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Disaggregated labor supply implications of guaranteed employment in India

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Abstract: How do household labor supply decisions change with the entry of a massive employment guarantee program? This paper explores the household level labor allocation effects – disaggregated by gender, age group, task, and season – associated with India’s Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) as specifically implemented in the state of Andhra Pradesh. Using three rounds of panel household survey data including 3,725 households combined with project administrative records, our results suggest that participation in the MGNREGS prompted an increase in overall household labor supply by about 13 days only in the summer slack labor season, mostly attributed to adult women. This expansion, though, is not large enough to evade “crowding out” of some labor previously offered to non-MGNREGS labor tasks, particularly private casual labor opportunities, and more so in the main agricultural seasons than the summer slack season. Despite overall labor displacement, women are found to increase their time spent on farm in the *rabi* agricultural season while men in a small number of surveyed households spend more time on migration labor activities in all three seasons studied. Time spent on paid and unpaid activities, including household chores, do not increase for youth and children in MGNREGS-participating households, suggesting no within-household substitution of labor towards younger members.

Key words: labor, employment guarantee, gender, MGNREGS, India

JEL codes: D13, E24, J22, J38, J45

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1. Introduction

This paper explores various household level labor supply effects induced by participation in a government-sponsored employment guarantee program with self-selection at its core. Major government employment schemes, often in the form of public works projects, aim to provide income transfers to the poorest segments of the population beset with few employment options and low wages and may also serve as a shock to overall household labor supply as well as task- and member-specific time allocation.¹ The case of India's Mahatma Gandhi National Rural Employment Guarantee Scheme (hereafter, MGNREGS) is no different, apart from the unique constitutional "right to work" under-pinning its implementation. The massive scope of the scheme – inclusive of all rural areas of India and employing around 50 million people every year (Khera 2011) – however suggests the potential for more extensive labor market effects and for a range of complementary shifts in how particular groups of individuals spend their time. The entry of MGNREGS offers households, particularly poor households, the opportunity to reassemble their labor supply portfolio.

MGNREGS participation may alter overall household labor supply, the allocation of time to specific paid and unpaid work, and the gender and age composition of non-MGNREGS work. Policy makers should be attuned to these various implications of MGNREGS employment for a number of reasons. Most obviously, the program may have the potential to "crowd out" time previously allocated to work in the private sector, causing newfound constraints in the labor market and potentially no increase in the aggregate amount of time worked by individual laborers. There are fears that such crowding out, should it exist, would adversely affect agriculture specifically, a highly labor intensive industry in India. One could also imagine how MGNREGS participation may "crowd in" other types of work, including time spent on household enterprises or own-farm, especially where MGNREGS wages can be used to invest in these endeavors. Policy makers may view this latter case as a positive labor market outcome where these activities are highly productive and growth-inducing.

Moreover, the equality in wages offered to males and females via MGNREGS – in addition to a number of other program features that make it particularly attractive to women – may generate widespread female participation. Where women have historically undertaken much

¹ These programs are similar but not identical to the increasingly popular conditional cash transfer (CCT) programs where income is provided to targeted households conditional on some outcome or action. Indeed, government employment schemes can be considered a special case CCT program whereby the conditioning mechanism is work.

of the home-based unpaid work, female MGNREGS participation could prompt a shift in some of those tasks towards other household members, including youth and children who may be pulled out of school as a result. On the other hand, adult MGNREGS participation could bring more income into the household and reduce the need for younger members to participate in paid work. How these opposing forces net out is an important empirical question thus far unexplored. Ultimately, the decision to participate in MGNREGS – by both female and male adults – could bring about a range of important labor supply outcomes that may differ by gender, age group, and task.

A number of empirical studies have sought to untangle some of the important overall labor market participation changes induced by MGNREGS in a general equilibrium framework.² Imbert and Papp (2015) use district level data and exploit the phased roll out of the program to find a near one-to-one “crowding out” of private sector labor supply due to MGNREGS implementation. Azam (2012) uses the same data and same identification strategy but performs analysis at the individual level to find a positive intent-to-treat impact on labor market participation of females only. Zimmermann (2012) also uses the same data set but a regression discontinuity design which suggests more modest impacts on the labor market. While important to our understanding of the country-level impacts of MGNREGS, especially in its inception years, these papers are unable to discern the labor market effects of actual MGNREGS participation by households due to data constraints and the research methods chosen. Partial equilibrium questions, on the other hand, are potentially more salient in a self-selection context and where participation rationing is known to be widespread, with both factors highly relevant to MGNREGS.

Furthermore, these papers offer an overall look at labor market effects, with little to no attention to disaggregation by gender and age group of the household member, specific paid and unpaid work types, and agricultural season. Islam and Sivasankaran (2014) use data from three states to find that younger children spend more time in school while older children spend more time working outside of the household when MGNREGS is operating in their district, implying a reduction in child labor on account of MGNREGS. They show the importance of considering a range of time allocation effects separated by age group, but still are only able to estimate intent-

² The studies listed here are in addition to several theoretical pieces on labor market effects described by Basu, Chau, Kanbur (2009); Basu (2011); Mukherjee and Sinha (2013); and others.

to-treat effects and do not consider actual program participation. The gender of the MGNREGS participant may also induce different household labor supply effects, further necessitating a more detailed partial equilibrium exploration. We know, for example, that education outcomes for children in MGNREGS participating households have opposite effects depending on whether it is the mother or father who participates in the program (Afridi, Mukhopadhyay, Sahoo 2012). This finding encourages a more careful assessment of the labor supply effects specific to participant gender, especially given the many ways in which MGNREGS was expected to be a female-empowering program.

This paper extends the current research frontier by looking more specifically at various household level labor supply effects of MGNREGS participation. Unlike the many existing studies that rely on the National Sample Survey (NSS) data, we employ household panel data from primarily poor households in the state of Andhra Pradesh (AP) collected before (2004 and 2006) and after (2008) full MGNREGS phase in matched with administrative project data to answer household labor supply questions by comparing participants with non-participants. First, how does MGNREGS participation affect total household labor supply and the allocation of time to specific tasks? Do these effects vary by gender and age of the household member/worker, gender of the MGNREGS participant, or agricultural season? Second, how does one day of work devoted to a MGNREGS project “crowd out” (or “crowd in”) time spent on paid and unpaid work at the household level? Again, does disaggregating by gender, task, or season reveal any important patterns?

Our identification strategy relies on difference-in-difference estimation combined with propensity score weighting to counter the non-random selection into the program as well as the well-documented occurrence of work rationing within MGNREGS. Our results are drawn from one state where implementation has been applauded and demand levels are relatively high, however the findings may be relevant to other Indian states and countries considering how to better tailor their cash-for-work programs or labor market interventions.

2. Background: MGNREGS and household labor options

MGNREGS follows from the Mahatma Gandhi National Rural Employment Guarantee Act (hereafter, MGNREGA) passed in 2005 granting rural citizens the “right to work” on local and small-scale infrastructure projects (land improvement and clearing for community use, road

and agricultural waterway creation, etc.) at a set wage. The legal entitlement that necessitates MGNREGS makes it the only government employment program like it in the world. Individuals self-target into the program at the village level where projects are determined before seeking funding approval at higher levels of the MGNREGS bureaucracy. While MGNREGS is a national program, it is implemented by individual states and relies heavily on more local level government (districts, sub-districts, and villages) to ensure that the program proceeds as “demand driven.” Program benefits were phased in over three sets of districts based on an algorithm ranking poverty, or “backwardness,” level.³ The first phase districts were identified as the poorest and gained access to funds in the 2006/07 fiscal year, the second phase in 2007/08, and the third phase in 2008/09.

In rural India, most households derive their income from a variety of sources, including but not limited to private employment, casual labor, and home-based farming or enterprise development. Trends in employment suggest that off-farm sources of income have expanded relative to agriculture, especially from construction; agriculture, however, continues to be a source of income for a majority of rural households (e.g., Reddy *et al.* 2014; Chand and Srivastava 2014). During the last three decades, the participation rate for males in the rural labor force remained steady at about 56 percent while the rate for females declined from about 33-34 percent in 2004-05 to 26.5 percent by 2009-10. Bonded labor and child labor have declined rapidly, while seasonal migration remains an important component of household livelihood strategies (Deb *et al.* 2014). Typically, labor in India is classified as either permanent or casual/temporary, where permanent workers are considered “attached” to a landlord and spend most (if not all) of their time on this one activity whereas casual/temporary workers move between employers with much greater frequency. MGNREGS offers an additional income-generating means for rural laborers to consider adding to their overall household labor supply portfolio. How MGNREGS participating households account for this new income source – by either adding on top of existing labor days or displacing time spent on other tasks – has the potential to change the very nature of rural labor markets.

The new employment opportunity offered via MGNREGS is available at a uniform wage for everyone making it, by many measures, a “pro-women” program (Government of India 2012; Holmes, Sadana, Rath 2011; Khera and Nayak 2009). Not only are the wages offered to males

³ Zimmermann (2012) describes this algorithm and ranking process, both in theory and in practice, in more detail.

and females equivalent, unlike the private market, but the administration established a female participation target of one-third of all beneficiaries, an aim far exceeded in many states with an average of 47 percent across all of India (Narayanan and Das 2014). The perceived appeal of MGNREGS employment likely goes well beyond gender-neutral wages; non-wage factors may also induce high female participation including greater dignity, the ability to work in groups and control time, child care supposedly offered on site, the provision of work near household dwellings, and the psychological sense of security (Narayanan 2008; Sudarshan 2011).

This explicit focus on women, coupled with the well-entrenched social norms that make for a male-dominated labor market in India and the fact that household work is culturally left to women, raises novel questions about if and how household labor supply outcomes shift or compensate for the time a given individual – male or female – spends on MGNREGS. For example, does male participation in MGNREGS alter the intensity and composition of women's work differently than women's participation in MGNREGS on male's non-MGNREGS work? Moreover, if males were employed elsewhere before the start of MGNREGS but MGNREGS employment is more attractive or necessary during spells of low labor demand, then male MGNREGS participation may only mean a shift in type of labor for males and have no effect on female work. But, for women, MGNREGS may provide a new avenue for work outside the home and, therefore, either add onto the work already done or cause a substitution of household work towards male household members or children.

While MGNREGS is exclusively offered to adults (age 18 and older), participation by an adult household member may have consequences for the time allocation of younger household members. The income effect of adult MGNREGS participation could reduce youth and children's household and work responsibilities. On the other hand, adult participation could newly burden household youth and children with tasks, like household work or own farm maintenance, to compensate for the absence of one or both parents. Both effects were uncovered for specific sub-populations in analysis of Ethiopia's Productive Safety Net Program, which also offers public sector work opportunities only to adults (Hoddinott, Gilligan, Taffesse 2009). In India, these effects have been studied in an aggregate general equilibrium context (Islam and Sivasankaran 2014) or more specifically with respect to effects on child schooling (Afridi, Mukhopadhyay, Sahoo 2012); true household time allocation evidence for MGNREGS participating households, however, remains anecdotal at best.

