	-0.160***	-0.054**	-0.174***
	(0.046)	(0.017)	(0.049)
Age of the head	0.027**	0.016	0.047
	(0.010)	(0.008)	(0.025)
Education of the head (Ref. secondary and above)			
Illiterate	0.328	0.202	0.553
	(0.359)	(0.272)	(0.750)
Primary and middle	0.018	-0.009	-0.053
	(0.232)	(0.180)	(0.472)
Female head	0.288	0.239	0.711
	(0.440)	(0.284)	(0.846)
Ratio of working age female members to household size	-0.910	-0.369	-1.428
	(0.475)	(0.376)	(1.058)

Instruments			
Supports the ruling political party	1.143***	0.746***	2.317***
	(0.212)	(0.133)	(0.435)
Attend political meetings and rallies	0.767**	0.593***	1.594***
	(0.240)	(0.156)	(0.447)
GP level fixed effects	Yes	Yes	Yes
Constant	-5.283***	-2.039***	-5.429***
	(0.764)	(0.468)	(1.229)
N	588	588	588
R-squared	0.299	0.402	0.356

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. The dummy variables used are mentioned in parenthesis as (dummy). The ones which are not mentioned are continuous variables. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 4: Validity of the instruments

	Attending private coaching		Expenditure on private coaching	
	Statistic	P-value	Statistic	P-value
Angrist-Pischke first stage chi-squared test				
Null: Endogenous regressor is unidentified	49.72	0.00	49.72	0.00
Underidentificaion test (Anderson canon. corr. LM statistic)				
Null: Matrix of reduced form coefficients has rank=K1-1 (underidentified)	88.40	0.00	88.40	0.00
Weak identification test (Cragg-Donald Wald F statistic)				
Null: Equation is weakly identified	49.72		49.72	
Stock-Yogo weak ID test critical values for single endogenous regressor:				
10% maximal IV size	19.93		19.93	
15% maximal IV size	11.59		11.59	
20% maximal IV size	8.75		8.75	
25% maximal IV size	7.25		7.25	
Overidentification test (Sargen-Hansen Statistic)				
Null: Instruments are valid	0.583	0.445	1.094	0.296
Endogeneity test				
Null: specified endogenous regressors are treated as exogenous	0.064	0.801	0.009	0.923

Notes. The test statistics are obtained through the "ivreg2" command in STATA.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 5: Validity of the instruments

	Attending private coaching		Expenditure on private coaching	
	Statistic	P-value	Statistic	P-value
Angrist-Pischke first stage chi-squared test				
Null: Endogenous regressor is unidentified	47.90	0.00	47.90	0.00
Underidentificaion test (Anderson canon. corr. LM statistic)				
Null: Matrix of reduced form coefficients has rank=K1-1 (underidentified)	85.64	0.00	85.64	0.00
Weak identification test (Cragg-Donald Wald F statistic)				
Null: Equation is weakly identified	47.90		47.90	
Stock-Yogo weak ID test critical values for single endogenous regressor:				
10% maximal IV size	19.93		19.93	
15% maximal IV size	11.59		11.59	
20% maximal IV size	8.75		8.75	
25% maximal IV size	7.25		7.25	
Overidentification test (Sargen-Hansen Statistic)				
Null: Instruments are valid	0.736	0.391	1.358	0.244
Endogeneity test				
Null: specified endogenous regressors are treated as exogenous	0.284	0.594	0.149	0.699

Notes. The test statistics are obtained through the "ivreg2" command in STATA.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 6: Validity of the instruments

	Attending private coaching		Expenditure on private coaching	
	Statistic	P-value	Statistic	P-value
Angrist-Pischke first stage chi-squared test				
Null: Endogenous regressor is unidentified	53.54	0.00	53.54	0.00
Underidentificaion test (Anderson canon. corr. LM statistic)				
Null: Matrix of reduced form coefficients has rank=K1-1 (underidentified)	94.1	0.00	94.1	0.00
Weak identification test (Cragg-Donald Wald F statistic)				
Null: Equation is weakly identified	53.54		53.54	
Stock-Yogo weak ID test critical values for single endogenous regressor:				
10% maximal IV size	19.93		19.93	
15% maximal IV size	11.59		11.59	
20% maximal IV size	8.75		8.75	
25% maximal IV size	7.25		7.25	
Overidentification test (Sargen-Hansen Statistic)				
Null: Instruments are valid	0.645	0.422	1.201	0.273
Endogeneity test				
Null: specified endogenous regressors are treated as exogenous	0.183	0.669	0.077	0.782

Notes. The test statistics are obtained through the "ivreg2" command in STATA.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 7: Estimates of the decision of the households to send the children for private coaching on participation under MGNREGA in 2011.

