IMPACT OF NREGA ON SCHOOL ENROLMENT

Applied Development Economics Term Paper

-Tanushree Dutta
MS Economics
Shiv Nadar University
(Batch of 2014-2016)

Abstract

This paper explores the impact of NREGS on school enrolment by using triple difference estimation. The paper finds significant positive impact on primary school enrolment and insignificant impact on secondary and middle school enrolment. However it finds a negative impact of increasing number of casual labourers in a household on school enrolment. By including an interaction between the triple difference estimate and average number of casual labours in a household the paper tries to investigate as to how the impact of NREGA on enrolment rates get affected by more number of casual labours in a household .

Section 1 : Introduction

Employment Guarantee schemes have been widely used as anti-poverty tools in the developing world. Apart from increasing employment, wages and consumption of the participants these programs have other unintended effects. One of the unintended effects is its effect on educational outcomes. Specifically, I try to explore whether NREGA affects the enrolment rates of school children by employing triple difference estimation

In this paper I study the impact of one such policy initiative in India – the National Rural Employment Guarantee Scheme (NREGS) initiated in 2006 .While the program's main objective is to alleviate rural poverty by legally guaranteeing a minimum of 100 days of annual employment to households, it also has the potential to empower rural women through greater access to labour market opportunities. NREGA mandates that atleast one third of the beneficiaries have to be women.

Literature suggests that an increase in parent's labour supply could improve their children's outcomes due to purely income effect. However greater female labour force participation affects these outcomes on two additional but opposing ways. Considering the fact that women in rural areas of developing countries are more inclined towards family's welfare than their male counterparts, the income from NREGA improves their bargaining power in the household decisions. This will have a positive impact on children's education outcomes.

Secondly , the domestic chores of the woman might get substituted by her children especially girl child . The substitution effect highlights the negative impact of NREGA on child's enrolment rates . (Afridi et al. 2012) .

Rosenzweig and Evenson (1977) conducted a panel study on ICRISAT villages and found that higher male wages seem to increase schooling whereas higher female wages seem to have negative impacts on child schooling. There was evidence of gender disparity among the children as the schooling hours of girls were more sensitive to increase in female wages .

Skoufias (1993) shows that an increase in female wages in rural India reduces the time in school significantly for girls only . Similar results were found by Grootaert and Patrinos (1999) in a cross-country study. However, Ilahi (1999) does not find any impact of female wages on children's time use in Peru.

Afridi et al .(2012) had used panel data of Young Life (YLS) in Andhra Pradesh and found significant increase in enrolment and other educational outcomes due to female labour force participation .

This paper attempts to look at the impact of MNREGA on school enrolment. The main finding of the paper is that NREGA didn't lead to any significant change in school enrolment Further, I tried to understand the household's intra – allocation of labourers if it has more number of casual labourer. For that, I constructed a variable which depicts the average number of casual labourers in a household. Even though, the triple difference estimation brought insignificant results but the fact that the coefficient of average number of casual labourers in a household in relation to school enrolment is negative and significant cautions about the unintended consequences of an employment scheme.

A key issue for the evaluation of public works programmes which are not completely randomly assigned and where only limited data is available, like the MNREGA, is that the decision to participate in public works might be subject to factors which are unobserved and which simultaneously also affect the outcome under consideration, leaving any estimates of effects subject to bias . In this paper , the potential selection bias is reduced by comparing the BPL households in Phase 1 and Phase 2 districts (which received the treatment) to the control group Phase 3 which was yet to receive the program.

The following section explains this workfare program briefly and summarises the past works on MNREGA. Section 3 introduces the data , estimation strategy and construction of outcomes respectively. Section 4 reports the results and Section 5 concludes .

Section 2 : Background and Literature

Public- works program had always been popular public policy tools in India. From the fourth Century BC when the ancient Indian political economist, Kautilya, wrote his *Arthasastra,* there has been emphasis on public relief works, particularly at times of famine . The most important programme at the state level is the Maharashtra Employment Guarantee Scheme (EGS), introduced in 1972. The genesis of the scheme (NREGS) can be traced to the Maharashtra Employment Guarantee Scheme introduced during 1970s.

The National Rural Employment Guarantee Act (NREGA) ,now known as MNREGA was launched in February 2006 , in the 200 most backward districts and was subsequently extended to another 130 districts in 2007-2008 . It is an entitlement scheme that guarantees 100 days of employment to all those rural households who demand work. This feature makes NREGS one of the most ambitious anti-poverty schemes in developing countries. The program aims to work as an additional source of income for underemployed workers in rural labor markets and as a safety net for the rural poor after bad economic shocks.

