The Unintended Consequences of Increasing Rural Employment Opportunities: The Impact of Rural Employment Guarantee Scheme on Schooling in India

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Abstract

Employment Guarantee schemes are a widely used anti-poverty lever in the developing world. In this paper, we examine the consequences of increasing rural employment opportunities via such schemes for human capital of children in rural areas. Children are more likely to enrol in schools due to an income effect. However, children may substitute and work in farms or home production resulting in a decline in enrollment. The net result is theoretically ambiguous. We use the variation introduced by the roll-out of the National Rural Employment Guarantee Scheme (NREGA) in India to evaluate this theory empirically. We exploit the timing of introduction of NREGA across districts of India in our identification and find that NREGA results in an overall decrease in enrollment indicating that the substitution effect dominates. However there is heterogeneity in the impact across households. Enrollment in private schools increases and that in government schools falls albeit it comes at the cost of diluting educational outcomes. Grade repetition and pass rate worsen in private schools.

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1 Introduction

Employment Guarantee Schemes have been widely used as anti-poverty policies both in developed and developing countries. [1] As one of the most successfully implemented safety net schemes, these programs intend to smooth income shocks for vulnerable populations. Consequently, these schemes can affect human capital of the children directly through program effects. In addition, schooling outcomes can respond to such programs indirectly through congestion effects. This paper uses the variation in the roll-out of the Indian government's 2005 National Rural Employment Guarantee Act (NREGA) to evaluate the impact of rural employment guarantee on children's human capital.

Employment guarantee schemes can influence schooling directly. The schooling outcomes can improve due to an income effect. However, if farm labor becomes scarce, these programs would increase the rate of return for children to work on farms. The resulting substitution effect arising from intra-household reallocation of the sector of labor in which each member works, could result in deterioration of schooling outcomes. The net result is theoretically ambiguous and depends on which effect dominates. The first contribution of this paper is to evaluate the impact of NREGA on enrollment in rural India. At first blush, estimating the program effect on schooling would seem ideal to understand the inter-generational welfare effects of this scheme. However, as demonstrated in other contexts such as affects on food prices (Jayachnadran et al , 2010) and consumption (Angelucci and Giorgi, 2009), large scale safety net programs can have non-trivial general equilibrium effects. In the case of schooling, massive influx of students in the schools can dilute the educational experience and undermine the quality of education. Grades, pass-rates, drop-out, and failure rate can deteriorate. The second contribution is to isolate the general equilibrium effects of the program on such educational outcomes in rural India.

A number of factors make the India's flagship NREGA program an ideal settling to study the impact of employment guarantee on schooling. First the the sheer scale of this program makes India a compelling case to study. As per the program statistics, by 2010-11 the program provided employment opportunities to 53 million households. Under this program, rural households had worked 2.3 billion man-days making it the world's largest operating employment guarantee scheme. Second, the program was gradually rolled-

[1] The earliest experiments with this policy lever date back to the 1817 Poor Employment Act and the 1834 Poor Law Amendment Act in Great Britain (Blaug, 1963, 1964), and the New Deal program of the 1930s in the United States (Kesselman, 1978; Bernstein, 1970). More recently Chile in 1987, India in 1978 and 2001, Pakistan in 1992, Bangladesh in 1983, Philippines in 1990, Botswana in 1960, and Kenya in 1992 have implemented variants of employment grantee schemes. See Mukherjee and Sinha (2011) for details.

out in the districts of India as per their backward status, which was determined on the basis of pre-defined characteristics. This variation provides an excellent opportunity to evaluate the impact of this program.

Using a longitudinal data set of about 1.2 million primary and upper-primary schools in India from 2005 to 2008, we employ school fixed effects and compare within school enrollment across the districts which received the program early to the ones that received it late. We find that conditional on school characteristics and net cost of attending school, enrollment in schools declines and this result is driven by primary schools rather than upper primary schools. This indicates that primary school aged children are substituting for adults. As qualitative reports have indicated, this substitution is most likely in home production such as taking care of younger siblings or animals rather than in farms.

But there is heterogeneity in response to the program. We find that enrollment in low quality free public schools reduces, while it increases in better quality expensive private schools.[2] Thus, the program increases household educational investment and allocations for some households. Despite this increase in allocation towards education, the quality of education received does not improve. We see a deterioration in passing rate as well as an increase of repeaters in private schools. We do find a modest increase in the number of private school teachers in response to the program, but these are not big enough to fully compensate and offset the negative congestion effects. Overall, these results indicate a strong congestion effect on quality of schooling.

In order to address non-random placement of the program, we control for the three characteristics- district Schedule Caste population as per the 1991 Census of India, 1996-97 agricultural wages, and output per agricultural worker from 1990 to 1993- which determined the roll-out order. In addition to the school fixed effects, we also include year fixed effects to control for overall trends in enrollment and state by year time trends to control state specific funding decisions that may impact schooling outcomes. In order to control for supply side effects and cost and benefits of attending schools, we include a very comprehensive school level and district level set of controls in our specifications. Using the data available from 2003-2005 for a large sub-sample of the states, we also compare the pre-trends in the districts that received the program early to the ones that received it late. Re-assuringly, we do not see an evidence of differential pre-trends in enrollment. We show that results are similar in the full sample and in the sub-sample for which we have pre-treatment data to rule out bias emerging from selection into the

[2]A number of surveys in India show that the quality of private schools in India is much better than public schools and private schools are much more expensive (Muralidharan and Kremer (2007); Desia et al (2008))

sample. Only 10 states and union territories covering a very small fraction of rural India are excluded in the pre-trend comparison. Using this sample, we also demonstrate that including changes in yearly enrollment from 2003 to 2005 and allowing these to vary over time, does not change our results.

Our paper makes contributions to three strands of literature. The first strand focuses on examining the causal effects of employment guarantee schemes and other safety net programs on development outcomes. Several other studies have evaluated safety net programs, and in particular, this program. [3] Previous evaluation has shown that NREGA increased unskilled wages (Imbert and Papp , 2011; Azam, 2012; Berg et al., 2012) and female labor force participation (Azam 2012). Imbert and Papp (2012) develop a theoretical model of labor markets. Using their model, they isolate the general equilibrium effects on wages and quantify the redistributive welfare effects of the program. Using survey data, Ravi and Engler (2009) evaluate the effect on the consumption of the participating households relative to non-participants. Afridi et al (2012) examine the effects of relative increase in mothers income on schooling outcomes explaoiting the increase in women's employment resulting from NREGA in a few districts in one state. We compliment this literature and examine the effects of the program on schooling outcomes.[4] We also show that there are unintended consequences of the program for non-beneficiaries due to congestion externalities in schools. Our findings have important policy implications. Without adequate commensurate increase in school infrastructure, large scale safety net programs designed to smooth household consumption, may result in poor quality of schooling.

Our result also contributes to the literature on identifying general equilibrium effects of social programs. Angelucci and Giorgi (2009) show that cash transfer programs can increase the consumption of non-beneficiaries through transfers within social networks. Jayachandran et al (2011) find that food subsidy programs can affect prices of food and other durable household purchases. Ardinton et al (2009)find that social transfers affect labor supply in South Africa. More closely related to this paper, Imbert and Papp (2012)

[3]See Skoufias and Parker(2003) for an in-depth analysis of the Mexican PROGRESA on child outcomes. PROGRESA is a conditional cash transfer program where transfers to the households were conditioned on children's attending school. So the incentives households face are very different from NREGA.

[4]Unlike Afridi et al (2012), we do not find an improvement in the schooling outcomes. There are a number of differences between our paper and their study. We use the data for the entire country from 2005 to 2008. Their study uses data 5 districts in Andra Pradesh from 2007 and 2009. Hence, our design allows us to understand the general equilibrium effects of the scaled up program. By 2009 NREGA was already implemented in the entire country. So they do not use the variation in timing of the roll-out for identification. We also examine a very rich set of schooling outcomes, whereas they focus on time spent in school.

show that employment guarantee programs affect rural wages and employment finding that NREGA had re-distributive effects on rural wealth. We examine the consequences of such social programs on schooling outcomes and show that the scale of the program generates unintended congestion externalities in private schools atleast in the short run.

Our paper also contributes to the literature on child labor.[5] Basu and Van(1998) provide a theoretical model that examines conditions under which children work in the labor market. The paper provides insights about existence of multiple equilibria where child labor either exists or not. Our paper empirically investigates this theory albeit indirectly using enrollment decisions rather than time allocation decisions. Edmonds (2005) uses data from Vietnam to examine if improving standards of living reduces child labor. Edmonds and Pavnick (2004) examine the effect of international trade on children's outcomes. Jacoby and Skoufias (1997) study the effects of financial market incompleteness and human capital accumulation. Their main finding is that seasonal fluctuation in school attendance is a form of self-insurance by households. We contribute to this literature by examining the effects of permanent and assured increase in household income on decision to enrol in school.

The rest of the paper is organized as follows: In section 2 , we offer more detailed information on the NREGA in India. Section 3 discuses a simple conceptual framework to motivate the empirical analysis. Section 4 presents the data used in this paper. Section 5 documents the results. Section 6 provides the results of the robustness tests. Section 7 offers concluding remarks.