We also expect there to be important seasonal dimensions to the questions we ask. In AP, where there are two main agricultural seasons (*kharif* and *rabi*) and a slack season (summer), seasonality is relevant for a number of reasons.⁴ First, there is an implicit scaling down of MGNREGS works in AP during the peak agricultural seasons in order to safeguard the interests of farmers and because “earth works” projects during the rainy season are not possible. Second, as with many other states in India, there is very little irrigation and therefore very little agricultural work available in the dry summer season. Third, wages can vary dramatically by season given the changing demand for labor. In particular, off-peak (peak) season wages may be lower (higher) than MGNREGS wages. Given these many disaggregated household questions that follow from our interrogation of gender, age group, task, and season-specific effects, we seek to better understand the relationship between time allocation decisions of individual members with the introduction of MGNREGS.

3. Data

The data come from three rounds (2004, 2006, and 2008) of panel household surveys administered under the World Bank’s Andhra Pradesh Rural Poverty Reduction Project (APRPRP).⁵ APRPRP was designed to reach 560 disadvantaged mandals (sub-districts) in sixteen districts, covering a large portion of AP (World Bank 2012). The external impact evaluation approach, carried out by the Centre for Economic and Social Studies (CESS), from which these data are derived, focused on five of the sixteen districts (Kadapa, Warangal, Nalgonda, Nellore, and Visahakapatnam), broadly representative of the three macro-regions within Andhra Pradesh (Telangana, Rayalaseem, and Coastal).⁶ Within these districts, villages were randomly selected to be part of the sample, then households randomly sampled within qualitatively-assigned wealth stratification levels: poorest of the poor, poor, not so poor, and not poor.⁷ The number of sampled households is 4,759 in 2004, 4,693 in 2006, and 4,533 in 2008.

The wealth of information collected via these questionnaires allows us to also answer various labor supply questions related to MGNREGS participation. Moreover, the timing of data

⁴ *Kharif* season (usually June to October) marks the rainy season that begins with the onset of the summer monsoon. *Rabi* (usually November to February) is the winter season and summer (usually March to May) is the dry season with very little, if any, rainfall. The relative importance of the two agricultural seasons varies by district.

⁵ For details on this program and its impacts, see Deininger and Liu (2013a, 2013b). Because nearly all households in our sample are APRPRP beneficiaries, we do not expect the impacts of this program to contaminate our results.

⁶ Note that our study relies on data before Andhra Pradesh split into two states in 2014.

⁷ See Deininger and Liu (2013c) for more details on how each category is defined.

collection allows us to observe two pre-MGNREGS years (2004 and 2006) and one within-MGNREGS year after all three phases of districts had access to the program (2008), as well as the varied effects as observed by districts in each of the three MGNREGS phases. Questionnaires were administered separately to a female and male respondent from each household, with some overlap but mostly separate questions. For example, time allocation questions for each member of the household age 10 and older were asked specifically of males. Village level questionnaires were administered to ascertain information better collected through key informant interviews; some of our important variables are derived from this complementary data set.

During 2008 data collection, enumerators also recorded the MGNREGS job card number of households that participated in MGNREGS, allowing us to link the household survey data with publicly available and audited MGNREGS administrative data that provide the exact number of days and specific dates individuals worked on MGNREGS projects. Further, the names of individuals provided in the administrative data allow us to match to our household survey data and identify the gender of the MGNREGS participant.⁸ Importantly, the structure of the household survey and detailed administrative data allow us to uncover the seasonal dimensions of MGNREGS. In terms of other important external data, rainfall values are derived from geospatial datasets (from the Tropical Rainfall Measuring Mission at NASA) linked to the revenue village boundaries in our study area. We also match village level characteristics as observed before the start of MGNREGS from the Indian Population Census and Indian Village Amenities Census, both administered in 2001.

Our final data set – dropping all observations with important missing values – includes 3,725 households in the five districts comprising 448 revenue villages within AP. Of the five districts included in our sample, three gained access to MGNREGS in 2006, one in 2007, and one in 2008. For the three agricultural seasons captured in the household survey, households in phase one and two districts are eligible for MGNREGS in the *kharif* and *rabi* seasons covered in the 2008 survey while the phase three districts gain access to MGNREGS starting only in the summer season (during which the 2008 fiscal year begins). When matching the household survey

⁸ Of the full set of households that provided job card information, only 14 were not able to match with the administrative data. These households are dropped from our sample. We have confidence in the MGNREGS administrative data for two reasons: (1) the routine verification via social audits and (2) the results from an author-conducted data verification exercise in select AP villages in 2014. In the latter, household responses to recall questions about MGNREGS wages, number of days worked, and types of assets created matched entries in post-office or bank books where available.

data with the administrative data, we find that 116 households participated in a MGNREGS project during the summer season captured in the 2006 survey. We drop these households from our data set in order to credibly produce uncontaminated estimates given that we use 2006 as our baseline.⁹ Due to the nature of the APRPRP beneficiaries, relatively poorer households are oversampled. This skewness works in our favor since MGNREGS participants are also expected to be at the lowest end of the income distribution.¹⁰

4. Estimation approach

In the following sub-sections, we discuss the models and identification strategies employed to estimate the aggregate and task-specific time allocation effects of MGNREGS-participating households and the number of days worked on MGNREGS projects.

4.1. ATET of MGNREGS participation

Our first objective is to estimate the various household labor supply effects resulting from any (binary) MGNREGS participation, the average treatment effects on the treated (ATET). To do this, we estimate several models for household j in revenue village v and district d during survey year t that can be described by:

$$\mathbf{L}_{jvdt} = \alpha_{jvd} + \alpha_1 \mathbf{m}_{jvdt} + \alpha_2 \mathbf{x}_{jvdt} + \alpha_3 \mathbf{z}_{vdt} + \varphi_{dt} + \varepsilon_{jvdt} \quad (1)$$

where \mathbf{L} represents a vector of labor and task outcome variables, \mathbf{m} is the vector of binary MGNREGS treatment variables describing whether a household member participated in the scheme, \mathbf{x} is a vector of household observable characteristics, \mathbf{z} is a vector of village characteristics, φ are district-year fixed effects, α_{jvd} are household fixed effects, and ε is the error term. This model can be estimated separately by agricultural season in order to better reveal the important labor market variation within a year.

The vector \mathbf{L} includes not only total household labor, but also a range of other labor supply variables including paid and unpaid non-MGNREGS labor, labor time split by sub-category (private casual labor, farm servant (salaried) labor, non-farm self-employment, migration, other salaried work, own-farm, and household chores), female and male labor, and

⁹ This represents 4.7 percent of the total household level sample before dropping.

¹⁰ However, without the ability to weight the sample based on the original stratification methodology, this means our data are not necessarily representative of the population of households in the revenue villages or districts sampled. Those were not, however, statistically representative of AP state anyway.

labor split between age groups within the household (adults age 18 and older, youth age 14-17, and children age 10-13). We also specify m as specific to any MGNREGS participation by an adult household member, but also separately of adult female and male participants.

To estimate equation (1) and the ATET effect embodied in α_1 , we rely on a difference-in-difference (DID) approach whereby the difference between the 2008 and 2006 survey years can be used to estimate the impact of MGNREGS participation on aggregate household labor supply by treating the households that do not participate in MGNREGS in 2008 as the “control” group. The DID estimator offers the opportunity to explore unbiased causal relationships by controlling for time invariant unobservable characteristics of households, conditional on the acceptance of the parallel trend assumption, the assumption that changes in the dependent variable over time would have been exactly the same for both the participating and non-participating groups in the absence of MGNREGS work opportunities. We test the parallel trend assumption using the difference between 2006 and 2004, when MGNREGS was not available to the households.¹¹

The causal interpretation of α_1 can be further undermined if non-random self-selection into MGNREGS is a concern, rendering our assumption of independence between treatment and outcome invalid. In a perfect MGNREGS-implementation environment, the “right to work” nature of the program should imply that the decision to participate in MGNREGS m would be subject to rampant selection effects. In practice, however, it is well-documented that MGNREGS work is rationed through a number of direct and indirect avenues which may occur for any number of administrative or political reasons (Narayanan and Das 2014; Das 2015).

The first is denial of a job card, the document necessary to apply for work. Second, after securing a job, an individual may not be able to access work, either through inadequate jobs and days available given the number of projects in progress, or because the skill, strength, or stamina needed for the work is too great, or the distant location of the work sites ration less skilled or healthy or more remotely located individuals. Liu and Barrett (2013) find that 44 percent of households sought but could not obtain a MGNREGS job nationwide in 2009-10, 25 percent in AP specifically. Ravi and Engler (2015) estimate rationing rates (i.e., demanded a job but not offered one) of 43 percent in 2007 and 21 percent in 2009 for Medak district in AP. Himanshu,

¹¹ Here we test whether MGNREGS participating households as observed in 2008 experienced a common trend in labor supply changes between 2006 and 2008 as they did between 2004 and 2006 when MGNREGS was not an option. This is done by inserting the treatment variable m at $t=2008$ into the difference-in-different estimation for 2006/2004 and testing for the significance of its coefficient estimate.

Mukhopadhyay, and Sharan (2015) show how job card holders passively wait for work days to be offered by *sarpanches* in Rajasthan. This “supply driven” approach to work availability is similar to reports from AP (Maiorano 2014; Sheahan *et al.* 2014). Third, rationing may occur through the tacit repression of demand. Individuals who may otherwise wish to participate may be discouraged from expressing demand on account of delayed wage payments, participant intimidation, and general frustrations with program administration. For example, Narayanan *et al.* (in-progress) show that disappointment with implementation leads to “worker discouragement” and the reduced probability of seeking MGNREGS work.¹²

We expect that this well-documented rationing severely dampens non-random selection effects. We do, however, also estimate our DID models using a propensity score weighting (PSW) method proposed by Hirano, Imbens, and Ridder (2003) that seeks to balance participants and non-participants. This involves using a logit model to predict the treatment variable, then using the predictions to calculate weights for application in the DID estimates.¹³ We follow the sample trimming method proposed by Crump *et al.* (2006, see Theorem 5.3), as employed by others using these same data (Deininger and Liu 2013a). In our logit models, we include all control variables found in equation (1) as well as the lagged labor outcome variable (Chen, Mu, Ravallion 2009; Jalan and Ravallion 1998; Mu and Walle 2011), necessitating a unique weight for each model specification. This method is “double robust” in that if the main model is misspecified but the selection function is correctly specified, the estimates based on the reweighted regression are still consistent (Wooldridge 2007).

DID estimation can also suffer from over-stated standard errors when serial correlation is pronounced (Bertrand, Duflo, Mullainathan 2004). However, the very limited time scale over which our panel data are observed and the fact that our differences essentially fall into a two pre- and post- MGNREGS intervention periods renders this common critique inconsequential in our case. All variables included in \mathbf{x} and \mathbf{z} for both our DID and DID-PSW estimation are described in more detail in Section 6. All standard errors are clustered at the revenue village level to limit the effects of potential heteroskedasticity and correlation across nearby observations.

¹² Barriers to MGNREGS participation may be most significant for women. Holmes, Sadana, and Rath (2011) found that women in Madhya Pradesh remain subject to entrenched social norms about what type of work is acceptable and received fewer MGNREGS work days as a result. This unequal access to work is further exacerbated for single women – never-married, divorced, separated, and widowed – who are expected to work alongside a man or are denied job cards because administrators inaccurately claim they do not constitute “a household” (Bhatty 2008).