The important feature of MNREGA that distinguishes it from previous work programs is that for the first time households are provided with a legal right to be employed up to 100 days a year per household and individuals are entitled to receive the wages if no work is made available to them within two weeks of an application . NREGS relies on both

self-targeting as well as community based targeting. Gram Panchayats are supposed to identify the suitable villages and local government institution are given a central role in planning and implementation. MNREGA mandates that same wage needs to be paid to both men and women. Crèches are provided at the worksites. At least one third of the NREGS workforce in a village is required to be female. Thus NREGS is viewed to contribute towards female empowerment. NREGS emphasises on asset creation. There is a heavy focus on irrigation, minor roads, and land improvement to boost returns to labor at the local level.

However, according to World Bank (2011) , the objective of asset creation "runs a very distant second to the primary objective of employment generation ." This is very clear from the fact that the act bans machines and contractors from worksites and limits material , capital and skilled wage expenditure to 40% of total expenditure . Wages paid for unskilled work are borne entirely by the central government. States pay at most 25% of expenditure on materials, capital and skilled wages. These restrictions further strengthens the incentive to select projects that require mainly unskilled labor .

In the past years MNREGA has attracted considerable amount of attention and it is reflected on the considerable amount of literature that has been published for MNREGA .

Imbert and Papp (2012) has used difference in difference strategy and analysed the impact of MNREGA on labor market outcomes. They found that during dry season there was a significant increase in public works. They also found the there was a difference in employment outcomes between early and late districts and this difference has increased with time which they think is may be due to learning outcomes or awareness in early districts. With regard to private sector employment their finding is that rise in public employment is offset by fall in private sector employment rather than changes in time spent by outside the labour force or unemployed. Surprisingly, they also found that unemployment doesn't seem to fall in early district relative to late districts. This fact highlights to the point that apart from awareness, may be rationing is also governing the changes in employment due to MNREGA.

Zimmerman (2013) criticized the use of Difference in Difference because of the violation of parallel tends assumption. The rollout of MNREGA was not random as the backward districts received the program earlier. She didn't find any statistically significant increase in public employment. She too found decrease in private sector employment. She also found increase in farm employment. She therefore attributed the decrease in private employment to increase in farm employment. She found that the employment had significantly increased during bad rainfall shock .This led her to conclude that MNREGA was effective as a safety net.

One of the issues with Difference in Difference as raised by Zimmerman is the violation of parallel trends framework due to non- random roll out of the program. However **Berg et al (2015)** address this issue in their paper by using district specific time trend. Berg et al also found the effect of seasonal variation in evaluating MNREGA's impact on agricultural wages. Surprisingly, they found that the wages rose in July-December i.e. in the agricultural season as opposed to Imbert and Papp's finding on the effectiveness of MNREGA in slack seasons.

The two reasons provided by them is that labor become scarce during peak season and thus MNREGA work at that time increase their wages due to competition. The second reason is that the dependent variable in Berg's paper was wages whereas it was earnings in Imbert and Papp's paper. Berg t al .(2015) also looked at the exposure effects of NREGA by introducing a variable which shows the month for which NREGA has been active in that district . They have looked at the the three potential effects of public works on welfare : a direct effect on those who are employed , a labour market effect related related to the shift in labour demand and a productivity effect related to the investment in public goods produced under the scheme .

In terms of migration impacts, the slowing down of short-term migration from rural to urban areas has been estimated **(Imbert and Papp 2014, Bhatia & Ranjan 2009, Jacob 2008).**

Jha et al .(2008) worked on the issue of targeting and program capture of MNREGA by using pooled household level data for the Indian states of Rajasthan and India . They used the size of landholdings as a predictor of participation in MNREGA . Program capture by non poor was evaluated on the basis of the relationship between landholdings and MNREGA participation in that state . They found that the area of land owned is a negative predictor of NREG participation in Rajasthan whereas the situation is reversed in Andhra Pradesh , indicating less efficient targeting .They concluded that program capture could be a factor **Dutta et al .(2012)** also studied about the issue of rationing in NREGS . They concluded that "self – targeting" mechanism of NREGS works well as the demand for work was higher in poorer states. However, the actual participation rates in these states were far from satisfactory. Participation rate was calculated as the demand of work nets the rationing rate.

Mehrotra Santosh (2008) highlighted in his article that if MNREGA is implemented properly then the expenditure allocations might take a U-turn , first increasing and then falling . As MNREGA is a demand driven programme so if labour's need for work falls , the fiscal requirements of the programme will also fall.