	Probit	Biprobit	IV-probit
Main Variable			
Worked in MGNREGA in 2011	0.352**	0.255	0.213
	(0.16)	(0.48)	(0.45)
Control Variables			
Child characteristics			
Age	0.129	0.096	0.102
	(0.11)	(0.12)	(0.11)
Age squared	-0.003	-0.001	-0.002
	(0.00)	(0.00)	(0.00)
Female child	-0.076	-0.080	-0.082
	(0.11)	(0.12)	(0.12)
Household characteristics			
Caste (Ref. General)			
SC/ST	-0.125	-0.016	-0.007
	(0.24)	(0.28)	(0.29)
OBC	0.103	0.204	0.210
	(0.22)	(0.25)	(0.25)
Religion (Ref. Hindu)			
Muslim	-0.443*	-0.371	-0.363
	(0.27)	(0.30)	(0.30)
Main occupation (Ref. regular wage)			
Self-employed in agriculture	0.612	0.711	0.724
	(0.41)	(0.44)	(0.45)
Agricultural labour	0.075	0.139	0.156
	(0.38)	(0.43)	(0.44)
Non-agricultural labour	0.324	0.386	0.399
	(0.42)	(0.46)	(0.47)
Self-employed	0.354	0.515	0.527
	(0.39)	(0.43)	(0.44)
Others	0.931*	1.098**	1.106**
	(0.48)	(0.51)	(0.51)
BPL card holder	-0.291**	-0.279**	-0.277*
	(0.15)	(0.14)	(0.14)
Housing (Ref. fully cemented)			
Semi-cemented	0.037	0.098	0.102
	(0.29)	(0.28)	(0.28)
Non-cemented	-0.421*	-0.361	-0.358
	(0.24)	(0.24)	(0.24)
Land cultivated	0.006	0.004	0.003
	(0.03)	(0.03)	(0.03)
Age of the head	-0.024***	-0.024***	-0.024***

	(0.01)	(0.01)	(0.01)
Education of the head (Ref. secondary and above)			
Illiterate	0.040	0.041	0.046
	(0.32)	(0.32)	(0.32)
Primary and middle	-0.275	-0.241	-0.238
	(0.26)	(0.26)	(0.26)
Female head	0.221	0.237	0.239
	(0.29)	(0.29)	(0.29)
Ratio of working age female members to household size	0.661	0.669	0.659
	(0.66)	(0.69)	(0.69)
GP level fixed effects	Yes	Yes	Yes
Constant	0.774	0.736	0.684
	(0.69)	(0.71)	(0.71)
Athrho		0.059	0.060
		(0.29)	(0.18)
Log Pseudo likelihood	-324.40	-599.82	-624.58
Wald test for ρ=0			
χ^2		0.041	0.11
Prob (>χ^2)		0.840	0.746
N	601	588	588

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 8: Estimates of the logarithmic value of expenditure on private coaching on participation

under MGNREGA in 2011.

	OLS	Treatment Effects
Main Variable		
Worked in NREGA in 2011	0.599**	0.452
	(0.259)	(0.694)
Control Variables		
Child characteristics		
Age	0.146	0.101
	(0.174)	(0.184)
Age squared	-0.000	0.002
	(0.007)	(0.007)
Female child	-0.100	-0.102
	(0.188)	(0.186)
Household characteristics		
Caste (Ref. General)		
SC/ST	-0.244	-0.071
	(0.365)	(0.388)
OBC	0.254	0.395
	(0.347)	(0.338)
Religion (Ref. Hindu)		
Muslim	-0.890**	-0.786*
	(0.437)	(0.444)
Main occupation (Ref. regular wage)		
Self-employed in agriculture	0.630	0.790
	(0.698)	(0.685)
Agricultural labour	-0.169	-0.071
	(0.647)	(0.649)
Non-agricultural labour	0.307	0.415
	(0.719)	(0.723)
Self-employed	0.320	0.603
	(0.646)	(0.659)
Others	1.177	1.411*
	(0.785)	(0.774)
BPL card holder	-0.454*	-0.435*
	(0.241)	(0.228)
Housing (Ref. fully cemented)		
Semi-cemented	0.118	0.200
	(0.420)	(0.401)
Non-cemented	-0.675*	-0.572
	(0.360)	(0.352)
Land cultivated	0.027	0.026
	(0.046)	(0.050)
Age of the head	-0.040***	-0.041***