¹³ For participating households, the weight is equal to one; for non-participating households, the weight is equivalent to $\widehat{ps}/(1 - \widehat{ps})$ where \widehat{ps} is the predicted propensity score.

4.2. “Crowding in/out” of time to other tasks on account of time spent on MGNREGS

In addition to the ATET effects of MGNREGS participation, we also test whether one day of MGNREGS participation by a household member influences the time spent on particular income generating activities or household tasks by any household member, i.e., if there are inter-individual, intra-household labor reallocation effects. We adapt from Datt and Ravallion (1994) as well as Imbert and Papp (2015) to specify the following model:

$$\mathbf{L}_{jvdt} = \beta_{jvd} + \beta_1 \mathbf{d}_{jvdt} + \beta_2 \mathbf{x}_{jvdt} + \beta_3 \mathbf{z}_{vdt} + \rho_{dt} + \epsilon_{jvdt} \quad (2)$$

where \mathbf{d} is a vector containing variables that describe the number of days spent working on MGNREGS, ρ are district-year fixed effects that vary by year, β_{jvd} are household level fixed effects, ϵ is the error term, and \mathbf{L} , \mathbf{x} , and \mathbf{z} are the same vectors as defined in equation (1). As before, \mathbf{L} is defined with respect to our full set of labor/activity outcome variables and \mathbf{d} contains variables specified with respect to any household member and separately by female and male participants.

Equation (2) is estimated in a DID panel framework whereby the difference between 2004 and 2006 time periods serves as one observation and the difference between 2006 and 2008 serves a second. Because $d = 0$ for all observations in the 2004/06 difference and for non-MGNREGS participating households in 2008, β_1 represents the estimated magnitude of the change in time spent on other work on account of one day spent on MGNREGS. If $\beta_1 < 0$, then MGNREGS labor “crowds out” time spent on other activities; if $\beta_1 > 0$, then MGNREGS labor “crowds in” labor for that activity or period. Based on others’ findings we expect to observe “crowd out” effects on private labor time (Imbert and Papp 2015) and time spent on farm (Islam and Sivasankaran 2014).

Like the ATET estimates, β_1 will not serve as a convincing causal estimate if endogeneity is a concern. In an ideal implementation world, the number of days devoted to MGNREGS work would be jointly determined with the number of days allocated to any other type of work, leading to simultaneity issues in addition to the inherent program selection effects. Again, as in Section 4.1, we argue that rationing – not being able to work the number of days one would like, even with a job card in hand – diminishes the worry of endogeneity. We also use the difference between the ATET estimates derived from DID and DID-PSW, corroborated by test of the parallel trend assumption on which consistent DID estimates depend, as a signal of which labor categories or aggregates may be most susceptible to endogeneity concerns in this case.

While not a pure test, we offer it as an illuminating check in the absence of any convincing instrumental variables (IVs).¹⁴ To the extent that simultaneity and selection still matter beyond the known rationing, then our estimates are better interpreted as partial correlations conditional on many controls, and not necessarily as truly causal estimates.

5. Variable construction and descriptive statistics

5.1. *MGNREGS participation*

The MGNREGS job card information collected at survey time is matched with publicly available MGNREGS administrative data to ascertain which surveyed households worked on the program, when, and with what intensity (recorded as number of days worked). The percent of surveyed households in our data who worked on MGNREGS are provided by season and MGNREGS phase in Table 1. Since exact start and end dates for employment on a MGNREGS project are provided in the administrative data, we are able to assign the exact number of days worked to the agricultural seasons that match our household survey data. This table displays not only household level participation, but participation by gender and also the incidence of households with both female and male MGNREGS workers. In summer 2008, about 25 percent of our sampled households participated in MGNREGS, the highest of any season. When looking across all three seasons included in the 2008 survey, we find that about 31 percent of households worked on MGNREGS at some point (not shown), not dissimilar from the 35 percent Liu and Barrett (2013) calculate for the 2009 fiscal year using the NSS data for all of AP. In most cases, the percentage of households with a female MGNREGS participant is slightly higher than the households with a male participant. Nearly half of all MGNREGS participating households have both a female and male dedicating time to the program in a given season. Table 2 provides the unconditional (including zeros) average number of days worked on MGNREGS by season, with the largest value (about 6) in summer. When restricting to only participants, the average number of days is about 23 in *kharif*, 19 in *rabi*, and 23 in summer (not shown).

¹⁴ In analysis by Afridi, Mukhopadhyay, and Sahoo (2012), MGNREGS participation is instrumented with rainfall shock in May-June and the number of projects in progress, both at the mandal level. When specifying these variables at the village level instead, neither of these variables – in addition to a host of many others attempted – prove to be good IVs (while relevant using the F-value > 10 “rule of thumb,” the standard errors are massive when using as IVs).

5.2. *Non-MGNREGS labor supply options*

The household survey contains a full module on individual household member labor time allocation by agricultural season over the last full year for any household member age 10 and older. Labor days are split into seven categories: (i) casual agricultural and non-agricultural labor, (ii) farm servant salaried labor (more permanent agricultural work), (iii) non-farm self-employment (self-employment and economic activities derived from common property resources, like firewood collection), (iv) migration, (v) other salaried work (including services), (vi) own farm (crop production and livestock maintenance), and (vii) family chores.¹⁵ In all labor categories, the number of days worked are recorded. In some sub-categories, the hours worked per day are also observed, in which case we standardize based on an eight hour work day.¹⁶ We match the MGNREGS administrative data with the household survey data to “net out” the private and public sector casual labor by season, household, and gender within household. One day of work under any task is treated as equivalent to one day of work under another.

Table 2 shows the average number of days worked per household in more aggregated labor categories: paid non-MGNREGS labor includes casual labor, farm servant labor, non-farm self-employment, migration, and salaried work while unpaid non-MGNREGS labor includes own farm labor and household chores. Across seasons and years, days spent on paid non-MGNREGS work dominate those devoted to unpaid non-MGNREGS work. The introduction of MGNREGS in 2008 does not result in a large increase in total days worked between 2006 and 2008. Indeed, the average falls slightly in *kharif* and increases only marginally in *rabi* and summer. The percentage of households supplying labor to each minor category can be found in Table A1 of the appendix for the full household, Table A2 for household females by age group, and Table A3 for household males by age group. Private casual labor is clearly the type of paid work from which most households derive their income, followed by work on their own farm, and then by non-farm self-employment. The portion of households who work as salaried farm servants is very low (3 percent), although not lower than the percent of households who migrate for work (2 percent). Reported youth (age 14-17) and child (age 10-13) labor is miniscule. 2-5 percent of households report female or male youth casual labor.

¹⁵ The one category of labor observed in the survey instrument that we purposefully exclude is the “other” category because it includes, by definition, time spent unemployed.

¹⁶ Standardizing to the number of days worked instead of number of hours worked is preferred since most labor categories in the survey only provide days and many assumptions would be necessary to convert to hours. Moreover, MGNREGS work is observed in days, allowing for more direct comparison.

5.3. *Household characteristics*

We include a range of household characteristics as controls, with summary statistics in Table A4 of the appendix. The choice of which characteristics to include is motivated by similar work by Datt and Ravallion (1994) and analysis using the same AP data set by Deininger and Liu (2013). The first set of these variables are time invariant: (i) the poverty status of the household as classified by the stratification procedures used during data collection and (ii) household caste. These variables are inserted as linear terms, not differences, in all of our difference-in-difference models. The second set of household characteristics is time variant and, therefore, included as differences between survey waves. These include a range of household composition variables, gender of the household head, literacy of household members, land ownership and irrigation characteristics, shocks experienced by the household recently, and membership with the APRPRP self-help group.

5.4. *Village characteristics*

Village level control variables are also descriptively explored in Table A4 of the appendix. Most of the village level variables we include can be interpreted as baseline characteristics observed before the introduction of MGNREGS, as derived from the Indian Population Census and Indian Village Amenities Census of 2001. Here we specify variables that seek to describe the population of the village in terms of caste, literacy, and primary occupation as well as the status of available amenities including roads, medical facilities, and agricultural credit societies. Because these variables are observed as static to us, we include them simply as linear (non-differenced) terms in our DID models.

The two important time variant village characteristics we observe are rainfall and wages. We include village level contemporaneous rainfall levels to control for weather-induced labor market shocks.¹⁷ The casual daily wage rates come directly from the village survey that accompanies the household surveys. Members of the community are asked to recall casual wages separately for females and males in the village split by “peak” and “lean” agricultural seasons over the last year. We apply the “peak” wages to the *kharif* and *rabi* seasons and the “lean”

¹⁷ The rainfall level is a proxy for exogenous demand for work of various types – casual agricultural labor, own farm labor, etc. – in a given season. Kochar (1999) finds that male household members in central India offer more hours to the labor market in the event of *unanticipated* crop shortfalls, not only forecasted ones, even when insurance markets are available. As such, we include the contemporaneous rainfall level in our model.

wages to the summer season. Missing values at the village level are replaced with median values by mandal and, if necessary, by district. Nominal wages are adjusted to real levels using the consumer price index (CPI) specific to rural laborers in AP as released by the Directorate of Economics and Statistics. We deflate by aggregating months across agricultural seasons, setting the summer season observed in the 2008 survey (the most recent season) as the base. We include both the simple average of the adjusted male and female wages as well as a ratio of the male to female wages as control variables. We treat the wage rate as exogenous from the perspective of households at a given point in time since it represents a prevailing community level wage, and shifts in household labor supply will not have an immediate impact on wage levels.¹⁸

6. Regression results

6.1. *ATET of MGNREGS participation*

Regression results for our DID and DID-PSW estimates of equation (1) are displayed for any household MGNREGS participation in Table 3, female participation in Table 4, and male participation in Table 5. Because separate regressions must be run to produce individual weights for each DID-PSW model, we do not display the full set of underlying logit propensity score estimation results. Instead, we show the marginal effects for six illustrative logit models in Table A5 of the appendix, where results are in line with expectations.¹⁹ The parallel trend tests for the DID and DID-PSW models can be found in appendix Tables A6, A7, and A8, respectively. Of the 48 labor supply outcomes related to each of the three treatment variables, only 4 (about 8 percent) do not pass the parallel trend assumptions for the DID-PSW models (columns 4-6), an improvement over the DID-only results (i.e., 6 do not pass for any participant, 5 for female participants, and 10 for male participants). We make note of these cases alongside our results in

¹⁸ Changes in agricultural technology induced by the potential contraction in private labor supply on account of MGNREGS (a link suggested by Bhargava 2014) could lead to changes in labor demand by private landlords and therefore effect labor supply for both MGNREGS participating and non-participating households. We argue that any of these unobserved changes are accounted for in the village level casual wage rate.

¹⁹ Here we note the importance of household, village, and district level characteristics that are both time variant (lagged) and invariant in explaining MGNREGS participation for females and males. When estimating Shapely values to determine which groups of variables contribute most to the R-squared (fit) of one model (female MGNREGS participation in summer season), we find that household invariant characteristics account for 25 percent of the variation, household variant for 23 percent, village invariant for 13 percent, village variant for 6 percent, and district invariant for 33 percent.

Tables 3-5 and only report the findings in this section where we are not concerned about the biasing effects of endogeneity.