Liu and Deininger (2010) studied the impact of MNREGA participation on consumption expenditure , calorie consumption , protein intake , and asset accumulation by using a panel data for 2500 households, collected in 2004, 2006, and 2008, from five districts in Andhra Pradesh, a state in the Southern India .**Liu and Deininger** employed triple difference to rectify the problem of parallel trend assumption in double difference due to non-random roll out of MNREGA . They assumed that the bias will remain constant across the years and hence by including 2005 (when the program was not in place) the bias could be negated. They found significant impact of MNREGA participation on calorie consumption ,protein intake , and consumption expenditure . They found an impact on consumption greater than direct cash transfer from MNREGA , and conclude that short term effects of MNREGA on participating households was greater than the program costs .

Ravi and Englar (2009) studied the impact of program on food security, savings and health outcomes by using Propensity Score Matching , Double Differences and Triple difference. Data was collected from Medhak , a district in Andhra Pradesh .

They use a single cross section data containing 1066 households collected in June 2007 (when MNREGA was already operational in the district) .To account for the fact that MNREGA was already operational in the district when their baseline data was collected, they use new joiners, long-term participants, and other constructed groups to implement their double and triple difference strategy. Interestingly , they also found that NREGS significantly lowers emotional distribution and anxiety by 25% .

Jha et al .**(2009)** examined the nutritional status with respect to two macronutrients as well as various micronutrients by collecting primary household data of rural households in three Indian states : Andhra Pradesh , Maharashtra and Rajasthan . They found significant impacts of the two policy interventions i.e. PDS and MNREGA on nutritional deficiency.

The growing empirical literature on NREGS has focussed mainly on its effects on labour market outcomes, awareness, rationing, women empowerment and child Labour.

However there is not much work on impact of MNREGA on school enrolment. My paper closely relates to the works of Li Tianshu and Sekhri Sheetal (2013) who used DISE data and found that enrolment in primary school reduces less due to programs. They also found that enrolment in private school increases, whereas the enrolment in government schools has fallen. However their work was at district level and my work is at household level. Household level study will provide an in-depth analysis of the programmes impact which might get lost due to aggregation (i.e. District level or state level studies).

Section 3 A : Data

Main source of data used in the analysis is “NSS Employment and Unemployment Survey” carried out by NSSO , stratified by urban and rural areas of each district. Surveying is further divided into sub-rounds each lasting three months. In order to make the results representative all statistics and estimates computed using the NSS data are adjusted using the sampling weights.
The data used for this analysis is NSS 61st and 64th round. While NSS 61st round is a thick round but NSS 64th isn’t a thick round. The smaller sample size in thin rounds makes them incomparable to thick rounds. However, NSSO conducted a much larger Employment and Unemployment Round survey in 2007-08 (64th round) annual series whose main concentration is on employment and migration.

The 2007-08 data covered almost all districts in India with a sample size of 125,578 households (79,091 rural and 46,487 urban) and enumerating 5,72,254 persons is comparable to 2004-05 data with a sample size of 1,24,680 households (79,306 in rural areas and 45,374 in urban areas) and enumerating 6,02,833 persons .

My dataset is restricted to children who live in rural areas and are between the age of 5 to 19 years in the baseline period i.e. in the NSS 61st round. As the workfare program under

NREGA was extended mainly to rural districts so urban districts have been dropped. My sample excludes Jammu and Kashmir, North Eastern States (but the sample includes Assam) and Union Territories. Jammu and Kashmir has been excluded because the survey data is missing for some quarters because of the conflict in some quarters. Union territories have been excluded as none of the districts surveyed by NSS received the treatment .North – Eastern districts have also been excluded because of low participation. It should also be noted that CPI-RL data is not available for many of the North-Eastern States and Union Territories . Low participation and lack of availability of CPI data led me to drop UT and North-Eastern States. Finally, I will exclude children for whom there is some missing information on relevant covariates in either of the years.

Section 3B : Estimation Strategy

The empirical strategy involves comparing changes in individuals in districts that received the program to individuals in districts that didn't receive the program.

Starting from 200 districts on 2 February 2006, which were the phase 1 districts, it extended to 130 districts in April 2007 (phase 2 districts) , and finally to the rest of rural India in 2008 . In my sample of 486 districts , I compare the households in 258 districts which received the program earlier to households in 187 districts which received the program later . The remaining 41 districts didn't receive treatment even during the third phase.