	(0.011)	(0.011)
Education of the head (Ref. secondary and above)		
Illiterate	-0.206	-0.238
	(0.488)	(0.476)
Primary and middle	-0.585	-0.534
	(0.378)	(0.368)
Female head	0.303	0.330
	(0.462)	(0.470)
Ratio of working age female members to household size	1.075	1.141
	(1.006)	(0.978)
GP level fixed effects	Yes	Yes
Constant	4.270**	4.217**
	(1.221)	(1.327)
Athrho		0.037
		(0.207)
Log Pseudo likelihood		-1652.93
Wald test for ρ=0		
χ^2		0.05
Prob ($>\chi^2$)		0.819
N	601	588

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 9: Estimates of the probit regression to find the impact of the days worked under MGNREGA in 2011 on the decision to send the children for private coaching (with and without residuals) along with the tobit estimates of the logarithmic value of the days worked.

	Tobit	With residual	Without residual
Main Variable			
Residuals		0.014	
		(0.032)	
Log of days worked under MGNREGA in 2011		0.166**	0.161**
		(0.066)	(0.065)
Control Variables			
Child characteristics			
Age		0.082	0.117
		(0.119)	(0.106)
Age squared		-0.001	-0.002
		(0.005)	(0.004)
Female child		-0.082	-0.076
		(0.116)	(0.113)
Household characteristics			
Caste (Ref. General)			
SC/ST	1.170***	-0.018	-0.143
	(0.402)	(0.290)	(0.240)
OBC	0.913**	0.188	0.074
	(0.420)	(0.257)	(0.222)
Religion (Ref. Hindu)			
Muslim	1.172***	-0.401	-0.479*
	(0.407)	(0.305)	(0.273)
Main occupation (Ref. regular wage)			
Self-employed in agriculture	3.303***	0.794	0.609
	(1.098)	(0.505)	(0.409)
Agricultural labour	3.140***	0.183	0.038
	(1.068)	(0.494)	(0.379)
Non-agricultural labour	2.767***	0.458	0.321
	(1.037)	(0.506)	(0.417)
Self-employed	2.384**	0.595	0.364
	(0.926)	(0.479)	(0.375)
Others	2.087**	1.155**	0.924*
	(1.057)	(0.545)	(0.477)
BPL card holder	0.073	-0.273*	-0.289**
	(0.296)	(0.143)	(0.145)
Housing (Ref. fully cemented)			
Semi-cemented	0.553	0.096	0.028
	(0.400)	(0.270)	(0.287)
Non-cemented	0.708*	-0.370	-0.440*

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	(0.406)	(0.232)	(0.234)
Land cultivated	-0.216***	-0.002	0.006
	(0.062)	(0.030)	(0.028)
Age of the head	0.037**	-0.024***	-0.024***
	(0.015)	(0.007)	(0.006)
Education of the head (Ref. secondary and above)			
Illiterate	0.447	0.046	0.032
	(0.529)	(0.317)	(0.320)
Primary and middle	0.065	-0.238	-0.281
	(0.376)	(0.255)	(0.257)
Female head	0.385	0.243	0.233
	(0.648)	(0.290)	(0.287)
Ratio of working age female members to household size	-1.116	0.617	0.632
	(0.696)	(0.687)	(0.654)
Instruments			
Supports the ruling political party	1.582***		
	(0.259)		
Attend political meetings and rallies	1.161***		
	(0.277)		
GP level fixed effects	Yes	Yes	
Constant	-7.632***	0.698	0.905
	(1.230)	(0.765)	(0.692)
Log Pseudo likelihood	-750.99	-312.83	-323.29
N	588	588	601

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 10: Estimates of the probit regression to find the impact of the annual earnings from MGNREGA in 2011 on the decision to send the children for private coaching (with and without residuals) along with the tobit estimates of the logarithmic value of the earnings