The ATET estimates for MGNREGS participation by any household member reveal that total household labor supply only increases significantly in the summer slack season, where participation leads to an increase in about 12 days worked (Table 3). This effect results almost entirely from increases in adult female work, with only a small (and marginally statistically significant) portion from adult male work. Female and male participation separately also lead to increases in total household labor supply in the summer season (Tables 4 and 5); female participation leads to more days worked by adult females (13-14 days) and male participation contributes to more time worked by adult males (11-13 days). When combined with the overall household labor supply result, it is apparent that female participation dominates in summer, when female non-MGNREGS wage rates are especially low and far inferior to men's wage rates. Female MGNREGS participation also increases female time spent working in the *rabi* season by about 7 days while overall changes in time worked in the *kharif* season is unchanged on account of MGNREGS participation regardless of gender.

Importantly, we find no increase in time spent on any work activities by youth or children of either gender, no matter which parent is a MGNREGS participant. This suggests that adult participation on MGNREGS does not have the unintended consequence of diverting time away from productive capital formation for youth and children over time in order to meet other household or enterprise obligations.²⁰

Because these effects may change when limiting our sample to households with only one MGNREGS participant (i.e., when males and females do not work on MGNREGS work sites together), we also explore these same relationships on the relevant sub-samples of households. Appendix Table A9 shows the results specific to female MGNREGS participation (i.e., households with male MGNREGS participation are dropped), which maintains between 79-84 percent of the original sample, depending on season. We still find that female MGNREGS participation increases overall household labor supply by 11-13 days and total female adult labor supply by about 15 days, both in the summer season. When looking at the effects of male MGNREGS participation and dropping households with female MGNREGS time (which keeps

²⁰ Our data do not allow us to make these same claims for children under age 10 but have no reason to assume the results would be any different.

84-88 percent of the original sample), we find that our previously mentioned results mostly disappear. Appendix Table A10 shows that male participation in the absence of female participation does not increase overall household or adult labor supply. Our ATET results, therefore, are driven by female participation in MGNREGS, whether or not she is accompanied by a male household member. This is a very important finding, consistent with expectations and with the expressed gender equity objectives of the program.

Since the average number of days on MGNREGS for participating households is 23 in the summer season and 19 in the *rabi* season, the fact that our household, female adult, and male adult ATET values fall short of these suggests that the addition of days worked is likely displacing some non-MGNREGS labor. Indeed, we find that time spent on paid non-MGNREGS work does fall on account of program participation by any, female, or male adult household member in all three seasons. These negative impacts are quite large in the main agricultural seasons: with ATET values upwards of -20 days for male participants and greater than -15 for female participants. More specifically, any adult participation also leads to a statistically significant decrease in non-farm self-employment in the *rabi* season, which is derived from both female and male participation. Time spent on salaried labor also drops across seasons, no matter the participant. Household farm servant labor also decreases by about 7 days in the *kharif* season on account of male MGNREGS participation only. The fact that we see no overall increase in labor supply in the main agricultural season to combat these several decreases in other types of paid labor foreshadows the results of our “crowding out” analysis below.

We reject the null of parallel trends in the summer season for the unpaid and own-farm labor sub-categories in both the any participant and female participant models, implying that our PSW scheme is unable to fully reweight the participants and non-participants to balance the sample. While we are able to pass the test for male participation, we find no statistically significant time effects on unpaid labor derived from own-farm or household work across any of the seasons. If MGNREGS participants are largely operating on a subsistence basis, then these results make sense: household tasks and farm work are obligatory to maintaining a family.

6.2. Time allocation consequences on account of a day of MGNREGS work

Table 6 provides estimates of time allocation consequences on non-MGNREGS labor days on account of total number of days spent on MGNREGS projects — by labor type, season,

and gender — with both within- and cross-gender effects, as explained by equation (2). This table focuses on total household labor supply (inclusive of anyone above age 10) but then specifically on adult female and male labor. Because we find no evidence of any ATET effects of MGNREGS participation on youth and child time, we relegate the results of these same regressions to appendix Tables A11 (youth) and A12 (children over 10). In the write-up that follows, we only discuss those instances where the ATET effects pass the parallel trend test and offer similar magnitudes between DID and DID-PSW methods. The line numbers listed in parenthesis in the text below are included to help guide readers around Table 6.

We estimate that a one day increase in the number of MGNREGS days provided by any household member “crowds out” 1.4 days of non-MGNREGS labor in the *kharif* season, 0.4 in the *rabi* season, and 0.6 in the slack summer season. When moving across the table to the columns that are specific to MGNREGS labor supplied by females and males, we learn that the displacement effects are similarly high for days spent working on MGNREGS projects by both genders. One day of MGNREGS work by any household adult displaces a marginally higher amount of adult female total non-MGNREGS time (line 11) than male time (line 21) in *kharif* (-0.7 versus -0.5), *rabi* (-0.3 versus no significant effect), and summer (-0.3 versus -0.2). Female MGNREGS days displace more female non-MGNREGS time whereas male MGNREGS day displace more male non-MGNREGS time, and with similar magnitudes across matched seasons.

Paid labor takes the largest hit, particularly private casual labor for both male and female adults, although more so for females.²¹ These results are not only apparent in the summer season, but also consistently across the *kharif* and (sometimes) *rabi* seasons too. While significant and larger than the other effects, the “crowding out” of private casual labor is quite small in magnitude across the seasons and genders (apart from adult female labor in *kharif* season); in no case does one day of MGNREGS work completely displace a full day of private casual labor, the employment type that receives the largest number of days from the population under study. The male displacement of private casual labor (line 24) in the *kharif* season is entirely driven by male work on MGNREGS however the reduction in female private casual labor (line 14) is induced by both female and male time spent on MGNREGS across seasons.

²¹ Imbert and Papp (2015) estimate a 1.5 percent decrease in private employment across all of India on account of the introduction of MGNREGS, but in a general – not partial – equilibrium sense.

Of other paid non-MGNREGS work, both women and men reduce their time spent on salaried work (lines 8, 18, and 28), but with estimated magnitudes of no greater than -0.1 days across any of the three seasons. Farm servant labor falls for adult males in the *kharif* season on account of days provided by males to MGNREGS (line 25), inducing an overall effect at the household level. Very few households (around 3-4 percent) engage in farm servant labor but they are considered “salaried” laborers in the survey. The MGNREGS labor option, therefore, not only reduces the time spent on casual/temporary labor opportunities, but also more formal/permanent jobs. It may be the case that these individuals do not have full time contracts (or do but are able to shirk on them) and can act as private casual laborers who move between MGNREGS and their other duties at will. While we do observe some very small “crowd in” effects in non-farm household enterprise work, our sub-category that includes both self-employment and income derived from the sale of common property resources (lines 16 and 26), we must interpret these results and magnitudes purely as correlations given our inability to pass the parallel trend tests for a number of the related ATET specifications.

The results for time spent on migration are perhaps surprising. At the household level, time spent on MGNREGS projects actually increases the time spent on migration work during the *rabi* agricultural season (line 7). These results are driven exclusively by male migration (line 27), however both female and male MGNREGS participation induce more male migration. It should be noted, however, that a very small percentage of the households in our sample engage in migration in any season or year. Indeed, there are only 30 households that are both MGNREGS participants and migraters in any of the 2008 agricultural seasons. But of those 30, only one of them also had migration in a previous household survey (2004). So, while there is a positive relationship between MGNREGS participation and migration, it is best not over-interpreted given the very few households to which it applies. Our findings are at odds with those from Imbert and Papp (2014) who study the rural-to-urban migration experience of a small collection of villages in northwestern India. Our results, however, do align more closely with the experience in China (Chau, Kanbur, Qin 2014) and some Latin American countries (Hagen-Zanker and Himmelstine 2012).

Given our inability to pass all of the parallel trend assumption tests for the ATET estimates related to unpaid labor for the any and female MGNREGS participation, we interpret our results with caution. Across all genders, we observe that one day of MGNREGS work has a

small but significant “crowd in” effect for time spent by adult women on farm (line 19) but the opposite effects for adult males (line 29). Discussions with MGNREGS workers in AP reveals that some women do not mind earning the discounted MGNREGS wages relative to higher private casual labor wages if it means they can spend the first part of their day at a MGNREGS site and the second half (after 2pm) engaging in own-farm work like leveling and clearing. While farms are small across the study area, between one-quarter and one-third of households supply at least some of their time to own-farm cultivation, implying that these are not necessarily only landless individuals, indeed marginal and small farmers too, that choose to spend some of their time on MGNREGS. This same line of reasoning may also be relevant to our previously mentioned findings on non-farm self-employment.

The household chore labor category (where we do pass the parallel trend tests) shows a negative effect for female adults (line 20), male adults (line 30, and the overall household (line 10), but quite small in magnitude overall. Interestingly, female MGNREGS days are related to declining household chore time for themselves and for male adults, however male MGNREGS days have no significant effects on time spent on household chores by either gender. This implies that time spent on MGNREGS by male adults results in a status quo among household operations, but that adult female time spend on MGNREGS results in a slight reorganization of time. Indeed, female time spent on MGNREGS has no effect on her time spent on household chores in *rabi* and summer seasons but a significant negative effect (although small: -0.1 days) on adult male time dedicated to household work.

We briefly delve into the time allocation effects on youth (Appendix Table A11) and children over ten (Appendix Table A12). For female youth, there are virtually zero effects. We only find incredibly small statistically significant effects related to the reduction in time spent on private casual labor on account of adult male participation. For youth males, we find several instances of tiny “crowd out” (household chores, own-farm) effects as well as “crowd in” effects (farm servant, other salaried work). The magnitude of all of these effects are less than 0.1 (absolute value), indeed generally closer to 0.01, implying shifts of less than an hour per eight hour work day. For female children (over ten), again, our results so virtually no change in time spent on any included activity. The one statistically significant effect we do uncover is a very small (approximately 30 minute) increase in time spent on private casual labor on account of a day of male adult time spent on MGNREGS. But, recall that only one percent of households in

our sample even have female children engaged in private casual labor, so this result is drawn from and applies to a very small segment of the population. Moreover, male children see an overall reduction in time they spent on all paid and unpaid work, although our results do not point to which sub-category of work in particular.

As with our ATET estimates, it does not appear that youth and children are negatively affected by being pulled out of school to compensate for adult time lost to household chores or other household enterprise time that adult household members participating in MGNREGS neglect. At the same time, we do not observe a reduction in youth or child time spent on paid or unpaid household activities when an adult household member garners MGNREGS employment. This may be due to the fact that so few households report youth and child time spend on these activities. But, for those 10 percent of households where female youth contribute time to household chores and, even more, the 7 percent of households where female children contribute to household work, this result could also be viewed negatively. Our data do not allow us to delve more deeply into the related schooling effects.²²

7. Conclusions

This paper explores how participation in India's massive employment guarantee scheme, MGNREGS, changes overall household labor and time allocated to particular types of paid and unpaid tasks disaggregated by gender, age category, and agricultural season using a panel of households across five districts in Andhra Pradesh. These results imply that employment guarantee schemes affect not only overall labor market indicators, as studied in a general equilibrium framework by several other researchers, but also the complex decision making process of individuals and households, which may have a second order effect on women's empowerment and childhood schooling outcomes. This underscores the value of such disaggregated analysis when analyzing a government labor market intervention as massive and influential as MGNREGS.