The phased implementation bears the danger that the poorer districts i.e. Phase 1 and Phase 2 will experience slower progress compared to already wealthier districts. District specific time trends partially control for some of these problems. But my data is at individual level. Further due to repeated cross section of NSS data I am unable to take individual fixed effects. This will lead to underestimation of the impact of NREGA. To address the selection problem I have constructed BPL households in my data using Tendulkar estimates. As BPL households in both the treated and non-treated districts are the most likely to participate in the program. The BPL households in the non-treated districts serve as an appropriate counterfactual. It should be noted that district fixed effects will take into account the geographical inequalities between these identical BPL households.

X_i contains a bunch of individual level controls. I include the land possessed as an indicator of wealth .Household Size affects income and can cause substantial changes in enrolment decisions taken by households. Child's age and sex has also been controlled because older children and girls are more likely to substitute for mother's work in households. Age square allows the relation to be non-linear and hence it is a measure of sensitivity. Controls for child's social group have also been added. The enrolment rates might also be influenced by unobservable factors like child's ability. Due to repeated cross section of the data I am unable to include individual fixed effects which would have accounted for many of the time-invariant changes . However there has been considerable literature which recognises parental education as an important input to child's cognitive skills ((Björklund and Salvanes (2011). Lundborg et al. (2011). Thus, I am using Parent's Education to control for some of the child's cognitive skills.

Adult's education has been used as a proxy for Parent's Education . In my dataset an adult is defined as a person who is 21 years or above. This has been defined keeping in mind the effective marriage age in India .

The main estimating equation is as follow :

$$\mathbf{Y_{idt} = \alpha_d + \alpha_t + \beta_1 (\alpha_d * T) + \beta_2 X_i + \beta_3 (BPL_h * Treated_d) + \beta_4 (BPL_h * treated_d * T) + \beta_5 (Parent's\ Literacy) + \xi_{idt}}$$

$$\mathbf{X_i = HH\ Size_i , Land_i , Sex_i , Age_i , (Age_i)\text{^}2 , Social\ Group_i}$$

Passing a previous grade will become an added control for middle and secondary enrolment

α_d captures the district fixed effects . α_t is an indicator variable which takes the value 1 if the round is 61 (the baseline period) and 2 if the round is 64 . $treated_d$ is an indicator variable which takes the value 1 if the district is a Phase 1 or Phase 2 district and 0 if it is Phase 3 district. Thus β_1 captures the district specific time trend. As I have taken district fixed effects thus NREGA phase indicators has been dropped so as to avoid multicollinearity . β_2 captures the impact of meals given in school on enrolment rates. Xi contains all the individual controls as discussed previously.

β_5 is the coefficient of interest and captures the impact of NREGA on the enrolment rates of children of BPL households.

Section 3 C : Construction of Outcomes

The main dependent variable which is the number of students who are currently attending educational institutions is a binary variable .It takes the value 1 if the person is currently attending the educational institution and 0 if he/she isn't. It has been constructed by using the status code 91 from the principal activity status which specifies that the person is currently attending educational institution. The enrolment for Primary , Middle and Secondary have been constructed by taking the data of enrolment for that specific age group . It should be noted that the general education level code that mentions the detailed information about a person's educational institution has not been used to construct the enrolment variable because it contains the information for a person who has successfully completed that grade . It might be possible that the person has not successfully completed his primary education because of grade repetitions but is still enrolled in primary school . But in that case he won't be considered as being completed primary education and won't be coded as 04 (the code for primary education).

The variable for casual work labourer has been constructed by using the status code for casual labourers and public work labourers from the principal activity status code. It records the total number of people in casual labour in a household.

The explanatory variable BPL is a binary variable which takes the value 1 if the person is below the poverty line and 0 if the person is above the poverty line. It has been constructed by labelling the MPCE of households in accordance with the Tendulkar Estimate .

The education of adult have been used as a proxy for parent's education .

Section 4 : Results

Summary Statistics

Table 1 presents the descriptive statistics for the treated and non-treated districts at the baseline.

As expected, these indicators reveal that treated districts performed poorly than the non-treated districts in the baseline period . This highlights the non-random roll out the program.

Double Difference Estimates on Primary , Middle and Secondary Enrolment

Table 2 , 3 and 4 presents the results of double difference estimates of primary , middle and secondary enrolment .The double difference estimate is positive and significant only for primary enrolment rates . It is significant at 5% . Thus the implementation of NREGA had led to an increase in primary enrolment by about 2 percentage points. The results differ from the findings of Sekhari Sheetal and Li Tianshu as they found significant negative impact for primary school enrolment and a non-significant impact for upper primary schools. Children been taken to worksites due to lack of child care was the reason for low primary enrolment.