	Tobit	With residual	Without residual
Main Variable			
Residuals		0.013	
		(0.032)	
Log of annual income earned under MGNREGA in 2011		0.055**	0.053**
		(0.023)	(0.023)
Control Variables			
Child characteristics			
Age		0.089	0.124
		(0.119)	(0.106)
Age squared		-0.001	-0.003
		(0.005)	(0.004)
Female child		-0.081	-0.075
		(0.116)	(0.113)
Household characteristics			
Caste (Ref. General)			
SC/ST	3.121***	-0.006	-0.132
	(1.091)	(0.290)	(0.239)
OBC	2.241**	0.208	0.094
	(1.076)	(0.256)	(0.219)
Religion (Ref. Hindu)			
Muslim	2.962***	-0.376	-0.457*
	(1.069)	(0.302)	(0.269)
Main occupation (Ref. regular wage)			
Self-employed in agriculture	9.571***	0.793	0.609
	(3.081)	(0.509)	(0.412)
Agricultural labour	8.649***	0.202	0.057
	(2.962)	(0.500)	(0.380)
Non-agricultural labour	8.096***	0.454	0.317
	(2.910)	(0.511)	(0.421)
Self-employed	7.086***	0.585	0.354
	(2.604)	(0.483)	(0.381)
Others	6.056**	1.160**	0.928*
	(2.890)	(0.552)	(0.481)
BPL card holder	0.360	-0.278*	-0.293**
	(0.844)	(0.143)	(0.145)
Housing (Ref. fully cemented)			
Semi-cemented	1.585	0.100	0.032
	(1.146)	(0.272)	(0.289)
Non-cemented	1.754	-0.359	-0.428*

	(1.163)	(0.234)	(0.237)
Land cultivated	-0.632***	-0.001	0.006
	(0.178)	(0.030)	(0.028)
Age of the head	0.107**	-0.024***	-0.024***
	(0.043)	(0.007)	(0.006)
Education of the head (Ref. secondary and above)			
Illiterate	1.264	0.051	0.037
	(1.476)	(0.320)	(0.323)
Primary and middle	0.202	-0.234	-0.276
	(1.026)	(0.257)	(0.260)
Female head	1.199	0.238	0.227
	(1.861)	(0.292)	(0.289)
Ratio of working age female members to household size	-3.615*	0.641	0.651
	(1.984)	(0.691)	(0.658)
Instruments			
Supports the ruling political party	4.642***		
	(0.839)		
Attend political meetings and rallies	3.165***		
	(0.814)		
GP level fixed effects	Yes	Yes	
Constant	-21.154***	0.621	0.832
	(3.361)	(0.765)	(0.686)
Log Pseudo likelihood	-1063.78	-313.44	-323.91
N	588	588	601

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Table 11: Estimates to find the impact of days worked under MGNREGA in 2011 and the annual

earnings on the expenditure on private coaching for the children (with and without residuals)

	Number of days worked in 2011		Total annual earnings in 2011	
	With residual	Without residual	With residual	Without residual
Main Variable				
Residuals	0.035		0.010	
	(0.143)		(0.050)	
Log of total days worked in 2011	0.263***	0.267**		
	(0.105)	(0.099)		
Log of annual income earned in 2011			0.088**	0.089**
			(0.038)	(0.036)
Control Variables				
Child characteristics				
Age	0.083	0.130	0.092	0.139
	(0.190)	(0.174)	(0.189)	(0.174)
Age squared	0.003	0.000	0.002	-0.000
	(0.008)	(0.007)	(0.008)	(0.007)
Female child	-0.102	-0.099	-0.100	-0.097
	(0.191)	(0.190)	(0.191)	(0.188)
Household characteristics				
Caste (Ref. General)				
SC/ST	-0.064	-0.274	-0.053	-0.256
	(0.460)	(0.370)	(0.454)	(0.366)
OBC	0.372	0.201	0.399	0.237
	(0.413)	(0.356)	(0.399)	(0.348)
Religion (Ref. Hindu)				
Muslim	-0.807	-0.945**	-0.780	-0.912**
	(0.512)	(0.450)	(0.498)	(0.441)
Main occupation (Ref. regular wage)				
Self-employed in agriculture	0.899	0.634	0.880	0.627
	(0.823)	(0.692)	(0.828)	(0.696)
Agricultural labour	-0.034	-0.234	-0.020	-0.202
	(0.822)	(0.642)	(0.818)	(0.644)
Non-agricultural labour	0.501	0.307	0.482	0.296
	(0.842)	(0.711)	(0.850)	(0.714)
Self-employed	0.698	0.340	0.671	0.320
	(0.766)	(0.633)	(0.777)	(0.640)
Others	1.479*	1.178	1.471*	1.177
	(0.843)	(0.780)	(0.850)	(0.783)
BPL card holder	-0.423*	-0.448*	-0.433*	-0.457*
	(0.235)	(0.240)	(0.237)	(0.241)
Housing (Ref. fully cemented)				
Semi-cemented	0.211	0.114	0.210	0.114
	(0.391)	(0.415)	(0.393)	(0.417)