In summary, we find that any MGNREGS participation expands total household labor supply in the summer season, mostly for and on account of adult females, but reduces the total number of days spent on paid non-MGNREGS work by several days across the two main

²² Our data only allow us to observe youth and children who never attended school or dropped out of school completely or for a short term at any point on their life, nothing specific to the recent past. These cases are only relevant to about 1 percent of households, in both the baseline (2004) and endline (2008) years.

agricultural seasons for both female and male adults. We uncover no evidence of increase in time spent on paid or unpaid work, including household chores, for youth and children – both male and female – in MGNREGS households relative to non-MGNREGS households, suggesting no within-household substitution of work burdens towards younger members. One day spent on MGNREGS work “crowds out” less than a day of paid non-MGNREGS work in two of three seasons and mostly draws from the pool of time previously allocated to private casual labor opportunities (agricultural and non-agricultural). Meanwhile, MGNREGS “crowds in” male migration (although for a very small set of households) and female time spent on-farm and in non-farm self-employment activities in *rabi* and *kharif* seasons, respectively, perhaps due to the flexible work hours offered by the program that allow for afternoon work elsewhere.

To date, the seasonal dimensions of labor supply response have been described qualitatively but not incorporated into econometric analysis. Our results suggest that labor seasonality is especially important when rural labor markets are prone to major swings in both supply and demand. Our current analytical approach, however, cannot address whether or how MGNREGS contributes to labor spillovers across agricultural seasons, a worthwhile topic for future research. Additionally, the apparent gender differences in our results illuminate how MGNREGS participation by males and females differently affect the time allocation decisions of males and females within the same household. Given the sometimes profoundly different results by gender, our results suggest that analyzing these effects at the individual level, not just gender-disaggregated household level, may yield some additional important insights.

This line of research not only adds to the growing body of literature specific to MGNREGS, but also can inform other large scale labor market interventions under consideration by low- or middle-income agrarian nations. This example from India, made special by the underlying constitutional right to work, helps feed into a larger literature exploring if and how the dispersion of government welfare benefits impact the labor market and household labor supply (e.g., de Brauw *et al.* 2015). Further, it can help to inform a related debate about the trade-off between workfare programs and cash distribution as a means of welfare enhancement for poor households (e.g., Alik-Lagrange and Ravallion 2015).

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Table 1: Percent of surveyed households participating in MGNREGS in 2008

MGNREGS Phase	HH Member	Kharif	Rabi	Summer
1	Any	26.0	20.8	30.1
	Females	21.1	18.1	25.8
	Males	16.1	11.4	19.1
	Both	11.1	8.8	14.7
2	Any	15.1	15.9	19.2
	Females	12.0	10.6	16.4
	Males	7.6	12.3	12.8
	Both	4.6	7.0	10.1
3	Any	-	-	15.7
	Females	-	-	10.9
	Males	-	-	11.3
	Both	-	-	6.5
Total	Any	18.2	15.3	24.8
	Females	14.7	12.7	20.7
	Males	11.0	9.1	16.2
	Both	7.4	6.5	12.1

Notes: This table shows the percent of surveyed households with any MGNREGS participation by season in the 2008 survey, accomplished by matching job card details with publicly available MIS data. The “any” rows describe household where any member, regardless of gender, participated. The “female” and “male” rows describe households where a female or a male member, respectively, participated. The “both” rows describe the percent of households where both a female and a male member participated.

Table 2: Number of days households participate to each major category of labor

	Kharif (153 days)						Rabi (120 days)						Summer (92 days)					
	2004		2006		2008		2004		2006		2008		2004		2006		2008	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Non-MGNREGS paid	134.6	(92.4)	159.7	(118.3)	154.1	(115.8)	153.0	(107.0)	129.3	(94.6)	127.0	(91.8)	86.2	(67.5)	84.2	(71.3)	91.1	(69.4)
Non-MGNREGS unpaid	91.9	(72.1)	134.2	(99.5)	134.6	(101.3)	125.4	(95.0)	95.6	(69.3)	97.8	(74.9)	62.7	(46.4)	65.8	(44.6)	63.0	(44.6)
MGNREGS	0.0	(0.0)	0.0	(0.0)	4.2	(12.9)	0.0	(0.0)	0.0	(0.0)	2.9	(10.3)	0.0	(0.0)	0.0	(0.0)	5.8	(16.1)
Total	226.6	(107.9)	293.8	(143.7)	292.8	(144.8)	278.4	(130.1)	224.9	(111.2)	227.7	(112.3)	148.9	(79.5)	150.0	(82.7)	159.9	(82.6)

Notes: This table shows the average number of days per household dedicated to each major aggregated labor category as aggregated from both household survey responses and publicly available MIS data on MGNREGS participation. The non-MGNREGS paid category is inclusive of private casual labor, farm servant, non-farm self-employment, migration, and salaried work time. Non-MGNREGS unpaid work is inclusive of time spent on own-farm and household chores.

Table 3: ATET estimate of any household MGNREGS participation (binary) on household labor supply outcomes

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	-1.6	(-6.8)		4.3	(-5.7)		12.6	(-3.7)	***	-0.6	(-7.1)		2.7	(-5.6)		12.3	(-3.8)	***
HH labor, females age 18+	2.2	(-3.8)		5.4	(-3.2)	*†	12.2	(-2.0)	***†	2.1	(-3.7)		4.5	(-3.1)		10.8	(-2.0)	***
HH labor, females age 14-17	-0.6	(-1.4)		0.0	(-1.0)		0.0	(-0.6)		-0.9	(-1.5)		0.3	(-1.1)		-0.1	(-0.7)	
HH labor, females age 10-13	-0.8	(-1.0)		-1.1	(-0.7)		0.0	(-0.5)		0.4	(-1.0)		-0.4	(-0.8)		-0.1	(-0.5)	
HH labor, males age 18+	-2.4	(-3.9)		1.1	(-3.4)		2.8	(-2.3)		-1.1	(-4.0)		0.2	(-3.4)		4.1	(-2.4)	*
HH labor, males age 14-17	1.4	(-1.2)		0.9	(-1.0)		-0.4	(-0.7)		0.7	(-1.4)		0.3	(-1.1)		-0.3	(-0.7)	
HH labor, males age 10-13	0.9	(-0.7)		-0.1	(-0.5)	†	0.3	(-0.4)		0.0	(-0.7)		-0.3	(-0.6)		-0.2	(-0.4)	
HH labor from paid non-NREGA work, total	-22.6	(-5.6)	***	-12.5	(-4.6)	***†	-7.0	(-3.3)	**	-18.0	(-5.8)	***	-15.8	(-4.6)	***	-10.8	(-3.4)	***
HH labor from private casual labor, total	-17.5	(-5.2)	***	-6.4	(-4.5)	†	-4.0	(-3.0)		-6.3	(-5.4)	†	-4.4	(-4.5)		-2.8	(-3.1)	
HH labor from farm servant labor, total	-0.7	(-2.0)	†	0.3	(-1.5)		-0.6	(-0.9)		-0.2	(-2.2)		-0.8	(-1.6)		-1.6	(-1.0)	*
HH labor from non-farm self-employ, total	-1.3	(-2.7)		-5.1	(-2.1)	**	-1.3	(-1.4)		-4.6	(-2.5)	*	-6.2	(-2.2)	***	-3.8	(-1.4)	***†
HH labor from migration labor, total	1.4	(-1.4)		1.2	(-1.2)		1.1	(-0.7)		1.7	(-1.3)		0.9	(-1.1)		0.7	(-0.7)	
HH labor from salaried labor, total	-4.5	(-2.9)		-2.5	(-2.3)		-2.2	(-1.4)		-7.4	(-2.9)	**	-4.8	(-2.3)	**	-2.9	(-1.5)	**
HH labor from unpaid non-NREGA work, total	-2.0	(-4.2)		-2.1	(-3.8)		-3.5	(-2.0)	*	-5.4	(-4.3)		-0.8	(-3.6)		-0.2	(-2.1)	†
HH labor from own-farm labor, total	-0.7	(-3.4)		-0.9	(-3.0)		-2.2	(-1.5)		-3.1	(-3.4)		-1.2	(-2.9)		0.5	(-1.6)	†
HH labor from HH work, total	-1.3	(-2.4)		-1.1	(-2.0)		-1.4	(-1.2)		-2.3	(-2.6)		0.8	(-2.0)		-0.7	(-1.3)	

Notes: *** p<0.01, ** p<0.05, * p<0.1. This table contains the output of various specifications of equation (1). Only the ATET estimates for MGNREGS participation are included in the table. Only phase 1 and 2 households are included in the kharif and rabi analysis, while phase 3 households are added to the summer regressions. For a list of control variables, see Table A4 of the appendix. District fixed effects included. All standard errors are clustered at revenue village level. † = does not pass parallel trend tests. Parallel trend test results can be found in Table A6 of the appendix.

Table 4: ATET estimate of female MGNREGS participation (binary) on household labor supply outcomes

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	-0.2	(-7.3)		10.1	(-6.0)	*†	13.2	(-4.0)	***	-0.2	(-7.3)		5.8	(-6.0)		14.1	(-4.1)	***
HH labor, females age 18+	1.9	(-4.1)		7.2	(-3.4)	**†	12.2	(-2.2)	***	4.2	(-4.1)		7.1	(-3.3)	**	12.7	(-2.2)	***
HH labor, females age 14-17	-0.6	(-1.5)		0.0	(-0.9)		0.2	(-0.6)		-0.2	(-1.7)		-0.1	(-1.0)		0.3	(-0.7)	
HH labor, females age 10-13	-1.1	(-1.1)		-1.3	(-0.8)		-0.3	(-0.5)		0.8	(-1.2)		-0.5	(-0.9)		-0.1	(-0.5)	
HH labor, males age 18+	-0.2	(-4.2)		5.4	(-3.7)		3.0	(-2.5)		-3.2	(-4.3)		2.1	(-3.7)		3.9	(-2.5)	
HH labor, males age 14-17	0.7	(-1.3)		0.5	(-1.0)		0.1	(-0.7)		-0.4	(-1.4)		-0.9	(-1.1)		-0.3	(-0.8)	
HH labor, males age 10-13	1.0	(-0.8)		0.1	(-0.6)	†	0.4	(-0.3)		0.3	(-0.8)		0.1	(-0.6)		-0.2	(-0.4)	
HH labor from paid non-NREGA work, total	-22.9	(-5.9)	***	-11.8	(-5.1)	**†	-7.2	(-3.4)	**	-17.4	(-6.0)	***	-15.4	(-5.1)	***	-10.6	(-3.4)	***
HH labor from private casual labor, total	-16.9	(-5.6)	***	-7.6	(-4.8)	†	-4.0	(-3.1)		-6.1	(-5.7)	†	-6.1	(-4.9)		-2.8	(-3.3)	
HH labor from farm servant labor, total	-0.7	(-2.4)		0.6	(-1.6)		-0.2	(-0.9)		-0.2	(-2.6)		0.0	(-1.7)		-1.2	(-0.9)	
HH labor from non-farm self-employ, total	-1.9	(-2.8)		-4.1	(-2.3)	*	-1.5	(-1.5)		-5.9	(-2.5)	**†	-5.2	(-2.4)	**	-4.1	(-1.4)	***†
HH labor from migration labor, total	1.2	(-1.7)		1.4	(-1.3)		1.0	(-0.8)		1.4	(-1.7)		0.9	(-1.1)		1.0	(-0.8)	
HH labor from salaried labor, total	-4.5	(-3.0)		-2.2	(-2.6)		-2.5	(-1.5)		-6.0	(-2.9)	**	-4.7	(-2.5)	*	-3.1	(-1.5)	**
HH labor from unpaid non-NREGA work, total	-1.3	(-4.4)		1.7	(-3.9)		-4.3	(-2.3)	*	-6.4	(-4.4)		1.0	(-3.7)		0.0	(-2.3)	†
HH labor from own-farm labor, total	1.7	(-3.6)		3.6	(-3.0)		-1.7	(-1.7)		-3.4	(-3.6)		2.2	(-2.9)		1.4	(-1.7)	
HH labor from HH work, total	-3.0	(-2.6)		-1.9	(-2.0)		-2.5	(-1.3)	*	-2.7	(-2.6)		-0.7	(-2.0)		-1.1	(-1.4)	

Notes: See notes for Table 3. †= does not pass parallel trend tests. Parallel trend can be found in Table A7 of the appendix. For results on sub-sample of households without male MGNREGS participation, see Table A9 of the appendix.