The coefficient of average number of public work members in the household is negative and significant in all the education categories. This points to two things : Firstly as suggested by Sekhari and Li it reveals the substitution effect and children being taken out due to lack of child care in primary and middle schools . Secondly in the case of secondary school the coefficient intensifies because it also captures the dropped out students who are now a public work member.

Double Difference Estimates on Primary , Middle and Secondary Enrolment after interacting with Casual Labour household

To know if the intensity of casual labourers in a household has any differential impact I have interacted the DD estimate with Casual labourers which measures the average number of casual labourers in a household

Table 5 presents the results. Column(1) presents the results for primary school enrolments . Column (2) for middle school enrolments and Column(3) for secondary school enrolments .

Primary

While the interaction of the DDestimate with public works is negative and significant at 1% but the DDestimate is positive .Both are significant at 1% level of significance . The (t*treated*Casual labour) captures the effect of NREGA on the enrolment rates of those children who belong to households having members already employed in some casual labour . As these households have been exposed to casual labour previously and at a greater extent so these face the negative consequences of the workfare . More number of people employed in casual labour lead to less number of family members for child care and hence children are eventually taken to worksites.

Middle School enrolment

Here the interaction of the public works with DDestimate is negative and significant at 1% level of significance. However, the DD estimate is not significant .The results are not surprising because it is

in accordance with the previous explanation that the households which are more exposed to casual labour have solutions to deal with the problem of shortage of labour .

Secondary School Enrolment

The decrease in enrolment in secondary school is also because of the above mentioned reason. However the effect intensifies here because the interaction also captures the fact that NREGA has led to increased job opportunities and thus have decreased Secondary School Enrolment.

Triple Difference Estimation

Table 5 and 7 reports the triple difference estimation. The triple difference estimation is insignificant in both the cases i.e. with and without the interaction with casual labour members . Even though the interaction of (T*BPL*Treated) with casual work member is significant in Table 7.Here also interaction terms highlights the negative consequence of workfare on children . Both the primary and secondary enrolment rates decrease by 0.25 and 0.17 percentage points .The insignificance of (T * BPL * Treated)might indicate that NREGA didn't significantly affect the opportunity cost within these households.

The main idea of including the triple difference estimates was to remove differential trends that may exist between treated and non-treated districts. However it might be the case that nutrient deficient BPL household members were not able to perform the hard manual labour in NREGA and hence due to low person days might not have received wages that could have significantly affected their intra – household allocation of labour.

Another reason may be that the double difference estimation is capturing the general equilibrium effects of NREGA whereas the triple difference estimates is capturing the average treatment effect on the treated .

Placebo Test

The difference in difference assumption relies on very strong assumptions of parallel trends. It means that without the reforms the trend would have been different in treated and non-treated districts. Placebo test helps in validating this assumption. This test involves re estimating the Difference in difference equation at a time other than over the pre – treatment period, but with the assumption that the intervention took place at an earlier date. As the policy was not implemented in the time span of the placebo test so, the difference – in – difference estimator should be statistically insignificant. A significant DD estimate is an indicator of violation of parallel trends assumption.

To conduct the placebo test only the sub round 3 and sub round 4 of NSS 61 have been used because NSS round 60 is from January – June 2004 whereas the NSS round 61 is from June 2004 to July 2005 . Sub rounds 3 and 4 contains data for

In the previous section I concluded that one of the reasons for the DD estimate to be significant is that it might be capturing general equilibrium effects of NREGA. Had this been

the case then in the placebo test one would expect insignificant DD estimate. Table 8 shows that the double difference estimates have not been significant for all the rounds . This highlights that the double difference estimates is essentially capturing the general equilibrium effects .

Section 5 : Conclusion and Further Discussion

The causal impact of MNREGA on school enrolment has been studied by using the data from NSSO sample surveys for the years 2004-05 and 2007-08 by employing triple difference estimation.

The double difference estimate and the triple difference estimation (Table 2, 3 and 4) were not significant . DD estimate was significant only for the primary school enrolment.

After including the interaction with average number of casual wage labourers in house the double difference estimate of the interaction terms (T*Treated* Casual Labour) became significant for all the three school enrolment levels. The double difference estimate for the primary enrolment is positive and significant. DD estimates for secondary and middle enrolment are insignificant.

The triple difference estimate remained insignificant for all the three levels of school enrolment.

The placebo test result indicates that DD estimates are capturing the general equilibrium effects ..

Though the triple difference estimate are insignificant in all the school enrolment levels but as far as the interaction with the average number of casual labour in a house is concerned, the coefficients are significant and are negative. Had the low person-days be the reason for the insignificance of the DDD estimate then the results are alarming because if with time the person days increases or the wage rates are revised then the opportunity cost of the family labour of BPL household might change and one may expect the same results as that was observed in (Table 6) .