2 Contextual Information

2.1 Background-National Rural Employment Guarantee Act

National Rural Employment Guarantee Act was passed in September 2005. This program provides 100 days of guaranteed wage employment in a financial year to every rural household whose adult members volunteer to do unskilled manual work at officially determined minimum wage of about 2 USD per day (Ministry of Rural Development, 2012; Azam, 2012). In a district covered by the program, any adult who applies for work under NREGA is entitled to employment in public works within 15 days; otherwise, the state government needs to provide a payment of unemployment allowance (NREGA Operational Guidelines, 2008). The particular types of projects allowed under NREGA are typical rural public projects such as road construction, earthworks related to irrigation,

[5]See Basu(1999) for a review of this literature.

and water conservation (Azam, 2012). Any households living in the rural area can apply to work, but they cannot choose what type of project to work on (NREGA Operational Guidelines, 2008). To obtain the benefit from this scheme, adult members of a rural household first apply for a job card at the local Gram Panchayat where the applicants are residing.[6] Within 15 days of application, the Gram Panchayat needs to issue the Job Card, which bears the photographs of all adult members of the household willing to work under NREGA. This card is free of cost. The work guarantee mandates 33 percent participation for women (NREGA Operational Guidelines, 2008).

The central government bears the entire cost of wages of unskilled manual workers, and 75 percent of the cost of material and wages of skilled and semi-skilled workers. The state governments bear 25 percent of the cost of material and wages of skilled and semi-skilled workers. In addition, state governments bear the cost of unemployment allowance payable in case the state government cannot provide wage employment on time (Ministry of Rural Development, 2008). The state government sets the wages. Wages are typically paid by piece-rate but some areas also pay fixed daily wages. Daily earnings are below the set wage. Theft and leakage in the program has been documented.[7] Imbert and Papp (2012) document that despite its shortcomings, the program is effective at attracting casual labor relative to the private sector. Reported earnings are also higher.

With a budget of almost 4 billion USD or 2.3 percent of total central government spending, the program is by far the best endowed anti-poverty program in India (Ministry of Rural Development, 2008a). In 2010-11, the NREGA provided 2.27 billions person-days of employment to 53 millions households, and the whole budget in the country was Rs. 345 billions (7.64 billions USD). The program represented 0.6% of the GDP (Johnson, 2009).

2.2 Roll-out of the NREGA Program

NREGA was implemented in three phases. Backwardness status of the districts was used to determine roll-out priority with representation in Phase-I provided to each state. (Planning Commission, 2003). The planning Commission of India explicitly calculated and ranked the backward status of Indian districts(Planning Commission, 2003). The official ranking of backwardness of the districts in each state was based on the Scheduled Caste and tribe population in 1991, agricultural wages in 1996-97 and output per agricultural worker in 1990-93. Weights were used to weigh each criterion. In the first

[6] A Gram Panchayat is the lowest level of administration in the Indian government, comprising of a group of villages (Azam, 2012).

[7] Niehaus and Sukhtankar, 2008

phase of the program, 200 most backward districts were notified to implement the policy with effect from February 2006. The program was then introduced in an additional 130 districts in the second phase in 2007, and all the remaining districts received the program in the last phase in April 2008. Currently, the scheme covers the entire country with the exception of districts that have a hundred percent urban population (NREGA Operational Guidelines, 2008). This phase-wise variation in introduction of the program enables us to identify the impact of this scheme on schooling outcomes. [8]

3 Conceptual Framework

Decision to Enroll in School : A number of research studies have shown that rural wages increased in response to the introduction of the program (Azam, 2012 ; Berg et al ,2012; Imbert and Papp (2012)). Conceptually this would result in an increase in the income of the rural households. If investing in children's education is a normal good, then this effect would have a positive effect on enrollment. The program also mandated that 33 percent of the jobs be reserved for women. An increase in the income of the mother may have an independent positive effect on children's enrollment in school due to improved bargaining power within the household (Qian,2008; Duflo,2003 ; Thomas, 1994). On the other hand, women's labor force participation may adversely effect enrollment. Elder children of school going age may substitute to provide child care for younger siblings. In the absence of availability of after school care, women may want to take their children to work sites. Finally, if farm labor becomes scarce, children may work in the farms while adults find jobs under NREGA. Thus, children may substitute for adult labor in the farm sector or in the household production. This will reduce the enrollment in school. Households will also weigh the pecuniary benefits of enrolling children in the schools against the cost.[9] Thus, the pecuniary benefits of school enrollment in terms of incentives to attend, for example- if midday meal is offered at the school or not; and school quality will have an impact on the enrollment decision. Theoretically, the effect of the program is ambiguous. We use grade level and gender specific enrollment data to understand the mechanisms. Children in primary classes are too young to work as substitutes in the farms. But they can substitute in home production. For example, they can help take care of younger siblings. Children in upper primary or beyond can

[8]Prior to February 2006, the government experimented with a pilot program (the Food for Work Program) in November 2004 in 150 of the 200 phase-I districts. Field observations (Dreze, 2005) and research studies (Imbert and Papp, 2012) have found little evidence of increase in public works due to this pilot.

[9]Liquidity constraints can impede households from sending their children to school (Edmonds, 2006).

potentially work in the farming sector earning wages. They can also substitute in home production. Thus, if we observe an increase in enrollment, income effect would dominate the substitution effect. However, if we observe a decline in enrollment, than that would indicate that the substitution effect dominates. In addition, if the enrollment falls only for primary school children than that would imply that children are substituting in home production rather than farm work.

NREGA guidelines mandated reservation of jobs for women. If mother's additional income has an effect on children's outcomes through preferences, then we should observe both girls and boys enrollment increase but we should observe a larger impact on girls as they lag behind boys in school enrollment in India.

Conditional on Deciding to Enroll, Choice of School Type: The households for whom the income effect dominates, such that they decide to enroll their children in school, are also faced with the choice of type of school to send their children. Given that elementary government schools are free and lower quality than private schools, households with higher disposable income, may increase their allocation for human capital of children and send them to better but expensive private schools. This will result in an increased enrollment in private schools, with an accompanying decrease in enrollment in government or other type of schools.

Supply side Response of Schools and General Equilibrium Effects The schools will also respond to the increased demand for schooling. This may result in addition of teachers, classrooms, or other infrastructure in schools. The number of schools may increase as well. If markets or state institutions compensate for increasing enrollment such that the infrastructure, number of teachers, and or number of schools increase commensurate to the enrollment, then we should see no effect on the performance outcomes. However, if the supply side does not adjust rapidly, there might be general equilibrium effects of the program. An increase in enrollment may result in congestion externalities. There can be two ways in which this can result in deterioration of schooling quality resulting in lower performance in schools. First, negative peer effects can arise if the new students who enroll in school are not well prepared for school (or if the students from government schools shift to private schools). Second, the increase in the number of students may increase the pupil-teacher ratio and reduce the per capita access to school resources. Note that increased number of teachers reducing the pupil-teacher ratio can offset any negative peer effects as well. Thus, school performance outcomes will be able to provide insights into whether the program results in such unintended externalities or not. While our data will allow us to examine the overall effects, we will not be able to decompose the effect into peer effects or pure congestion effects.

4 Data

The principal source of data is the annual panel of Indian elementary schools called the District Information System for Education (DISE). [10] The data covers grade 1 through grade 8 in approximately 1.2 million schools in the country. School characteristics including staff characteristics like gender and qualification of teachers; infrastructure including availability of common toilets, gender specific toilets, drinking water facilities, and electrification. Enrollment by gender and grade are available in the data set. These data also include pass status in school exam and appearance status in such exams for grade 5 and 7. Grade repetition is available for all grades. Schools in India either have only primary classes (grades 1 through 5) or primary and upper primary classes (grade 1 through 8). The data provide information about whether the school is primary or upper primary. The school management categories in the data include (1) Department of Education, (2) Tribal/Social Welfare Department, (3)Local body, (4)Private Aided, (5) Private Unaided, (6) Others, and (7) Un-recognized. We construct three aggregated categories- government run schools (1 and 2), private schools (4 and 5) and others(3 , 6, and 7). In addition to these features, the data report incentive schemes introduced in various schools to increase enrollment. Various schemes covered are free uniforms, textbooks, stationery, and attendance fellowships.[11]

The district level characteristics are from the Census of India 1991 and 2001. These include total population, population growth rate, percentage of female population, literacy rate, female literacy rate, percentage of scheduled caste and scheduled tribe population, and percentage of working population. Agricultural wages 1996-97 and total output per agricultural worker for 1990-93 are from the Planning Commission's 2003 report. Tables 1 through 6 present the summary statistics.

5 Empirical Strategy

We use the timing of roll-out of the NREGA program across districts of India for identification. Phase-I districts received the program in February 2006, Phase-II in 2007 and

[10] DISE is collected every year in a joint collaboration between the Government of India, UNICEF and the National University of Educational Planning and Administration (NUEPA). The data is publicly available from NEUPA.