Table 5: ATET estimate of male MGNREGS participation (binary) on household labor supply outcomes

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	-9.4	(-8.0)		3.2	(-7.0)		13.2	(-4.3)	***	0.1	(-8.0)		3.1	(-6.8)		10.7	(-4.3)	**
HH labor, females age 18+	-0.2	(-4.3)		3.2	(-4.0)	†	9.3	(-2.3)	***†	2.4	(-4.1)		2.2	(-3.9)		7.0	(-2.3)	***
HH labor, females age 14-17	-2.5	(-1.6)		-0.7	(-1.3)		-0.1	(-0.7)		-2.4	(-1.8)		-1.2	(-1.3)		-0.7	(-0.7)	
HH labor, females age 10-13	-0.5	(-1.1)		0.3	(-0.8)		-0.1	(-0.5)		-0.2	(-1.2)		-0.1	(-0.7)		-0.1	(-0.5)	
HH labor, males age 18+	-6.1	(-4.7)	†	1.8	(-4.3)		6.5	(-2.7)	**	0.9	(-4.7)	†	4.6	(-4.1)		6.1	(-2.8)	**
HH labor, males age 14-17	2.6	(-1.6)		2.1	(-1.4)		0.1	(-0.9)		1.7	(-1.7)		1.5	(-1.4)		0.5	(-0.9)	
HH labor, males age 10-13	0.1	(-0.7)		-1.0	(-0.6)	*†	0.0	(-0.5)		-0.7	(-0.6)		-1.0	(-0.6)		-0.2	(-0.4)	
HH labor from paid non-NREGA work, total	-29.6	(-6.7)	***	-15.1	(-5.7)	***†	-8.5	(-3.8)	**†	-23.0	(-6.6)	***	-19.4	(-5.5)	***	-14.1	(-3.8)	***
HH labor from private casual labor, total	-18.4	(-6.0)	***	-7.1	(-5.5)	†	-4.1	(-3.5)		-2.5	(-6.2)	†	-5.6	(-5.3)		-2.9	(-3.6)	
HH labor from farm servant labor, total	-6.8	(-2.4)	***†	-2.2	(-1.6)		-2.0	(-1.0)	*	-6.7	(-2.7)	**	-4.1	(-1.7)	**	-2.8	(-1.1)	**
HH labor from non-farm self-employ, total	-2.0	(-3.1)	†	-3.4	(-2.8)		-1.6	(-1.6)	†	-6.0	(-3.0)	**†	-4.5	(-2.7)	*	-4.9	(-1.5)	***†
HH labor from migration labor, total	2.0	(-1.6)		1.7	(-1.4)		1.5	(-0.8)	*	2.1	(-1.6)		1.3	(-1.4)		0.8	(-0.8)	
HH labor from salaried labor, total	-4.3	(-3.0)		-4.1	(-2.5)		-2.4	(-1.6)		-8.5	(-3.1)	***	-5.8	(-2.6)	**	-3.5	(-1.7)	**
HH labor from unpaid non-NREGA work, total	-4.4	(-5.3)		-2.9	(-4.9)		-3.1	(-2.4)		-1.4	(-5.4)		0.8	(-4.6)		0.0	(-2.4)	
HH labor from own-farm labor, total	-5.7	(-4.3)		-2.8	(-3.9)		-1.5	(-1.9)		-2.8	(-4.5)		-0.7	(-3.7)		0.5	(-1.9)	
HH labor from HH work, total	1.2	(-3.0)		-0.1	(-2.5)		-1.6	(-1.4)		0.8	(-3.0)		1.5	(-2.6)		-0.4	(-1.4)	

Notes: See notes for Table 3. †= does not pass parallel trend tests. Parallel trend tests can be found in Table A8 of the appendix. For results on sub-sample of households without female MGNREGS participation, see Table A10 of the appendix.

Table 6: “Crowding out” estimates of other activities on account of days spent on MGNREGS (full household and adult outcome variables)

	Dependent variable (all measured in days)	Total household MGNREGS labor days			Female MGNREGS labor days			Male MGNREGS labor days		
		Kharif	Rabi	Summer	Kharif	Rabi	Summer	Kharif	Rabi	Summer
1	Total HH labor from all non-NREGA work	-1.39 ***	-0.44 **	-0.60 ***	-1.67 ***	-0.58 *	-0.85 ***	-2.56 ***	-0.75 *	-0.94 ***
2	Total HH labor from paid non-NREGA work	-1.03 ***	-0.55 ***	-0.42 ***	-1.22 ***	-0.71 ***	-0.60 ***	-1.91 ***	-0.96 ***	-0.64 ***
3	Total HH labor from unpaid non-NREGA work	-0.37 ***	0.11	-0.18 ***	-0.45 **	0.13	-0.26 ***	-0.64 **	0.20	-0.30 ***
4	Total HH labor from private casual labor	-0.80 ***	-0.38 **	-0.32 ***	-1.03 ***	-0.57 **	-0.50 ***	-1.36 ***	-0.48	-0.43 ***
5	Total HH labor from farm servant labor	-0.13 *	-0.04	0.00	-0.08	-0.01	0.02	-0.35 **	-0.15	-0.03
6	Total HH labor from non-farm self-employ	-0.05	-0.11	-0.06 *	0.00	-0.14	-0.08	-0.21	-0.23	-0.10
7	Total HH labor from migration labor	0.05	0.07 **	0.03 *	0.05	0.10 *	0.04	0.11	0.11 **	0.03
8	Total HH labor from salaried labor	-0.09 *	-0.09	-0.07 **	-0.15	-0.10	-0.09 *	-0.11	-0.20	-0.13 *
9	Total HH labor from own-farm labor	-0.18	0.16	-0.10 ***	-0.09	0.25	-0.13 **	-0.53 **	0.18	-0.20 **
10	Total HH labor from HH work	-0.19 **	-0.06	-0.08 **	-0.37 ***	-0.12	-0.12 ***	-0.11	0.02	-0.10
11	Adult female labor from all non-NREGA work	-0.72 ***	-0.30 **	-0.28 ***	-1.08 ***	-0.50 ***	-0.46 ***	-0.94 ***	-0.26	-0.31 ***
12	Adult female labor from paid non-NREGA work	-0.56 ***	-0.40 ***	-0.22 ***	-0.83 ***	-0.63 ***	-0.37 ***	-0.75 ***	-0.48 **	-0.23 ***
13	Adult female labor from unpaid non-NREGA work	-0.16 **	0.10	-0.06 *	-0.25 **	0.12	-0.08 *	-0.19	0.22	-0.08
14	Adult female labor from private casual labor	-0.50 ***	-0.31 ***	-0.20 ***	-0.78 ***	-0.51 ***	-0.34 ***	-0.60 ***	-0.30	-0.17 **
15	Adult female labor from farm servant labor	-0.04	-0.01	0.00	-0.05	0.00	-0.01	-0.06	-0.02	-0.01 *
16	Adult female labor from non-farm self-employ	0.03	-0.06	-0.01	0.10 *	-0.09	-0.02	-0.06	-0.10	-0.02
17	Adult female labor from migration labor	-0.02	0.01	0.01	-0.02	0.03	0.02	-0.02	-0.01	0.00
18	Adult female labor from salaried labor	-0.04	-0.04 *	-0.02 **	-0.08 *	-0.06	-0.02 **	-0.01	-0.06	-0.03
19	Adult female labor from own-farm labor	-0.05	0.10 **	-0.03	-0.03	0.14 **	-0.04	-0.14	0.17 *	-0.04
20	Adult female labor from HH work	-0.11 **	0.00	-0.03	-0.22 ***	-0.02	-0.05	-0.06	0.05	-0.04
21	Adult male labor from all non-NREGA work	-0.54 ***	-0.05	-0.24 ***	-0.45 **	0.03	-0.27 ***	-1.32 ***	-0.27	-0.51 ***
22	Adult male labor from paid non-NREGA work	-0.56 ***	-0.40 ***	-0.22 ***	-0.83 ***	-0.63 ***	-0.37 ***	-0.75 ***	-0.48 **	-0.23 ***
23	Adult male labor from unpaid non-NREGA work	-0.16 **	0.02	-0.10 ***	-0.14	0.02	-0.14 ***	-0.38 **	0.03	-0.16 **
24	Adult male labor from private casual labor	-0.19 **	0.02	-0.07 *	-0.13	0.04	-0.07	-0.52 ***	0.00	-0.18 *
25	Adult male labor from farm servant labor	-0.08	-0.05	0.00	-0.05	-0.03	0.02	-0.24 **	-0.16 *	-0.02
26	Adult male labor from non-farm self-employ	-0.08 *	-0.04	-0.04	-0.08	-0.05	-0.05	-0.16	-0.09	-0.07
27	Adult male labor from migration labor	0.06 *	0.06 **	0.03 **	0.06	0.07 *	0.04 **	0.13 *	0.11 **	0.04 *
28	Adult male labor from salaried labor	-0.08	-0.05	-0.05 *	-0.10	-0.03	-0.05	-0.15	-0.17	-0.11 *
29	Adult male labor from own-farm labor	-0.11 *	0.07	-0.06 **	-0.04	0.12	-0.07 *	-0.37 ***	0.04	-0.12 *
30	Adult male labor from HH work	-0.05	-0.05	-0.04 ***	-0.10 **	-0.10 **	-0.07 ***	-0.01	-0.01	-0.04

Notes: *** p<0.01, ** p<0.05, * p<0.1. This table contains the regression results for estimating equations (3) and (4). Standard errors clustered at the revenue village level (not included only for space reasons, available upon request). District fixed effects included in all specifications. Only phase 1 and 2 households are included in the kharif and rabi analysis, while phase 3 households are added to the summer regressions. See Table A4 of the appendix for a list of control variables used in all regression. The grayed portions of the table represent the gender-matched effects whereas the remaining white portions are cross-gender and gender-specific effects. Results for youth and children found in Tables A11 and A12 of the appendix, respectively.