It should be recognised that policies do have unintended consequences. The negative sign of the coefficient that captured the impact of the average number of casual labourers on enrolment rates is in line with the literature that in poor rural households there is an intra-household allocation of labour based on comparative advantage and opportunity cost.

Programs such as mid-day meal programs should be introduced along with workfare programs or programs aiming at increasing female employment so that the opportunity cost can be compensated. Further, different compensation is required at different levels of schooling . For primary and middle school students compensation such as midday meal scheme may prove to be effective. However the same will not be effective for the secondary and senior secondary students as the reason for their drop out may be increased job opportunity due to NREGA. Efforts should be taken to improve the returns to schooling so that workfare programs don’t adversely affect the future generation.

Table 1

Summary Statistics

Variables		
Age	8.996 (0.000)*	9.366 (0.001)*
Real MPCE	841.477 (0.039)*	994.956 (0.061)*
BPL	0.006 (0.000)*	0.004 (0.000)*
Scheduled Tribes	0.128 (0.000)*	0.059 (0.000)*
Scheduled Castes	0.218 (0.000)*	0.226 (0.000)*
OBC	0.433 (0.000)*	0.471 (0.000)*
General	0.221 (0.000)*	0.244 (0.000)*
Household Size	6.454 (0.000)*	6.547 (0.000)*
Male	0.527 (0.000)*	0.528 (0.000)*
Female	0.473 (0.000)*	0.472 (0.000)*
Literacy Rate	0.508 (0.000)*	0.568 (0.000)*
Labour Force Participation Rate	0.350 (0.000)*	0.358 (0.000)*
Muslims	0.133 (0.000)*	0.126 (0.000)*

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Column (1) represents the treated districts whereas column(2) represents the non-treated districts . t values are reported in parenthesis. The summary statistics are for the baseline period .

Table 2

Double Difference Estimation

No of students in primary schools	
Age	0.116 (16.31)*
(Age)^2	-0.006 (16.04)*
land category 2	0.015 (4.26)*
land category 3	0.026 (2.87)*
Parent's Education	0.015 (18.66)*
BPL household	-0.035 (2.80)*
ST	0.024 (2.35)**
SC	0.042 (4.61)*
OBC	0.050 (5.43)*
Household Size	-0.010 (12.98)*
Male	0.021 (5.73)*
Muslims	-0.041 (5.04)*
T	0.549 (24.48)*
casual work member	-0.008 (0.45)
T * Treated	0.020 (2.06)**
R^2	0.31
N	253,553,990

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . Land Category 1 refers to land possessed from less than 0.005 hectares to 0.4 hectares Land Category2 refers to land possessed from 0.41 hectares to 4 hectares. Land Category 3 refers to 4.01 hectares to 8 hectares. Treated districts are the phase 1 and phase 2 districts whereas the non-treated districts are the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. Casual Labourers is the average number of casual labourers in a household. Also MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 3

Double Difference Estimation

No of students in middle schools	
Age	-0.323 (11.02)*
(Age)^2	0.017 (14.53)*
land category 2	0.006 (1.50)
land category 3	0.011 (1.24)
Parent's Education	0.011 (17.36)*
BPL household	-0.036 (2.89)*
ST	0.026 (3.25)*
SC	0.025 (3.33)*
OBC	0.045 (5.61)*
Household Size	-0.005 (6.13)*
Male	0.030 (7.38)*
Muslims	-0.043 (6.48)*
t	0.286 (13.23)*
casual work member	-0.112 (7.04)*
t * treated	-0.007 (0.79)
Primary Education	0.776 (170.40)*
R^2	0.58
N	142,989,324

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . Land Category 1 refers to land possessed from less than 0.005 hectares to 0.4 hectares Land Category2 refers to land possessed from 0.41 hectares to 4 hectares. Land Category 3 refers to 4.01 hectares to 8 hectares. Treated districts are the phase 1 and phase 2 districts whereas the non-treated districts are the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. Casual Labourers is the average number of casual labourers in a household. Also MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 4

Double Difference Estimation

No of students in Secondary schools	
Age	0.559 (34.78)*
(Age)^2	-0.016 (31.65)*
land category 2	0.009 (2.05)**
land category 3	0.017 (1.97)**
Parent's Education	0.014 (22.36)*
BPL household	-0.076 (5.30)*
ST	0.019 (2.32)**
SC	0.020 (2.58)**
OBC	0.054 (6.31)*
Household Size	-0.006 (8.40)*
Male	0.045 (12.91)*
Muslims	-0.050 (8.29)*
T	0.325 (11.15)*
casual work member	-0.178 (13.53)*
t * treated	-0.016 (1.52)
Middle Education	0.826 (174.29)*
R^2	0.53
N	179,180,480