[11] These data are collated using a district level administrative structure. School principals fill a standardized survey about the school. The data are manually checked at various levels for completeness, accuracy and inconsistencies. States also implement checks. NEUPA has commissioned an external audit of the school data. These audits check 5 percent of the schools chosen randomly from at least 10 percent of the districts from each state. The auditors also visit the schools. These audits have established that the enrollment data reported by the principals are remarkably accurate.

Phase-III in April 2008. The academic school year in India begins in March-April. Consequently, schooling outcomes in Phase-III districts would be un-affected by the program in 2008. We use 2005 as the pre-year and include data from 2005-2008 in our analysis.

5.1 Roll-out and Selection

The timing of the roll-out of the program was not randomly determined. The selection criterion based on characteristics described above would not be orthogonal to schooling decisions of the households. Thus, a simple comparison of the districts across different phases is not likely to generate causal estimates of the program. In order to circumvent this issue, we compare outcomes within districts that received program in different phases over time. This allows us to control for time invariant differences in unobserved characteristics of districts that received the program in different phases. We also use within school variation for identification by including school fixed effects to purge any time invariant school level characteristics that maybe correlated with treatment.

As described before, selection into treatment was based on three pre-program characteristics of the districts- pre-program levels of scheduled caste and tribes population, agricultural wages,and output per agricultural worker. We interact these with year indicators to control for trends in these variables. In addition, we include a rich set of district specific controls including 2001 levels of total population, percentage of rural population, population growth rate, overall literacy rate and female literacy rate interacted with year indicators. States have discretion over education funding. Therefore, we also control for a state specific time trend to control for state specific time varying unobserved heterogeneity. The identifying assumption is that the outcomes in districts that received the program in different phases are not trending differentially prior to treatment. For a sub-sample of states for which data is available from 2003 (this excludes 10 very small states and union territories), we show that school enrollment in districts that received the program in different phases is very similar. We also show that the within school results are invariant to including changes in enrollment from 2003 to 2005. We verify that excluding the 10 states for which data is available after 2003 does not influence the results to rule out selection into the sample.

5.2 Estimation Procedure

We use school level data from 1.13 million schools from 2005 to 2008 for testing our hypotheses. Our empirical specification is as follows:

$$Y_{idst} = \alpha_0 + \alpha_1 NREGA_{dt} + \alpha_2\, X_{idst} + \alpha_3\, Z_{ds} * T_t + \alpha_4\, State_s * trend + T_t + I_{ids} + \epsilon_{idst} \quad (1)$$

where Y_{idst} is the outcome variable for school i in district d in state s in year t. $NREGA_{dt}$ is an indicator that takes value 1 if district d in state s has started the NREGA program in year t, and 0 otherwise; X_{idst} is a vector of school level controls including different kinds of incentives received by the students, the characteristics of the teachers and infrastructure of the school i in district d in state s in year t; Z_{ds} is a vector of district-level controls for demographic characteristics, and is interacted with year indicators to control for trends; $State_s$ is a vector of state indicators, and is interacted with time trend to control for the state-specific time trends; T_t and I_{ids} are year- and school-fixed effects, respectively, and ϵ_{idst} is the idiosyncratic error term. We drop the NREGA phase indicators due to multi-collinearity in our school fixed effects model. We cluster errors at the district level to account for arbitrary correlation over time.

In order to examine the school choices conditional on deciding to enroll, we interact the introduction of NREGA with the type of school. The empirical model is as follows:

$$\begin{aligned} Y_{imdst} \;=\; & \beta_0 + \beta_1 NREGA_{dt} + \beta_2\, P_{ids} * NREGA_{dt} + \beta_3\, G_{ids} * NREGA_{dt} \\ & + \beta_4\, X_{imdst} + \beta_5\, Z_{ds} * T_t + \beta_6\, State_s * trend + T_t + I_{ids} + \epsilon_{idst} \end{aligned}$$

where Y_{imdst} is the outcome variable for school i of type m in district d in state s in year t. P_{ids} is an indicator equal to 1 for private schools and 0 otherwise and G_{ids} is an indicator which takes value 1 for government schools and 0 otherwise. The omitted category is others. We include the the interaction of the NREGA policy indicator with each of these type indicators to examine if enrollment differs by school type. Note that once we include the school fixed effects, indicators for school type (private and government) are not included as these are time invariant properties of schools. As before, we also drop the phase indicators due to multi-collinearity in the school fixed effects model.

We examine the effect on pass rate, pass rate conditional on appearing in the exams, appearing in the exams and grade repetition to shed light on the general equilibrium effects of the program. We also investigate whether number of teachers, number of

classrooms, and number of schools respond to the increased demand for schooling, if such a demand arises in this context.

6 Results

6.1 Overall Enrollment

We test the implications of the the conceptual framework we presented in section 3. First, in order to evaluate the effect of NREGA on equilibrium overall enrolment, we estimate equation 1 and present the results in Table 7. Column (i) presents the basic school fixed effects model with year fixed effects. In column (ii), we add the district level controls that influenced the roll-out priorities. The district controls include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate. In addition, we also control for the scheduled caste and tribe population as per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program. The program effect in column (i) and column (ii) is negative but statistically insignificant. In column (iii), we present the equilibrium effect of the program on enrollment net of other pecuniary benefits offered at school by controlling for supply side response. The pecuniary benefits or school level incentives control for any attendance scholarships being offered at the time, uniform, books, stationery and other such subsidies. In order to account for the supply side response, we control for school infrastructure including the number of classrooms, the number of classrooms in good condition, common toilets, girls toilets, boys toilets, drinking water facilities, and electrification. Number of male and female teachers are also controlled. Now, the negative coefficient of -2.19 is statistically significant at 5 percent indicating an overall drop in within school enrollment across the years in the sample resulting from implementation of NREGA. States can independently allocate resources to various areas in order to address their schooling priorities. [12] Thus we control for state specific time trends to allow for such compensations. Our result is robust to controlling for state specific time trends as reported in column (iv). Hence implementation of NREGA results in a drop in enrollment with 2 fewer children enroled per school. When split by primary and upper primary grades, this effect is driven by a drop in enrollment in primary classes (columns (v) and (vi)). Thus, young children substitute for adults in home production. We do not find any change in the enrolment of

[12]Schooling in India is a state subject implying that states have independent budgets for education.

children in upper primary classes. Since these children are already past elementary school (which is free in case of government schools), it is possible that households do not want to withdraw these children from schools as they have invested in their schooling. The sunk cost of investment can result in letting these children continue in schools. However, it is also possible that households who are employed in NREGA sites are younger and do not have children beyond the primary grades. In our subsequent analysis, we do observe heterogenous effects on children in upper primary schools as well. Hence we do not think that participating household's demographic composition is driving these results.

The field work conducted by Centre for Social Protection (Sudarshan, 2011)indicates that a majority of women who work in NREGA projects take their primary school aged children to work sites or leave them at home to provide child care for younger siblings. The study conducted semi-structured interviews of the women on NREGA sites in various districts. The report presents qualitative evidence from interviews about prevalence of this type of child care provided by older siblings. As per the study, one woman reported "Nobody is there to look after the child. Women have to take care of their own children. Some women do come with a small baby but they bring along an older son or daughter to take care of the infant while the woman carries out her work." The older child may be 10 to 12 years old. When the interviewer asked if these children go to school, one woman said, "Madam jo site par jayega woh school kaise ja sakta hai?" (If a child has to go to the site how can she go to school?). At another place, the response was, "Women do not come with their children but leave their children at home with other siblings who look after them." Other field studies have reported similar findings (Bhatty , 2006). These qualitative findings corroborate our quantitative finding that the program induces elementary school aged children substitute for adults in home production.

6.2 Heterogenous Effects by Type of Schools

In order to examine if the type of school that children attend is affected due to an increase in the income of the parents, we evaluate equation 2 and report the results in Tables 8 and 9. In Table 8, we show the interaction of the NREGA implementation policy dummy interacted with government school indicator and private school indicator. The excluded category is 'other types' as described in the data section. Columns (i), (iii), and (vi) repeat the results of the estimation of equation 1 for overall enrolment, primary enrolment and upper primary enrolment. These were reported in columns (iv)-(vi) in Table 7 and have been reproduced for comparison. Overall enrollment in government schools falls by 3 children per school whereas it increases in private schools by 23.8 children per school

(column (ii)). The coefficient on the interaction term with government school indicator is significant at 5 percent and with private school indicator at 1 percent significance level. The decrease in government primary schools is 4.52 per school, and the increase in private primary schools is 25.6. This effect is muted in the upper-primary classes. In upper primary classes, we do not see a drop in the government school enrollment but an increase of 5.48 in private schools. Hence parents shift children previously enrolled in the other type of schools into private schools. Since vast majority of schools in the data (66 percent) are government schools and only 13 percent are private schools, the increase in enrollment per private school is much larger than decrease in government schools.