APPENDIX

Table A.1: Percent of households with non-zero labor days supplied to each minor category

	Kharif			Rabi			Summer		
	2004	2006	2008	2004	2006	2008	2004	2006	2008
Non-MGNREGS paid work									
Private casual labor	73.6	74.4	74.6	73.0	73.9	73.3	66.3	65.0	71.9
Farm servant	3.7	3.4	3.3	3.6	3.2	3.2	3.5	3.1	3.1
Non-farm self-employment	25.2	21.6	18.7	23.9	21.0	18.8	25.3	22.7	19.4
Migration	2.5	1.2	1.9	2.3	1.2	2.0	2.3	1.5	1.7
Salaried work	11.7	10.8	13.1	11.7	10.6	13.3	11.5	10.5	13.2
Non-MGNREGS unpaid work									
Own farm	37.1	45.7	44.1	44.0	37.0	38.2	30.2	32.2	30.6
Household chores	98.9	99.0	98.7	98.7	99.0	98.6	98.4	98.8	98.4
MGNREGS	0.0	0.0	18.2	0.0	0.0	15.3	0.0	0.0	24.8

Notes: Casual labor includes all non-MGNREGS agricultural and non-agricultural labor days. Farm servant labor is technically one specific category of salaried labor that we decided to analyze separately. Non-farm self-employment includes days spent self-employed and with income-generation related to common property resources. Own farm includes days spent in crop and livestock agriculture at the household's farm. See main text for information on the data sources used to create these aggregates.

Table A.2: Percent of households with non-zero labor days supplied to each minor category for females by age group, season, and year

	2004	Kharif 2006	2008	2004	Rabi 2006	2008	2004	Summer 2006	2008
Females (adult: age 18 and older)									
Private casual labor	62.3	63.3	63.9	61.4	63.0	62.4	51.0	51.2	59.7
Farm servant	0.1	0.4	0.2	0.1	0.4	0.3	0.1	0.2	0.3
Non-farm self-employment	13.4	11.5	9.2	12.6	11.1	9.0	13.6	12.4	9.4
Migration	0.9	0.5	0.7	0.8	0.5	0.9	0.6	0.6	0.7
Salaried work	2.1	2.3	2.7	2.0	2.0	2.8	2.0	1.9	2.7
Own farm	27.2	40.3	39.5	37.0	30.1	31.2	18.9	24.2	23.0
Household chores	96.3	96.0	95.4	96.1	96.0	95.0	95.7	95.6	94.4
MGNREGS	0.0	0.0	14.7	0.0	0.0	12.7	0.0	0.0	20.7
Females (youth: age 14 to 17)									
Private casual labor	4.9	3.9	3.1	4.8	4.0	3.0	4.2	3.1	2.9
Farm servant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-farm self-employment	0.7	0.5	0.2	0.6	0.4	0.2	0.6	0.6	0.3
Migration	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Salaried work	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2
Own farm	1.4	1.9	1.7	2.0	1.3	1.3	1.0	1.1	1.1
Household chores	9.2	9.8	9.4	9.1	9.9	9.3	9.0	9.7	9.4
MGNREGS									
Females (child: age 10 to 13)									
Private casual labor	1.6	1.3	1.0	0.5	0.6	1.0	1.3	1.1	1.0
Farm servant	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Non-farm self-employment	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.2
Migration	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Salaried work	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Own farm	0.8	0.9	0.7	0.6	0.8	0.5	0.6	0.6	0.4
Household chores	4.7	6.9	7.2	1.4	3.4	7.0	4.6	6.9	7.0
MGNREGS									

Notes: See notes for Table A1.

Table A.3: Percent of households with non-zero labor days supplied to each minor category for males by age group, season, and year

	2004	Kharif 2006	2008	2004	Rabi 2006	2008	2004	Summer 2006	2008
Males (adult: age 18 and older)									
Private casual labor	55.3	55.8	53.6	54.6	55.3	52.0	50.0	49.0	52.9
Farm servant	3.2	3.1	3.0	3.2	2.8	2.8	3.2	2.7	2.8
Non-farm self-employment	20.8	16.9	14.7	19.4	16.2	14.9	20.8	18.0	15.4
Migration	2.0	1.0	1.4	1.8	1.0	1.4	2.0	1.2	1.2
Salaried work	9.7	8.7	10.5	9.7	8.5	10.7	9.5	8.5	10.5
Own farm	32.1	41.8	39.7	38.9	33.3	34.1	23.9	27.6	26.1
Household chores	30.3	56.6	54.9	30.0	56.6	54.7	29.9	56.5	54.7
MGNREGS	0.0	0.0	11.0	0.0	0.0	9.1	0.0	0.0	16.2
Males (youth: age 14 to 17)									
Private casual labor	3.1	3.5	3.1	3.1	3.4	3.1	2.9	3.0	3.2
Farm servant	0.4	0.2	0.1	0.4	0.2	0.2	0.3	0.2	0.2
Non-farm self-employment	0.8	0.4	0.3	0.8	0.6	0.3	0.9	0.6	0.3
Migration	0.2	0.0	0.2	0.2	0.0	0.2	0.2	0.1	0.2
Salaried work	0.3	0.6	0.7	0.3	0.6	0.7	0.3	0.6	0.7
Own farm	1.6	2.1	1.4	2.0	1.7	1.1	1.5	1.5	0.9
Household chores	2.5	5.1	5.6	2.6	5.0	5.5	2.6	5.0	5.6
MGNREGS									
Males (child: age 10 to 13)									
Private casual labor	0.6	0.6	0.4	0.5	0.6	0.5	0.3	0.4	0.5
Farm servant	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Non-farm self-employment	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1
Migration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salaried work	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1
Own farm	0.6	0.9	0.6	0.6	0.8	0.4	0.5	0.8	0.4
Household chores	1.4	3.5	3.7	1.4	3.4	3.8	1.4	3.4	3.8
MGNREGS									

Notes: See notes for Table A1.

Table A.4: Summary statistics of control variables

Variable	Mean	SD	25 th	50 th	75 th
Household classified as "poorest of the poor" (=1)	0.4	0.5	0.0	0.0	1.0
Household classified as "poor" (=1)	0.3	0.5	0.0	0.0	1.0
Household classified as "not so poor" (=1)	0.2	0.4	0.0	0.0	0.0
Household classified as "not poor" (=1)	0.1	0.3	0.0	0.0	0.0
Household in scheduled caste (SC) (=1)	0.2	0.4	0.0	0.0	0.0
Household in scheduled tribe (ST) (=1)	0.2	0.4	0.0	0.0	0.0
Household in backward caste (BC) (=1)	0.4	0.5	0.0	0.0	1.0
Household in other caste (OC) (=1)	0.2	0.4	0.0	0.0	0.0
Households has at least one member who can write (=1)	0.8	0.4	1.0	1.0	1.0
Female headed households (=1)	0.1	0.3	0.0	0.0	0.0
Number of female adults in household	1.4	0.6	1.0	1.0	2.0
Number of male adults in household	1.4	0.8	1.0	1.0	2.0
Households has both a male and female adult (=1)	0.9	0.3	1.0	1.0	1.0
Number of household members age 10-13 (children)	0.4	0.6	0.0	0.0	1.0
Number of household members age 14-17 (children)	0.3	0.6	0.0	0.0	1.0
Household size	4.1	1.7	3.0	4.0	5.0
Household size – squared	19.3	16.4	9.0	16.0	25.0
Household dependency ratio (0-100)	54.1	57.7	0.0	40.0	100.0
Households with no member age 15-64 (=1)	0.0	0.2	0.0	0.0	0.0
Number of acres owned and irrigated by household	0.6	1.5	0.0	0.0	0.5
Number of acres owned and rainfed by household	0.9	2.1	0.0	0.0	1.0
Number of acres owned by household – squared	9.2	37.0	0.0	0.3	4.0
Number of shocks (0-12) experienced by the household recently	0.5	0.7	0.0	0.0	1.0
Household is part of a self-help group (=1)	0.4	0.5	0	0	1
Wage gap: hh casual wage in 2006 – village avg NREGA wage in 2008*	-16.7	46.0	-40.3	-27.0	-8.7
Access to medical facility in village (=1)	0.7	0.5	0.0	1.0	1.0
Number of agricultural credit societies in village	0.2	0.4	0.0	0.0	0.0
Paved approach road to village (=1)	0.8	0.4	1.0	1.0	1.0
Distance to nearest town from village (km)	40.8	26.9	18.0	35.0	63.0
Population density (households per hectare) in village	0.7	0.9	0.3	0.5	0.7
Percent of village population that is SC/ST	32.8	24.4	17.0	26.4	41.6
Percent of village population that is illiterate	54.3	10.0	48.0	54.2	61.0
Percent of village population that is a cultivator	15.7	10.1	9.2	14.0	20.0
Percent of village population that is an agricultural laborer	15.3	10.6	7.1	14.0	21.9
Percent of village population that is a marginal worker	12.4	10.8	4.0	9.5	18.2
Percent of village population that does not work	47.2	7.7	42.1	46.3	51.5
Average rainfall rate (mm/hr) across months in season	0.1	0.1	0.0	0.1	0.2
Average rainfall rate (mm/hr) across months in season - squared	0.0	0.0	0.0	0.0	0.0
Village level daily wage rate for casual labor (male and female avg)	66.7	23.8	48.1	60.1	82.1
Ratio of village level daily wage for men and women casual laborers	1.7	0.4	1.4	1.7	2.0

Notes: These statistics are calculated with data from all three survey years. Number of households in balanced panel = 3,725. *This variable is only used in the propensity score weighting logit regressions. The wage gap is computed using the household-specific wages in 2006 (from household survey data) and the MGNREGS wages in 2008 (from publicly available MGNREGS administrative data).