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . Land Category 1 refers to land possessed from less than 0.005 hectares to 0.4 hectares Land Category2 refers to land possessed from 0.41 hectares to 4 hectares. Land Category 3 refers to 4.01 hectares to 8 hectares. Treated districts are the phase 1 and phase 2 districts whereas the non-treated districts are the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. Casual Labourers is the average number of casual labourers in a household. Also MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 5

Triple Difference Estimation

No of students in schools	(1)	(2)	(3)
T	0.553	0.303	0.323
	(21.23)*	(12.69)*	(10.35)*
T*BPL	-0.080	-0.150	-0.078
	(1.05)	(1.56)	(1.58)
Treated*BPL	-0.015	-0.114	-0.028
	(0.17)	(1.11)	(0.50)
Casual work member	-0.008	-0.112	-0.178
	(0.45)	(7.05)*	(13.57)*
T* Treated	0.035	-0.032	0.018
	(1.33)	(1.24)	(0.53)
T*Treated*BPL	-0.001	0.139	-0.007
	(0.01)	(1.29)	(0.10)
R^2	0.31	0.58	0.53
N	253,553,990	142,989,324	179,180,480

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . BPL constitutes of households that falls below the poverty line . It has been constructed using MPCE values with the help of Tendulkar estimates . Casual Labourers is the average number of casual labourers in a household.

Table 6

Double Difference Estimation

No of students in schools	(1)	(2)	(3)
T	0.540	0.281	0.322
	(24.19)*	(13.75)*	(11.20)*
BPL	-0.036	-0.037	-0.077
	(2.87)*	(3.02)*	(5.36)*
Public Work Member	0.109	-0.041	-0.145
	(4.72)*	(1.95)***	(9.25)*
T * treated	0.047	0.011	-0.006
	(4.56)*	(1.15)	(0.55)
T*treated*Casual Work Member	-0.257	-0.172	-0.087
	(8.30)*	(5.62)*	(3.42)*
R^2	0.31	0.58	0.53
N	253,553,990	142,989,324	179,180,480

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . Casual Labourers is the average number of casual labourers in a household. BPL constitutes of households that falls below the poverty line . It has been constructed using MPCE values with the help of Tendulkar estimates Also MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 7

Triple Difference Estimation

No of students in schools	(1)	(2)	(3)
t	0.551 (21.25)*	0.302 (1.15)*	0.322 (0.56)*
casual work member	0.106 (4.64)*	-0.044 (.021)**	-0.151 (.015)*
t * treated	0.037 (1.37)	-0.031 (.025)	0.018 (0.033)**
t * BPL* casual member	-0.251 (8.18)*	-0.164 (.031)*	-0.073 (0.025)
t*BPL	-0.086 (1.12)	-0.153 (-0.97)	-0.079 (0.49)
treated*BPL	-0.018 (0.20)	-0.120 (.104)	-0.031 (.055)
t * treated*BPL	0.028 (0.30)	0.162 (1.48)	0.004 (.064)
R^2	0.31	0.58	0.53

Table 8

Placebo Test

Double Difference Estimation

No of students in schools	(1)	(2)	(3)
t	-0.488	-0.234	-0.167
	(25.34)*	(10.38)*	(5.98)*
casual work member	-0.104	-0.095	-0.172
	(3.63)*	(3.43)*	(8.57)*
t * treated	-0.001	0.021	-0.004
	(0.08)	(1.71)***	(0.32)
t * treated * public work	0.351	0.088	0.096
	(5.75)*	(1.77)***	(2.62)*
R^2	0.28	0.56	0.56
N	317,363,391	170,101,146	213,205,138

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

District Fixed Effects included , State Specific time trends and all the other individual and household controls have been included Robust Standard errors have been reported in parentheses .(1) represents primary school , (2) represents middle school and (3) represents secondary schools . T represents round , it takes the value 0 if the round is 61 and 1 if the round is 64. Treated takes the value 0 if the district didn't have NREGA and takes the value 1 if the district had NREGA . Casual Labourers is the average number of casual labourers in a household.

References :

[1] Afridi, F. , A.p Mukhopadhyay, and S. Sahoo (2012), "Female Labour Force Participation and Child Education in India: The Effect of the National Rural EmploymentGuarantee Scheme", IZA Discussion Paper No. 6593.