6.3 Heterogenous Effects by Gender

Afridi at al (2012) and Imbert and Papp (2012) have both documented an increase in employment of women under NREGA. If this results in improved intra-household bargaining for women and women have a higher preference for human capital of children relative to men, then enrolment for girls should increase more relative to boys. Next, we test for this hypothesis and report the results in Table 9. For boys we see an overall reduction in enrolment of around 1 per school marginally significant at 10 percent (column (i)), and for girls we see an effect of same magnitude and sign but statistically significant at 5 percent. We see a highly statistically significant reduction in enrolment in government schools of 2.12 per school and an increase in private schools of 11.87 per school for boys. The effects for girls are very similar. The effect in private schools is equivalent to boys and is statistically significant at 1 percent (columns (ii) and (iv)). In primary , we cannot reject the hypothesis that the effect of the program on girls and boys is the same. There is a decrease in the enrollment in government schools and an increase in enrollment in private schools (columns (v) and (viii)) for both boys and girls and the magnitude is similar. As in Table 8, in upper primary classes, the effects are much more muted but no different for boys and girls. In Appendix Table 1 and 2, we report the coefficients of the interaction term by grade. The increase in the private school enrolment is spread across classes until grade 7. The effect in grade 8 is the lowest (0.55 per school for boys and 0.32 per school for girls)and is marginally significant at 10 percent for boys. It is only in lower grades, that we observe a decrease in enrollment in government schools. This further augments the hypothesis that overall enrollment is unaffected in higher classes by NREGA due to sunk cost in investment in children's education. The similarity of the effects for boys and girls indicate that mother's improved status in the household is not resulting in any stronger preferences for human capital of the children.

6.4 General Equilibrium Effects

We next turn to understanding the effects of the program on performance in schools. As discussed in the conceptual framework, the program can lead to a deterioration in the performance outcomes if there are congestion effects or negative peer effects arising from increased enrollment. The DISE data provides various measures of performance in school. For grade 5 and 7, DISE includes number of students passing the annual examinations and number of students appearing for such exams. We construct 3 measures from these - pass rate (number of students passing /total students enrolled), number of students passing conditional on appearing in the exam, and number of students appearing in the exam conditional on enrollment. We present the results in Tables 10 and 11. Pass rate in government schools, for both boys and girls, is unaffected even though the enrollment drops (Table 10, columns (i) - (iv)). However, the pass rate in private schools declines in grade 5 for both boys and girls. In grade 7, it declines only for girls and the coefficient is statistically significant at 10 percent. A one child per school increase in enrollment results in almost 1.17 percent decrease in pass rate for boys and 1.8 percent decrease in pass rate for girls in grade 5. However, a 1 child per school increase in private school enrollment for boys in grade 7 does not result in a reduction in pass rate and 0.5 per school increase in enrollment for girls reduces pass rate by 0.68 percent (columns (iii) and (iv)). Hence in columns (v) through (viii) of Table 10, we examine the impact on passing conditional on appearing in the exam. In grade 5 of private schools, we observe a highly statistically significant decline in this measure of performance as well. The effect for boys and girls is the same in magnitude around (1 percent decline) and sign. However, there is no effect in grade 7. Appendix Table 3 shows that number of children appearing in exams falls in private schools for boys and girls in both grade 5 and 7, but the magnitude of the effect is smaller in grade 7. Since number of children conditional on appearing in exams falls, this is on account of fewer children passing rather than an increase in children appearing. Grade 5 has fewer students on the average than grade 7. The average number of students in grade 5 in private schools is 25.51 with a standard deviation of 30.7 (the average for boys is 14.4 and the girls is 10.7). In contrast, the average number of students in grade 7 in private schools is 45 with a standard deviation of 50.1 (the average number of boys is 26 and girls is 20.3). Thus, the marginal congestion effect of adding one more child in classes with lower enrollment level is larger in magnitude.

In Table 11, we evaluate the impact on grade repetition. This data is available for all classes. The program results in around 0.5 percent additional repeaters in private schools (column (i)) and this is statistically significant at 5 percent level. This effect is

same for boys and for girls (columns (ii) and (iii)). We split this by primary and upper primary grades. The effect is driven by grade repetition in primary grades as shown in columns (iv)-(ix). This is consistent with the evidence presented before. Appendix Tables 4 and 5 show grade by grade repetition. The repetition increases in grades where enrollment is high and it increases further due to the program effects.

6.5 Supply Side Response

We have demonstrated that the program induced an increase in enrolment in private schools and a deterioration in the performance measures taking into account the supply side response. But it is instructive to examine how the schools have responded to the demand shock. Therefore, we also examine the supply side response to the program. Specifically, we examine whether or not schools hire more teachers, more male teachers and female teachers and report the results in Table 12. Overall, there was a very small increase in the number of teachers per school. This is marginally significant at 10 percent (column (i)). However, the number of teachers in private schools increased by 0.2 per school. This is statistically significant at 1 percent level. The number of teachers in government schools decreased by 0.138 per school , also significant at 1 percent. Hence there is a flight of teachers from government schools and other type of schools to private schools. Number of male teachers reduce in government schools and increase in private schools with no increase in total number (columns (iii) and(iv)). The overall increase in teachers is driven by increase in female teachers. Female teachers in government schools are unchanged whereas the number increases in private schools by 0.1 teacher per school (columns (v) and(vi)). In columns (vii) through (x), we examine the effect of the program on number of classrooms and number of classrooms in good condition. We do not detect any effect. Despite the improvements in schools in terms of more teacher hiring, the performance in private schools deteriorates. Hence the program generates negative externalities on students in private schools that the markets are not able to internalize. The government schools become less crowded but then also lose teachers. Hence, there is no net benefit to students attending government schools either.

6.6 Congestion Effects versus Pure Substitution Effect

We have demonstrated that children's performance worsens in private schools as the enrollment increases. We argue that this is on account of either congestion or negative peer effects experienced by students or both. One alternative explanation might be that this is purely a substitution effect operating on the intensive margin. Children

who attend school also help with house work or in the fields and thus have fewer hours to devote to studying. There are number of facts that indicate that this is not the case. First we observe this deterioration in private schools and not government schools. We pointed out before that government schools have fewer students but fewer teachers. If performance were affected by substitution effect, then we would see a worsening of outcomes for the government school students as well as students would study less and there would be fewer teachers to help around. The fact that performance of government school children is not worsening, indicates the existence of a congestion effect. Within private schools, this effect varies in primary and upper primary schools. We discern a negative significant effect on performance in primary grades but not in upper primary grades. The upper primary children have an advantage at substitution, but we do not see these children's outcomes worsening more. On the other hand, as described above, there are fewer children in upper primary classes than in primary grades. The addition of 1 child per grade has a larger negative effect in primary classes than in upper primary classes. This is not consistent with only substitution effect driving our results. In fact the patterns within private school provide strong evidence of congestion externalities. But we cannot rule out the possibility that parents are strategic about which children to move from government schools to private schools. If they shifted only very smart children in upper primary grades and relatively weaker students in primary grades, then the same patterns can emerge.

7 Robustness Checks

The identifying assumption is that there were no pre-trends in enrollment in districts belonging to different phases prior to NREGAs implementation. DISE data is not available for all states prior to 2004 although major states are covered since 2003. Hence, we look for pre-trends in enrollment in states covered since 2003. We use data from 2003 to 2006 to check if there are differential pre-trends in enrollment by phases of NREGA roll-out. Figures 1 and 2 show that over this period between 2003 and 2005, the growth in enrollment and number of schools looks similar. [13] The 10 states or Union Territories for which data is available in years subsequent to 2003 but prior to 2005 (and are thus used in the empirical analysis in the paper) are Jammu and Kashmir, Haryana, Arunachal Pradesh, Manipur, Daman and Diu, Dadra and Nagar Haveli, Goa, Lakshadweep, Pondicherry, and Andaman and Nicobar Islands. We drop these states from our

[13] Limited data for a few states is also available for 2001 and 2002 but the coverage is not as expansive. Since data for many states and many variables is not available, we do not use these years.

sample and replicate the analysis from Table 7 and Table 8 for only the states covered since 2003. The results from this exercise are reported in Appendix Tables 6 and 7 and are remarkably similar to those reported in Tables 7 and 8. These two tests together show that pre-trends in enrollment are not biasing our results. In Appendix Table 8, we also control for district specific changes in enrollment from 2003 to 2005 (pre-treatment years) and allow this to very over time by interacting with year indicators for the states for which we have data since 2003.[14] The overall effect on enrollment and enrollment by primary and upper primary are similar to those reported in Table 7.

One concern might be that the increase in private schools is driven by growth in private school market independent of the program. Our estimates use within school variation and compare schools over time before and after the program. Hence, the growth in private schools cannot be the driver of our results. Anecdotal evidence suggests that NREGA reduced out-migration from poor districts to richer ones. To the extent that this does not change the composition of the districts before and after the program, this should not be a concern for our analysis.