Non-cemented	-0.579	-0.705*	-0.566	-0.686*
	(0.348)	(0.355)	(0.349)	(0.357)
Land cultivated	0.018	0.025	0.020	0.026
	(0.051)	(0.046)	(0.051)	(0.047)
Age of the head	-0.040***	-0.041***	-0.040***	-0.041***
	(0.012)	(0.011)	(0.012)	(0.011)
Education of the head (Ref. secondary and above)				
Illiterate	-0.230	-0.214	-0.229	-0.210
	(0.476)	(0.477)	(0.484)	(0.485)
Primary and middle	-0.532	-0.587	-0.531	-0.585
	(0.366)	(0.369)	(0.372)	(0.375)
Female head	0.343	0.313	0.344	0.308
	(0.451)	(0.451)	(0.458)	(0.458)
Ratio of working age female members to household size	1.052	1.022	1.088	1.055
	(1.027)	(0.990)	(1.044)	(0.999)
GP level fixed effects	Yes	Yes	Yes	Yes
Constant	4.136**	4.463***	4.068**	4.362***
	(1.346)	(1.226)	(1.338)	(1.217)
R-squared	0.246	0.238	0.244	0.237
N	588	601	588	601

Notes: The figures not in the parenthesis show the coefficient values. Standard errors, clustered at the village level are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Data collected by the author in Cooch Behar district of West Bengal, India.

Figure 1: Local polynomial smoothing regression plot of logarithmic value of private coaching on logarithmic value of the number of days worked under MGNREGA in 2011

kernel = epanechnikov, degree = 0, bandwidth = .5, pwidth = .56
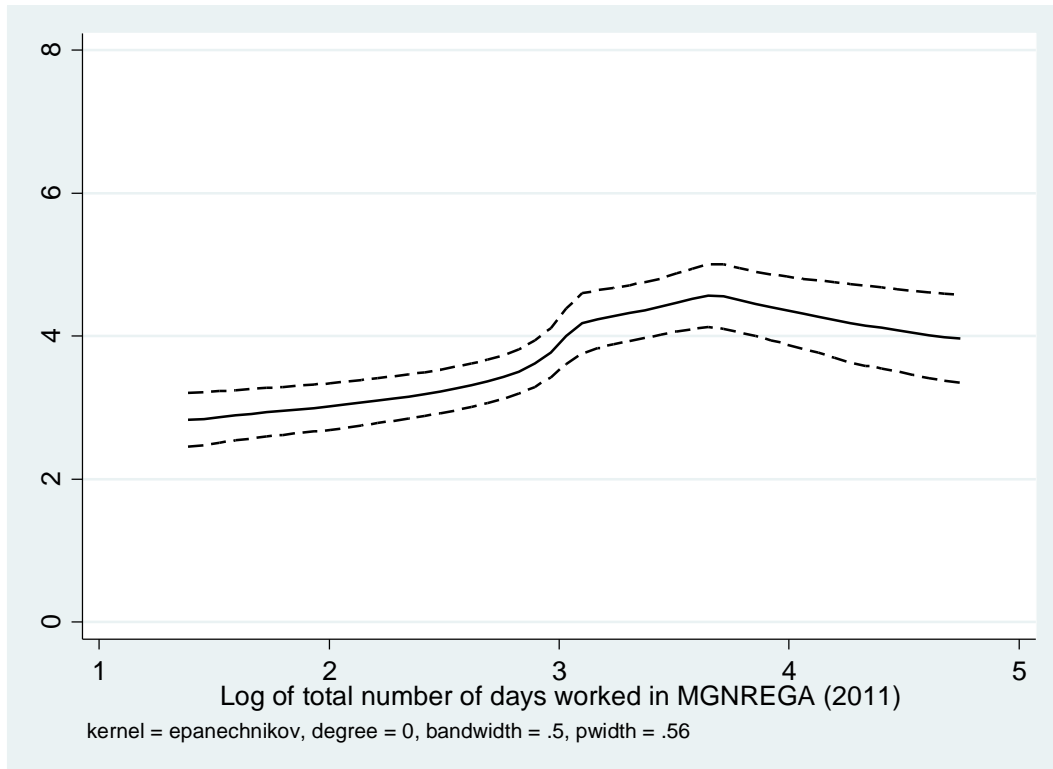
Figure 2: Local polynomial smoothing regression plot of logarithmic value of private coaching on logarithmic value of the annual earnings from MGNREGA in 2011

kernel = epanechnikov, degree = 0, bandwidth = .64, pwidth = .96