[2] Ambastha Pramathesh. , Shah Mihir.,Shankar P.S. Vijay.(2008) , "Two years of NREGA : The Road Ahead" , *Economic and Political Weekly ,* Vol. 43, No. 8 (Feb. 23 - 29, 2008), pp. 41-50

[3] Angelucci, M. and G. Giorgi (2009), "Indirect Effects of an Aid Program: How do Cash Injections Aspect Ineligibles' Consumption?"

[4] K. Bhatia and Ranjan, A. (2009). "Alternative to Migration." *Frontline 16.*

[5] Skoufias Emmanuel. (1993) , "Labour Market Opportunities and Intrafamily Time Allocation in Rural Households in South Asia" , *Journal of Development Economics*

[6] Azam, M. (2012), "The Impact of Indian Job Guarantee Scheme on Labor Market Outcomes: Evidence from a Natural Experiment," IZA Discussion Paper.

[7] Berg, E., S. Bhattacharyya, R. Durgam, and M. Ramachandra (2012), " Can Rural Public Works Affect Agricultural Wages? Evidence from India", CSAE Working Paper 2012-05.

[8] Berg et al .(2015) , "Can public works increase Equilibrium Wages? Evidence from India's National Rural Employment Guarantee" , Unpublished Manuscript

[9] Besley, T. and S. Coate (1992), "Workfare versus Welfare: Incentive Arguments for Work Requirements in Poverty-Alleviation Programs" , *American Economic Review*, Vol. 82 (1), 249-261

[10] Bhalla Surjit. (2010) , "Does NREGA really work" , Business Standard , 27 March 2010

[11] Deininger Klaus , Liu Yanyan(2010) , "Poverty Impact of India's National Rural Employmnent Guarantee Scheme : Evidence from Andhra Pradesh"

[12] Dev S . Mahendra (2011) , "NREGS and child well-being" , IGIDR working paper

[13] Dreze, Jean, and Reetika Khera. **(**2009). "The battle for employment guarantee." *Frontline* 26 (1).

[14] Dutta, P., R. Murgai, M. Ravallion, D. van de Walle (2012) 'Does India's Employment Guarantee Scheme Guarantee Employment?' World Bank Policy Research Working Paper No. 6003, March.

[15] Englar Monika ,Ravi Shanika . (2009). "Workfare as an effective way to fight poverty ? : The case of India's NREGS , World Development

[16] Jacoby, H. and E. Skoufias (1997), "Risk, Financial Markets, and Human Capital in a Developing Country", Review of Economic Studies, vol. 64, pp. 311-335.

[17] Jacob, N. (2008). “The Impact of NREGS on Rural-Urban Migration: Field Survey Of Villupuram District, Tamil Nadu.” CCS Working Paper No. 202.

[18] Jha et al . (2008) , “Capture of Anti-Poverty Programs: An Analysis of the National Rural Employment Guarantee Program in India” ,Australia South Asia Research Centre Working Paper

[19] Jha et al . (2011) , “Social Safety Nets and Nutrient Deprivation : An analysis of the National Rural Employment Guarantee Program & the PDS in India “ , Journal of Asian Economies , vol.22 ,pp.189-201

[20]Imbert, C. and J. Papp (2012), “Equilibrium Distributional Impacts of Government Employment Programs: Evidence from India’s Employment Guarantee" , Centre for Micro Finance Working Paper.

[21] Imbert, C. and J. Papp (2015), “Labor Market Effects of Social Programs: Evidence from India’s Employment Guarantee” , *American Economic Journal: Applied Economics*

[22] Manimagala , J. Regi. (2012) , “Impact of Public Interventions on Child School Enrolment Rates in India “ , *International Journal of Educational Planning & Administration*, ISSN 2249-3093 Volume 2, Number 1 (2012), pp. 1-24

[23] Mehrotra Santosh . (2008) , Economic and Political Weekly, Vol. 43, No. 31 (Aug. 2 - 8, 2008), pp. 27-35

[24] National Sample Survey , Employment and Unemployment 60 , 61 and 64 rounds

[25] Rosenzweig, M. and R. Evenson (1977), “Fertility, Schooling and the Economic Contribution of Children in Rural India: An Econometric Analysis", Econometrica, vol. 45, 1065-1079.

[26] Sekhri Sheetal. Li Tianshu .(2013) , “The Unintended Consequences of Employment Based Safety Net Programs”

[27] Zimmermann, L. (2014). “Why Guarantee Employment? Evidence from a Large Indian Public-Works Program.” American Economic Review