8 Conclusion

We use the phased-roll out of NREGA to estimate the impact of safety net programs such as employment guarantee schemes on schooling outcomes of children. Our findings have very important policy implications. We find that the program reduces enrollment in primary grades indicating that the program induces younger children to substitute in home production. Field reports indicating that these children are found offering child care for younger siblings are supported by this finding. From policy perspective, setting up adequate and well functioning child care facilities are needed to offset this substitution effect. Second, we find that enrollment in private schools increases whereas government schools falls. This results in congestion externalities deteriorating school performance outcomes, despite an increase in the number of teachers employed in private schools. Unless state or market institutions provide adequate increase in infrastructure support to schools, such safety programs are not likely to improve the schooling outcomes of children. Safety net programs may enable some households to allocate more resources towards quality provision of schooling, but the unintended perverse effects of the programs may undermine these efforts.

[14] We lose 0.7 percent of our sample schools as new districts were carved in 2004 and we are unable to use their pre-trend data.

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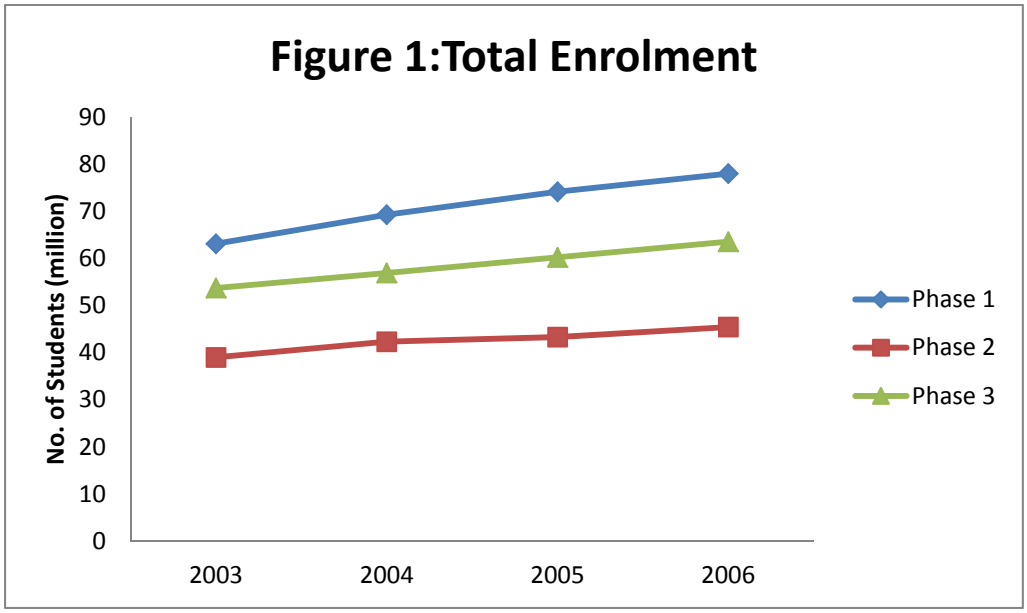
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Figure 1:Total Enrolment
No. of Students (million)
90
80
70
60
50
40
30
20
10
0
2003
2004
2005
2006
Phase 1
Phase 2
Phase 3

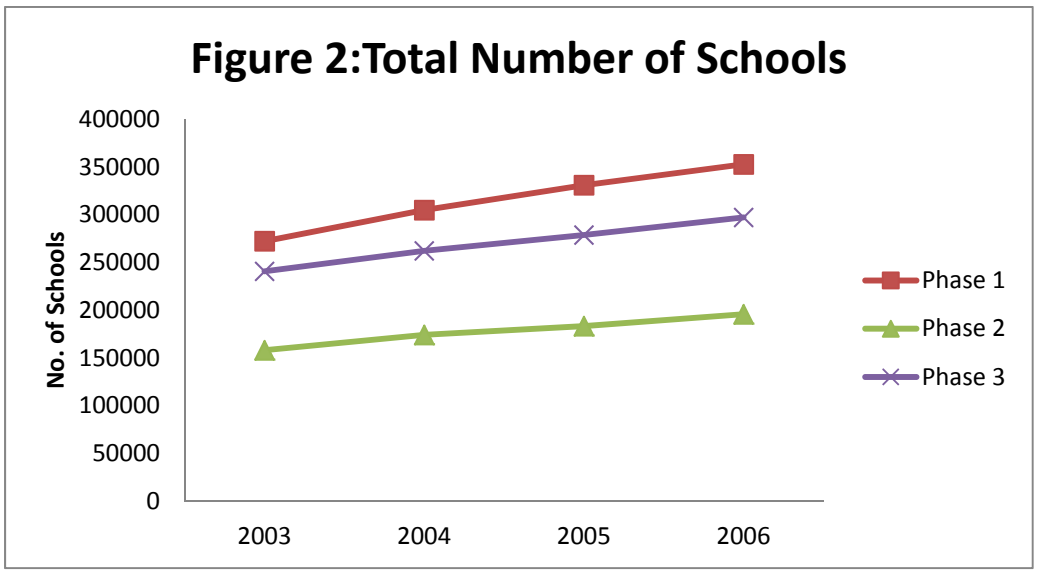

Figure 2:Total Number of Schools
No. of Schools
400000
350000
300000
250000
200000
150000
100000
50000
0
2003
2004
2005
2006
Phase 1
Phase 2
Phase 3

Table 1: Summary Statistics Outcome variables (All phases, all years)

			Obs	Mean	Std. dev.	Min	Max
Enrollment	Total	Overall	3583317	220.22	215.20	1	16155
		Boys	3553987	114.79	112.48	1	8807
		Girls	3566489	106.88	105.83	1	8070
	Primary Classes	Overall	3053180	214.50	194.99	1	16145
		Boys	3052337	110.65	100.28	1	8075
		Girls	3052508	103.90	95.29	1	8070
	Upper-primary Classes	Overall	1113283	108.73	112.48	1	3517
		Boys	1071456	60.66	67.18	1	3474
		Girls	1085242	51.68	58.27	1	2137
Passing Rate conditional on being enrollment	Grade 5	Overall	2673492	0.90	0.19	0	1
		Boys	2584726	0.90	0.20	0	1
		Girls	2569174	0.90	0.21	0	1
	Grade 7	Overall	898816	0.87	0.21	0	1
		Boys	859311	0.87	0.22	0	1
		Girls	859681	0.88	0.23	0	1
Passing Rate conditional on appearing in the exam	Grade 5	Overall	2744763	0.96	0.14	0	1
		Boys	2645710	0.96	0.14	0	1
		Girls	2623691	0.96	0.15	0	1
	Grade 7	Overall	921451	0.91	0.19	0	1
		Boys	878589	0.91	0.20	0	1
		Girls	879953	0.91	0.20	0	1

Summary Statistics Outcome variables Continued (All phases, all years)							
			Obs	Mean	Std. dev.	Min	Max
Proportion of repeaters conditional on being enrollment	Total	Overall	3555960	0.061	0.122	0	1
		Boys	3526696	0.064	0.127	0	1
		Girls	3539271	0.057	0.120	0	1
	Primary	Overall	3041941	0.064	0.125	0	1
		Boys	3035745	0.067	0.129	0	1
		Girls	3041378	0.061	0.121	0	1
	Upper-primary	Overall	1104825	0.048	0.111	0	1
		Boys	1063233	0.051	0.118	0	1
		Girls	1076257	0.044	0.113	0	1
Number of teachers in Government schools	Total		2366670	3.50	2.76	1	85
	Male		2366670	2.36	2.01	0	70
	Female		2366670	1.14	1.68	0	64
Number of teachers in Private Schools	Total		471220	6.38	4.84	1	99
	Male		471220	3.80	3.16	0	98
	Female		471220	2.58	3.77	0	93
Number of teachers in Other Schools	Total		745427	3.83	3.06	1	77
	Male		745427	2.29	2.11	0	48
	Female		745427	1.54	1.99	0	54
Enrollment in Government Schools	Total		2366670	222.71	211.16	1	16155
	Boys		2365568	116.24	110.58	1	8807
	Girls		2366059	108.18	103.46	1	8070
Enrollment in Private Schools	Total		471220	286.86	279.26	1	13841
	Boys		470933	151.71	145.92	1	6912
	Girls		471055	137.79	138.89	1	6929
Enrollment in Other Schools	Total		745427	170.39	162.48	1	8040
	Boys		745398	87.26	83.48	1	4022
	Girls		745417	83.38	80.55	1	4018

Table 2: Other Summary Statistics

			Observations	Proportion mean	Std. dev	Min	Max
Primary classes			3583317	0.86	0.35	0	1
Upper-primary classes			3583317	0.32	0.47	0	1
Private schools			3583317	0.13	0.34	0	1
Government schools			3583317	0.66	0.47	0	1
Common toilet			3583317	0.60	0.49	0	1
Women's toilet			3583317	0.44	0.50	0	1
Electricity			3583317	0.27	0.45	0	1
Drinking water			3583317	0.86	0.34	0	1
No. of Classrooms			3583317	3.75	3.28	0	98
No. of Classrooms in good condition			3583317	2.66	3.13	0	98
Number of students in primary classes who received incentives	Textbook	Boys	3053180	38.90	62.40	0	18300
		Girls	3053180	43.21	60.98	0	20025
	Stationery	Boys	3053180	3.48	21.98	0	9995
		Girls	3053180	3.68	25.54	0	16129
	Uniform	Boy	3053180	5.77	31.78	0	10800
		Girl	3053180	18.25	46.79	0	14425
	Attendence Scholarship	Boy	3053180	9.33	85.14	0	26650
		Girl	3053180	11.80	87.51	0	29492
	Other incentives	Boy	3053180	6.38	144.07	0	21094
		Girl	3053180	5.82	132.03	0	21086
Number of students in upper-primary classes who received incentives	Textbook	Boy	1113283	36.94	78.17	0	12000
		Girl	1113283	40.52	80.86	0	16490
	Stationery	Boy	1113283	3.34	29.73	0	8040
		Girl	1113283	3.39	26.84	0	8200
	Uniform	Boy	1113283	6.49	35.96	0	10750
		Girl	1113283	10.48	36.68	0	8800
	Attendence Scholarship	Boy	1113283	10.62	96.33	0	16800
		Girl	1113283	9.69	89.09	0	24040
	Other incentives	Boy	1113283	3.80	84.75	0	28174
		Girl	1113283	4.06	77.48	0	22105

Table 3: Summary Statistics- Outcome Variables by NREGA Phases

			Phase I			Phase II			Phase III		
			Obs	Mean	Std.	Obs	Mean	Std.	Obs	Mean	Std.
Enrollment	Total	Boy	1427235	117.03	114.99	811491	120.64	114.79	1343173	108.91	108.06
		Girl	1427426	108.35	107.80	811560	111.71	107.29	1343545	102.43	102.62
	Primary	Boy	1261288	113.35	101.94	713703	117.92	101.99	1162206	103.25	96.87
		Girl	1261288	105.73	96.49	713703	109.74	95.55	1162206	98.32	93.50
	Upper-primary	Boy	390606	63.28	70.75	230351	63.72	70.65	480773	57.11	62.21
		Girl	394851	53.95	60.59	233685	54.36	62.20	486980	48.60	54.16
Passing Rate Conditional on being enrolled	Grade 5	Boy	1010061	0.88	0.22	578243	0.90	0.20	997588	0.93	0.18
		Girl	1001533	0.88	0.24	574849	0.90	0.21	993956	0.92	0.19
	Grade 7	Boy	288666	0.86	0.23	174525	0.87	0.22	396463	0.88	0.21
		Girl	288796	0.86	0.24	175007	0.87	0.22	396225	0.89	0.22
Passing Rate Conditional on Appearing in Exams	Grade 5	Boy	1033617	0.95	0.16	598546	0.96	0.15	1014716	0.96	0.13
		Girl	1020888	0.95	0.17	594126	0.96	0.15	1009842	0.96	0.13
	Grade 7	Boy	294195	0.91	0.21	179799	0.91	0.20	404934	0.91	0.19
		Girl	294826	0.91	0.22	180573	0.91	0.20	404889	0.91	0.20
Proportion of repeaters conditional on enrollment	Total	Boy	1406690	0.075	0.14	800454	0.063	0.13	1319552	0.052	0.11
		Girl	1411635	0.068	0.13	804017	0.057	0.12	1323619	0.047	0.10
	Primary	Boy	1223532	0.081	0.14	694532	0.066	0.13	1117691	0.052	0.11
		Girl	1225410	0.072	0.13	696167	0.059	0.12	1119801	0.048	0.11
	Upper-primary	Boy	378336	0.052	0.12	223641	0.051	0.12	461256	0.050	0.11
		Girl	382089	0.046	0.12	226756	0.044	0.12	467412	0.042	0.11
Enrollment	Government		1006795	233.43	224.016	576487	242.598	221.815	783388	194.43	181.14
	Private		133146	293.188	281.589	94408	266.932	262.3	243666	291.22	284.06
	Others		287683	158.715	144.307	140809	159.299	145.04	316935	185.54	182.38

Table 4: Summary Statistics -School Charactersitcis by NREGA Phases

Primary classes			1427624	0.87	0.34	811704	0.86	0.35	1343989	0.84	0.36
Upper-primary classes			1427624	0.29	0.45	811704	0.30	0.46	1343989	0.37	0.48
Private school			1427624	0.09	0.29	811704	0.12	0.32	1343989	0.18	0.38
Government school			1427624	0.70	0.46	811704	0.71	0.46	1343989	0.58	0.49
Number of Teachers		Male	1427624	2.51	2.15	811704	2.60	2.35	1343989	2.52	2.35
		Female	1427624	1.17	1.77	811704	1.35	1.97	1343989	1.72	2.64
No. of Classrooms			1427624	3.36	2.84	811704	3.61	3.01	1343989	4.25	3.76
No. of Classrooms in good condition			1427624	2.30	2.68	811704	2.41	2.84	1343989	3.19	3.62
Common Toilet			1427624	0.54	0.50	811704	0.60	0.49	1343989	0.67	0.47
Women's Toilet			1427624	0.35	0.48	811704	0.42	0.49	1343989	0.54	0.50
Electricity			1427624	0.19	0.40	811704	0.23	0.42	1343989	0.39	0.49
Drinking water			1427624	0.84	0.36	811704	0.86	0.35	1343989	0.89	0.32
No. of students in primary classes who received incentives	Textbook	Boy	1239521	39.32	60.34	695788	41.69	64.20	1130260	36.74	63.41
		Girl	1239521	43.73	56.02	695788	46.90	62.73	1130260	40.37	64.85
	Stationery	Boy	1239521	2.66	18.16	695788	3.22	27.84	1130260	4.53	21.68
		Girl	1239521	2.84	18.83	695788	3.45	40.22	1130260	4.73	19.60
	Uniform	Boy	1239521	3.94	27.18	695788	3.84	20.45	1130260	8.95	40.67
		Girl	1239521	17.42	41.17	695788	17.85	45.20	1130260	19.41	53.09
	Attendence Scholarship	Boy	1239521	8.96	101.20	695788	9.37	71.50	1130260	9.71	72.69
		Girl	1239521	11.81	100.07	695788	11.67	72.80	1130260	11.87	80.81
	Other incentives	Boy	1239521	8.64	163.96	695788	8.35	173.61	1130260	2.70	91.01
		Girl	1239521	7.64	147.35	695788	7.31	150.90	1130260	2.92	97.28
No. of students in upper-primary classes who received incentives	Textbook	Boy	407609	39.54	77.38	239568	37.90	74.13	505412	34.43	80.53
		Girl	407609	42.57	77.49	239568	41.85	83.69	505412	38.26	82.06
	Stationery	Boy	407609	2.56	23.35	239568	2.92	25.12	505412	4.16	35.64
		Girl	407609	2.71	24.02	239568	2.97	23.84	505412	4.13	30.08
	Uniform	Boy	407609	4.74	34.82	239568	4.53	21.85	505412	8.79	41.61
		Girl	407609	10.49	35.02	239568	9.21	28.93	505412	11.07	40.97
	Attendence Scholarship	Boy	407609	11.16	104.09	239568	10.07	73.22	505412	10.45	99.47
		Girl	407609	10.02	92.31	239568	9.58	66.51	505412	9.47	95.56
	Other incentives	Boy	407609	4.48	102.27	239568	4.44	116.67	505412	2.95	39.34
		Girl	407609	4.17	92.26	239568	4.76	103.41	505412	3.64	42.39

Table 5: Year Wise Summary Statitistics by NREGA Phases

Enrollment (Unit: million)

Phase I	2005	2006	2007	2008
Overall	52.06	54.74	57.33	56.71
Government	36.53	38.19	41.51	40.95
Private	7.54	8.62	8.08	8.28
Phase II	2005	2006	2007	2008
Overall	30.84	32.50	33.29	33.35
Government	22.00	22.56	24.09	24.03
Private	4.75	5.79	5.31	5.48
Phase III	2005	2006	2007	2008
Overall	48.83	51.67	51.43	49.24
Government	27.08	27.20	26.86	24.36
Private	11.01	13.15	13.98	14.47

Proportion of Repeaters (Unit: %)

Phase I	2005	2006	2007	2008
Overall	8.29	7.91	6.68	5.88
Government	9.72	9.74	8.25	7.06
Private	3.43	2.24	1.72	1.49
Phase II	2005	2006	2007	2008
Overall	7.06	6.50	5.78	4.99
Government	7.71	7.54	6.62	5.65
Private	3.87	2.22	1.79	1.75
Phase III	2005	2006	2007	2008
Overall	5.74	4.91	5.03	4.20
Government	6.08	5.83	5.90	4.94
Private	2.60	1.99	1.91	1.59

Table 6: Comparison of District Level Characteristics across NREGA Phases

	Year of Measurement	Phase I		Phase II		Phase III	
		Mean	Std Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Total Population (1,000 people)	2001	1,831	1,112	2,047	1,429	1,992	1,119
Population Growth rate (%)	1991-2001	21.13	6.96	21.18	8.03	20.75	9.67
Overall Literacy Rate (%)	2001	47.16	10.45	52.51	12.39	58.23	10.32
Percentage of Female Population (%)	2001	48.68	1.24	48.31	1.27	48.04	1.98
Female Literacy rate (%)	2001	43.55	12.55	49.32	15.32	58.46	14.17
Percentage of Working Population (%)	2001	42.25	6.65	40.01	6.94	40.35	7.12
Percentage Scheduled Caste and Scheduled Tribe Population (%)	1991	38.42	20.74	31.27	21.63	25.76	20.87
Agricultural wages (Rs/person/Day)	1996-97	32.14	9.58	37.72	9.84	46.44	18.48
Output per Agricultural Worker (Rs/worker)	1990-1993	5,196	3,401	7,025	5,212	11,868	9,521

Table 7: The Impact of Introduction of NREGA on Enrollment (2005-08)

	Dependent Variable: Total Enrollment					
	Overall Enrolment				Primary	Upper Primary
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
NREGA Commenced	-1.45	-1.60	-2.23**	-1.96**	-2.23**	-0.42
	(0.95)	(1.09)	(1.02)	(0.95)	(1.04)	(0.56)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	No	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	No	Yes	Yes	Yes	Yes	Yes
Incentives	No	No	Yes	Yes	Yes	Yes
School Infrustructure	No	No	Yes	Yes	Yes	Yes
Number of Teachers	No	No	Yes	Yes	Yes	Yes
State Time Trend	No	No	No	Yes	Yes	Yes
Observations	3,583,317				3,053,180	1,113,283
Number of Schools	1,106,957				941,390	378,324

Notes:

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects and school fixed effects. In addition, we also control for Scheduled castes and tribes popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Table 8: Heterogneous Impact of the Introduction of NREGA on Enrollment (2005-08)

	Total Enrollment		Primary Enrollment		Upper Primary Enrollment	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
NREGA Commenced	-1.95**	-3.01***	-2.20**	-2.01**	-0.43	-1.45**
	(0.96)	(1.09)	(1.04)	(1.02)	(0.56)	(0.67)
NREGA Commenced *Government School		-3.06**		-4.52***		-0.48
		(1.45)		(1.47)		(0.83)
NREGA Commenced *Private School		23.80***		25.61***		5.48***
		(2.03)		(2.126)		(0.877)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,583,317		3,053,180		1,113,283	
Number of Schools	1,106,957		941,390		378,324	

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Table 9: The Impact of the Introduction of NREGA on Enrollment (2005-08)

	Total Enrollment				Primary Enrollment				Upper Primary			
	Boys		Girls		Boys		Girls		Boys		Girls	
	(i)	(ii)	(iii)	(iv)	**(v)**	(vi)	(vii)	(viii)	**(ix)**	(x)	(xi)	(xii)
NREGA Commenced	-0.95*	-1.08*	-1.01**	-1.68***	-1.09**	-0.86	-1.12**	-1.16**	-0.13	-0.69*	-0.25	-0.65*
	(0.49)	(0.57)	(0.48)	(0.53)	(0.53)	(0.52)	(0.53)	(0.51)	(0.33)	(0.38)	(0.27)	(0.36)
NREGA Commenced *Government School		-2.12***		-1.30*		-2.50***		-2.01***		-0.38		-0.22
		(0.75)		(0.72)		(0.75)		(0.74)		(0.49)		(0.41)
NREGA Commenced *Private School		11.87***		11.77***		13.02***		12.60***		3.28***		2.22***
		(1.05)		(1.00)		(1.10)		(1.04)		(0.51)		(0.42)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,553,987		3,566,489		3,052,337		3,052,508		1,071,456		1,085,242	
Number of Schools	1,097,757		1,102,909		940,947		941,259		365,259		370,670	

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Table 10: The Impact of the Introduction of NREGA on Performance Outcomes (2005-08)

	Pass/Enrollment				Pass/Appearing at Exam			
	Grade 5		Grade 7		Grade 5		Grade 7	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NREGA Commenced	0.32	0.31	-0.92*	-0.76	0.16	0.18	-0.88*	-0.66
(unit: %)	(0.33)	(0.34)	(0.48)	(0.49)	(0.24)	(0.26)	(0.45)	(0.46)
NREGA Commenced	-0.22	-0.32	-0.49	-0.77	-0.11	-0.16	-0.14	-0.52
*Gov't School (unit: %)	(0.44)	(0.47)	(0.57)	(0.61)	(0.35)	(0.38)	(0.54)	(0.57)
NREGA Commenced	-1.17***	-1.79***	-0.60	-0.68*	-0.76***	-1.10***	-0.37	-0.33
*Private School (unit: %)	(0.29)	(0.33)	(0.38)	(0.39)	(0.23)	(0.26)	(0.37)	(0.37)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,412,910	2,398,334	807,709	807,994	2,471,122	2,450,877	825,393	826,621
Number of Schools	834,812	833,173	311,403	314,233	839,023	836,656	313,675	316,481

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Table 11: The Impact of the Introduction of NREGA on Repeaters (2005-08)

	Total			Primary Grades			Upper Primary Grades		
	Overall	**Boys**	**Girls**	**Overall**	**Boys**	**Girls**	**Overall**	**Boys**	**Girls**
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
NREGA Commenced (unit: %)	-0.57**	-0.63**	-0.51*	-0.61***	-0.67***	-0.55**	-0.15	-0.086	-0.16
	(0.28)	(0.30)	(0.26)	(0.23)	(0.25)	(0.22)	(0.19)	(0.20)	(0.19)
NREGA Commenced *Gov't School (unit: %)	0.48	0.52	0.45	0.18	0.20	0.15	0.35	0.32	0.38
	(0.31)	(0.33)	(0.30)	(0.25)	(0.27)	(0.24)	(0.23)	(0.24)	(0.23)
NREGA Commenced *Private School (unit: %)	0.49**	0.50**	0.50**	0.56***	0.56***	0.55***	0.11	0.047	0.13
	(0.21)	(0.22)	(0.20)	(0.16)	(0.17)	(0.15)	(0.17)	(0.18)	(0.16)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,555,960	3,526,696	3,539,271	3,041,941	3,035,745	3,041,378	1,104,825	1,063,233	1,076,257
Number of Schools	1,103,959	1,094,768	1,099,905	980,714	978,544	980,714	384,590	379,430	384,590

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Table 12: The Impact of the Introduction of NREGA on Teachers and Classrooms (2005-08)

	No. of Teachers						No. of Classrooms			
	Total		Male		Female		Total		in Good Condition	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
NREGA Commenced	0.042*	0.10***	0.021	0.076***	0.021*	0.028	0.017	0.049	0.0019	0.0020
	(0.024)	(0.038)	(0.014)	(0.024)	(0.013)	(0.019)	(0.023)	(0.039)	(0.023)	(0.030)
NREGA Commenced *Government School		-0.14***		-0.11***		-0.032		-0.039		0.00052
		(0.041)		(0.025)		(0.020)		(0.043)		(0.034)
NREGA Commenced *Private School		0.22***		0.11***		0.10***		-0.050		-0.0037
		(0.041)		(0.026)		(0.024)		(0.049)		(0.042)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,583,317									
Number of Schools	1,106,957									

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Robust standard errors clustered at district level are reported in parantheses.

A. Table 1: The Impact of the Introduction of NREGA on Enrollment in Primary Schools (2005-08)

	Grade 1		Grade 2		Grade 3		Grade 4		Grade 5	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NREGA Commenced	0.0083	-0.056	-0.036	0.075	-0.070	-0.092	-0.21**	-0.18**	-0.30***	-0.29***
	(0.11)	(0.12)	(0.082)	(0.081)	(0.075)	(0.0772)	(0.081)	(0.086)	(0.074)	(0.076)
NREGA Commenced *Government School	-0.36**	-0.33**	-0.53***	-0.71***	-0.30***	-0.33***	0.000371	-0.063	0.13	0.13
	(0.16)	(0.15)	(0.12)	(0.13)	(0.097)	(0.11)	(0.10)	(0.12)	(0.098)	(0.11)
NREGA Commenced *Private School	1.46***	2.06***	1.59***	1.56***	1.33***	1.27***	1.38***	1.27***	1.10***	1.04***
	(0.21)	(0.19)	(0.16)	(0.15)	(0.13)	(0.13)	(0.13)	(0.14)	(0.12)	(0.12)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardnes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,052,337	3,052,508	3,052,337	3,052,508	3,052,337	3,052,508	3,052,337	3,052,508	3,052,337	3,052,508
Number of Schools	940,947	941,259	940,947	941,259	940,947	941,259	940,947	941,259	940,947	941,259

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

A. Table 2: The Impact of the Introduction of NREGA on Enrollment in Upper-primary (2005-08)

	Grade 6		Grade 7		Grade 8	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NREGA Commenced	-0.38**	-0.36**	-0.19	-0.077	-0.12	-0.21
	(0.19)	(0.18)	(0.18)	(0.15)	(0.25)	(0.21)
NREGA Commenced *Government School	-0.27	-0.35*	-0.061	-0.12	-0.054	0.25
	(0.22)	(0.21)	(0.20)	(0.18)	(0.28)	(0.23)
NREGA Commenced *Private School	1.76***	1.45***	1.03***	0.50***	0.49*	0.28
	(0.20)	(0.19)	(0.18)	(0.16)	(0.27)	(0.22)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,071,456	1,085,242	1,071,456	1,085,242	1,071,456	1,085,242
Number of Schools	365,259	370,670	365,259	370,670	365,259	370,670

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

A. Table 3: The Impact of the Introduction of NREGA on Performcance Outcomes (2005-08)

	Appearing at exam/Enrollment			
	Grade 5		Grade 7	
	(xiii)	(xiv)	(xv)	(xvi)
	Boys	**Girls**	**Boys**	**Girls**
NREGA Commenced	0.21	0.19	-0.064	-0.091
(unit: %)	(0.19)	(0.20)	(0.14)	(0.16)
NREGA Commenced	-0.14	-0.20	-0.44**	-0.35*
*Gov't School (unit: %)	(0.25)	(0.26)	(0.20)	(0.21)
NREGA Commenced	-0.52***	-0.91***	-0.23*	-0.30**
*Private School (unit: %)	(0.18)	(0.20)	(0.13)	(0.15)
Incentives	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes
Observations	2,408,048	2,393,084	805,782	805,782
Number of Schools	834,329	832,650	311,174	313,951

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

A. Table 4: The Impact of the Introduction of NREGA on Repeaters in Primary Schools (2005-08)

	Grade 1		Grade 2		Grade 3		Grade 4		Grade 5	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NREGA Commenced	-1.30***	-1.14**	-0.54**	-0.62***	-0.51**	-0.46**	-0.43**	-0.45***	-0.40*	-0.23
(unit: %)	(0.49)	(0.48)	(0.24)	(0.24)	(0.21)	(0.20)	(0.18)	(0.17)	(0.24)	(0.23)
NREGA Commenced	0.47	0.27	0.24	0.35	0.17	0.17	0.084	0.077	-0.024	-0.14
*Gov't School (unit: %)	(0.49)	(0.48)	(0.26)	(0.26)	(0.23)	(0.23)	(0.21)	(0.20)	(0.30)	(0.30)
NREGA Commenced	0.59*	0.50*	0.38**	0.50***	0.36**	0.42***	0.29**	0.37***	0.24	0.31*
*Private School (unit: %)	(0.30)	(0.29)	(0.18)	(0.19)	(0.16)	(0.15)	(0.13)	(0.13)	(0.18)	(0.19)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,867,237	2,868,590	2,844,002	2,844,533	2,801,925	2,800,654	2,742,414	2,735,402	2,263,704	2,249,607
Number of Schools	930,525	931,716	924,146	925,070	911,336	911,828	894,355	893,807	744,613	743,177

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

A. Table 5: The Impact of the Introduction of NREGA on Repeaters in Upper-primary (2005-08)

	Grade 6		Grade 7		Grade 8	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
NREGA Commenced	-0.36*	-0.30	-0.032	-0.16	0.49	0.49
(unit: %)	(0.21)	(0.19)	(0.17)	(0.17)	(0.37)	(0.34)
NREGA Commenced	0.48**	0.39*	0.20	0.29	0.44	0.51
*Gov't School (unit: %)	(0.24)	(0.22)	(0.21)	(0.21)	(0.42)	(0.40)
NREGA Commenced	0.10	0.040	-0.21	-0.038	0.14	0.16
*Private School (unit: %)	(0.18)	(177)	(0.17)	(0.17)	(0.29)	(0.256)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,018,129	1,026,801	972,736	977,557	637,551	640,595
Number of Schools	357,166	361,360	342,140	345,795	232,565	235,984

*** p<0.01, ** p<0.05, * p<0.1

i) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

ii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iii) Robust standard errors clustered at district level are reported in parantheses.

Excluding States for which 2003-2005 data is unavailable

A. Table 6: The Impact of Introduction of NREGA on Enrollment (2005-08)

Dependent Variable: Total Enrollment

	Overall Enrolment				Primary	Upper Primary
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
NREGA Commenced	-1.68*	-1.71	-2.23**	-1.93**	-2.20**	-0.42
	(0.97)	(1.12)	(1.04)	(0.98)	(1.06)	(0.59)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	No	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	No	Yes	Yes	Yes	Yes	Yes
Incentives	No	No	Yes	Yes	Yes	Yes
School Infrustructure	No	No	Yes	Yes	Yes	Yes
Number of Teachers	No	No	Yes	Yes	Yes	Yes
State Time Trend	No	No	No	Yes	Yes	Yes
Observations	3,478,376				2,961,395	1,073,974
Number of Schools	1,068,298				908,531	362,132

Notes:

*** p<0.01, ** p<0.05, * p<0.1

i) Excluded Jammu and Kashmir, Haryana, Arunachal Pradesh, Manipur, Daman and Diu, Dadra and Nagar Haveli, Goa, Lakshadweep, Pondicherry, and Andaman and Nicobar Islands, to form a consistent panel with Figures 1-6.

ii) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

iii) Each regression controls for year fixed effects and school fixed effects. In addition, we also control for Scheduled castes and tribes popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in , 1990-93 interacted with time indicators to account for the backward district status that influenced selection into the program.

iv) Robust standard errors clustered at district level are reported in parantheses.

Excluding States for which 2003-2005 data is unavailable

A. Table 7: Heterogeneous Impact of the Introduction of NREGA on Enrollment (2005-08)

	Total Enrollment		Primary Enrollment		Upper Primary Enrollment	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
NREGA Commenced	-1.93**	-2.76**	-2.20**	-1.96*	-0.42	-1.30*
	(0.97)	(1.12)	(1.06)	(1.06)	(0.59)	(0.70)
NREGA Commenced		-3.54**		-4.82***		-0.73
*Government School		(1.46)		(1.50)		(0.86)
NREGA Commenced		24.12***		26.77***		5.50***
*Private School		(2.06)		(2.18)		(0.89)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes
Year and School Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,478,376		2,961,395		1,073,974	
Number of Schools	1,068,298		908,531		362,132	

*** p<0.01, ** p<0.05, * p<0.1

i) Excluded Jammu and Kashmir, Haryana, Arunachal Pradesh, Manipur, Daman and Diu, Dadra and Nagar Haveli, Goa, Lakshadweep, Pondicherry, and Andaman and Nicobar Islands, to form a consistent panel with Figures 1-6.

ii) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

iii) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

iv) Robust standard errors clustered at district level are reported in parantheses.

Controlling Pre-trends from 2003 to 2005, excluding States for which 2003-2005 data is unavailable

A. Table 8: The Impact of the Introduction of NREGA on Enrollment (2005-08)

	Total Enrollment		**Primary Enrollment**		**Upper Primary Enrollment**	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
NREGA Commenced	-1.91**	-2.64**	-2.15**	-1.93*	-0.43	-1.16
	(0.97)	(1.14)	(1.06)	(1.13)	(0.61)	(0.71)
NREGA Commenced		-3.62**		-4.76***		-0.91
*Government School		(1.48)		(1.54)		(0.88)
NREGA Commenced		24.01***		26.83***		5.40***
*Private School		(2.04)		(2.21)		(0.90)
Incentives	Yes	Yes	Yes	Yes	Yes	Yes
Teacher Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School Infrustructure	Yes	Yes	Yes	Yes	Yes	Yes
District Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Backwardness	Yes	Yes	Yes	Yes	Yes	Yes
Controls for Pre-trend	Yes	Yes	Yes	Yes	Yes	Yes
Year and School Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,469,995		2,953,317		1,072,039	
Number of Schools	1,060,053		900,590		360,252	

*** p<0.01, ** p<0.05, * p<0.1

i) Excluded Jammu and Kashmir, Haryana, Arunachal Pradesh, Manipur, Daman and Diu, Dadra and Nagar Haveli, Goa, Lakshadweep, Pondicherry, and Andaman and Nicobar Islands, to form a consistent panel with Figures 1-6.

ii) We also add the controls for district-level pre-trends, which include the changes from 2003-04, and 2004-05, interacted with year dummies.

iii) School Incentive programs include textbooks, stationary, uniforms, attendance scholarship, and other incentives; teacher characteristics include the number of male and female teachers; infrastructure includes the number of classrooms, classrooms in good condition, the existence of common toilet, women's toilet, electricity, and water facilities; and district level demographic characteristcs include total population, percentage of urban population, population growth rate, overall literacy rate, and women's literacy rate.

iv) Each regression controls for year fixed effects, school fixed effects and state-specific time trends. Each regression also includes indicators for the type of school and whether school offers primary classes and\or upper primary classes. In addition, we also control for Scheduled caste popuation a per Census of India 1991, agricultural wage in 1996-97, and output per agricultural worker in 1990-93, interacted with time indicators to account for the backward district status that influenced selection into the program.

v) Robust standard errors clustered at district level are reported in parantheses.