Table A.5: Marginal effects of logit models describing determinants of MGNREGS participation in 2008 by season and gender of participant using lagged (2006) characteristics

	Kharif		Rabi		Summer	
	(1) Female	(2) Male	(3) Female	(4) Male	(5) Female	(6) Male
HH is poorest of the poor =1	0.525* (0.286)	0.230 (0.271)	0.445 (0.278)	0.315 (0.302)	0.530** (0.209)	0.464** (0.231)
HH is poor =1	0.593** (0.274)	0.420 (0.263)	0.713*** (0.260)	0.394 (0.276)	0.556*** (0.211)	0.551** (0.223)
HH is not so poor =1	0.508* (0.261)	0.0130 (0.261)	0.245 (0.259)	0.00125 (0.273)	0.167 (0.201)	0.0892 (0.213)
HH is SC caste =1	0.511*** (0.130)	0.502*** (0.139)	0.279* (0.147)	0.448** (0.175)	0.294** (0.125)	0.259* (0.137)
HH is ST caste =1	-0.347 (0.252)	-0.194 (0.298)	-0.297 (0.251)	-0.194 (0.248)	-0.174 (0.194)	0.109 (0.200)
HH is OC =1	-0.552*** (0.194)	-0.517** (0.242)	-0.417** (0.197)	-0.408 (0.271)	-0.299* (0.157)	-0.293* (0.175)
Medical facility in vil =1	-0.139 (0.173)	-0.0451 (0.196)	0.00297 (0.186)	0.335 (0.223)	-0.236 (0.154)	-0.0783 (0.165)
No. ag credit societ. in vil =1	-0.180 (0.145)	-0.0315 (0.167)	-0.343* (0.195)	-0.439** (0.212)	-0.207 (0.151)	-0.250 (0.154)
Paved road to vil =1	0.182 (0.213)	0.214 (0.226)	0.317 (0.243)	0.252 (0.281)	0.0784 (0.184)	0.0846 (0.197)
Dist. from vil to town (km)	-0.000234 (0.00370)	-0.00366 (0.00425)	-0.00310 (0.00407)	0.00172 (0.00505)	0.00182 (0.00323)	0.00571* (0.00342)
No. hh per ha in vil	-0.407** (0.195)	-0.298 (0.234)	-0.267 (0.209)	-0.289 (0.293)	-0.178 (0.119)	-0.251 (0.171)
Percent SC/ST in vil	0.00654 (0.00501)	-0.00210 (0.00682)	0.00555 (0.00583)	0.00967 (0.00724)	0.00605* (0.00367)	0.00322 (0.00415)
Percent illiterate in vil	-0.00831 (0.00994)	-0.00312 (0.0107)	0.00173 (0.0100)	-0.00577 (0.0114)	-0.0116 (0.00881)	-0.000919 (0.0100)
Percent cultivators in vil	-0.00136 (0.0147)	0.0237 (0.0168)	0.00690 (0.0155)	0.0490** (0.0204)	0.0138 (0.0127)	0.0358** (0.0139)
Percent ag laborers in vil	0.0178 (0.0151)	0.0341* (0.0185)	-0.0156 (0.0169)	0.0397* (0.0233)	0.00407 (0.0137)	0.0338** (0.0154)
Percent marginal worker in vil	0.00504 (0.0145)	0.0324* (0.0177)	-0.000181 (0.0148)	0.0424* (0.0217)	0.0131 (0.0126)	0.0375** (0.0147)
Percent non-workers in vil	-0.00908 (0.0188)	-0.00178 (0.0236)	-0.0221 (0.0205)	0.0127 (0.0302)	0.00684 (0.0181)	0.0272 (0.0214)
>0 HH mem can write =1	0.217 (0.137)	0.0670 (0.173)	0.213 (0.150)	-0.118 (0.184)	0.169 (0.120)	0.291** (0.139)
Female headed HH =1	-0.0423 (0.228)	-0.508 (0.329)	-0.0238 (0.249)	-0.134 (0.375)	0.0417 (0.180)	-0.109 (0.231)
No. female adults in HH	-0.150 (0.121)	-0.346** (0.144)	0.0272 (0.131)	0.0703 (0.164)	-0.0320 (0.104)	-0.171 (0.117)
No. male adults in HH	-0.0782 (0.114)	0.0554 (0.134)	-0.0452 (0.117)	0.174 (0.146)	-0.124 (0.0948)	0.128 (0.101)
Male and female adult =1	0.778*** (0.299)	0.924** (0.437)	0.583* (0.298)	1.348** (0.540)	0.479** (0.221)	0.986*** (0.309)
No. members age 10-13	-0.0263 (0.0993)	0.0144 (0.114)	0.0522 (0.0997)	0.282** (0.117)	-0.0731 (0.0888)	-0.0553 (0.101)
No. members age 14-17	-0.117 (0.104)	0.0776 (0.120)	0.173* (0.104)	0.351*** (0.117)	0.151* (0.0870)	0.212** (0.0856)
Household size	-0.0108 (0.0511)	0.0417 (0.0587)	-0.0257 (0.0576)	0.0444 (0.0726)	0.0276 (0.0432)	0.0187 (0.0514)
Household size - sq	0.00343 (0.00639)	0.000733 (0.00817)	-0.000791 (0.00708)	-0.0152* (0.00875)	0.00212 (0.00535)	-0.00340 (0.00589)
Household size	0.0000653 (0.00126)	-0.000905 (0.00155)	0.000610 (0.00121)	0.000180 (0.00165)	0.000909 (0.00101)	0.00120 (0.00110)
HH depend. ratio is zero =1	-1.112** (0.521)		-1.345** (0.592)	-1.770* (1.002)	-1.604*** (0.505)	-2.348** (1.019)
No. HH acres own and irrig.	-0.0684 (0.0736)	0.0269 (0.0603)	0.0449 (0.0748)	0.0447 (0.0674)	-0.00553 (0.0533)	0.0110 (0.0532)
No. HH acres own and rainfed	0.0144 (0.0626)	0.0580 (0.0522)	0.125** (0.0613)	0.100 (0.0646)	0.0353 (0.0490)	0.0229 (0.0435)
No. acres owned by HH - sq	-0.00709 (0.00660)	-0.00333 (0.00315)	-0.0124* (0.00679)	-0.00648 (0.00482)	-0.00190 (0.00346)	-0.000950 (0.00278)
No. of HH shocks	0.0738 (0.0806)	-0.100 (0.108)	0.235** (0.0913)	0.122 (0.106)	0.0965 (0.0703)	0.107 (0.0794)

HH is in SHG =1	0.387*** (0.109)	0.167 (0.133)	0.301** (0.124)	0.143 (0.142)	0.499*** (0.0973)	0.323*** (0.104)
HH specific wage gap	-0.00517*** (0.00181)	-0.00798*** (0.00219)	-0.00724*** (0.00212)	-0.00786*** (0.00255)	-0.00468*** (0.00139)	-0.00627*** (0.00154)
Seasonal rainfall amount	8.633 (20.75)	-0.813 (21.44)	0.882 (8.231)	7.566 (10.99)	-38.56 (30.59)	-15.10 (29.08)
Seasonal rainfall amount - sq	-18.86 (34.14)	-1.547 (34.74)	28.55 (32.91)	-13.70 (42.37)	142.8 (203.2)	13.89 (195.9)
Village casual wage rate	0.00453 (0.00565)	0.00459 (0.00624)	0.00869 (0.00605)	-0.000720 (0.00749)	-0.000333 (0.00561)	-0.00430 (0.00665)
Ratio of male to female wage	0.0106 (0.193)	0.117 (0.204)	0.0147 (0.198)	0.0942 (0.218)	-0.277* (0.153)	-0.222 (0.164)
Lagged total HH labor supply	0.000272 (0.000478)	0.000947* (0.000512)	-0.000571 (0.000648)	0.000138 (0.000757)	0.0000509 (0.000661)	-0.000499 (0.000707)
Constant	-3.131 (3.450)	-3.779 (3.870)	-2.682 (1.651)	-7.192*** (2.466)	0.257 (1.972)	-4.549** (2.260)
District fixed effects	Y	Y	Y	Y	Y	Y
Number of households	2914	2914	2914	2914	3725	3725
Pseudo R-squared	0.107	0.099	0.089	0.094	0.097	0.097

Table A.6: Test for parallel trends in outcome variables prior to MGNREGS (any household participation)

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	1.1	(-6.0)		-8.2	(-5.9)	**	-2.5	(-3.8)		4.3	(-6.2)		0.1	(-5.8)		-0.4	(-3.9)	
HH labor, females age 18+	-2.7	(-3.7)		-7.9	(-3.7)	**	-4.4	(-2.2)	*	-0.6	(-3.7)		-3.1	(-3.6)		-1.5	(-2.2)	
HH labor, females age 14-17	1.3	(-1.4)		-0.8	(-1.3)		-0.4	(-0.8)		2.1	(-1.5)		0.8	(-1.4)		-0.1	(-0.8)	
HH labor, females age 10-13	1.6	(-1.1)		0.9	(-1.1)		0.3	(-0.5)		1.1	(-1.2)		0.6	(-1.1)		-0.2	(-0.5)	
HH labor, males age 18+	1.7	(-3.4)		-1.6	(-3.5)		2.0	(-2.3)		3.1	(-3.5)		2.5	(-3.5)		2.2	(-2.4)	
HH labor, males age 14-17	-0.2	(-1.2)		0.2	(-1.3)		-0.2	(-0.8)		-0.2	(-1.3)		-0.4	(-1.3)		-0.3	(-0.8)	
HH labor, males age 10-13	-0.6	(-0.7)		1.0	(-0.5)	**	0.2	(-0.4)		-1.1	(-0.7)		0.1	(-0.5)		-0.4	(-0.4)	
HH labor from paid non-NREGA work, total	3.9	(-5.1)		-9.2	(-4.7)	**	-4.6	(-3.1)		4.5	(-5.3)		-1.8	(-4.9)		-4.4	(-3.4)	
HH labor from private casual labor, total	4.2	(-4.7)		-13.2	(-4.7)	***	-4.0	(-3.0)		9.7	(-5.1)	*	-0.4	(-5.0)		-0.1	(-3.2)	
HH labor from farm servant labor, total	3.0	(-1.7)	*	0.6	(-1.4)		0.1	(-0.9)		1.6	(-1.9)		-0.4	(-1.5)		-0.8	(-1.0)	
HH labor from non-farm self-employ, total	-1.3	(-2.5)		1.3	(-2.4)		-1.7	(-1.5)		-3.5	(-2.6)		0.1	(-2.5)		-3.6	(-1.6)	**
HH labor from migration labor, total	-0.3	(-1.2)		0.0	(-1.1)		-0.2	(-0.7)		0.6	(-1.2)		0.3	(-1.1)		-0.2	(-0.6)	
HH labor from salaried labor, total	-1.7	(-2.5)		1.9	(-2.2)		1.2	(-1.4)		-1.8	(-2.6)		-1.0	(-2.1)		0.6	(-1.4)	
HH labor from unpaid non-NREGA work, total	-2.8	(-4.2)		1.0	(-3.7)		2.1	(-2.3)		-0.1	(-4.1)		3.1	(-3.5)		4.2	(-2.2)	*
HH labor from own-farm labor, total	-1.0	(-3.5)		2.2	(-3.1)		2.2	(-1.9)		0.3	(-3.4)		3.0	(-3.0)		3.5	(-1.8)	*
HH labor from HH work, total	-1.8	(-2.3)		-1.2	(-1.9)		0.0	(-1.3)		0.0	(-2.3)		0.1	(-1.9)		0.8	(-1.3)	

Notes: Related to estimates displayed in Table 3 of the main text.

Table A.7: Test for parallel trends in outcome variables prior to MGNREGS (female participation)

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	1.7	(-6.5)		-11.3	(-6.4)	*	-1.9	(-4.0)		1.8	(-6.6)		-3.5	(-6.4)		0.0	(-4.1)	
HH labor, females age 18+	0.2	(-4.1)		-7.7	(-4.0)	*	-2.4	(-2.4)		1.7	(-4.0)		-2.1	(-3.9)		0.6	(-2.4)	
HH labor, females age 14-17	2.2	(-1.5)		0.0	(-1.4)		-0.5	(-0.8)		2.2	(-1.6)		0.3	(-1.6)		0.2	(-0.9)	
HH labor, females age 10-13	1.8	(-1.2)		0.7	(-1.2)		0.3	(-0.5)		1.7	(-1.3)		0.7	(-1.2)		0.0	(-0.6)	
HH labor, males age 18+	-1.4	(-3.7)		-5.8	(-3.9)		1.1	(-2.4)		-2.0	(-3.7)		-2.1	(-3.9)		0.8	(-2.5)	
HH labor, males age 14-17	-0.8	(-1.3)		0.4	(-1.3)		-0.4	(-0.8)		-1.1	(-1.4)		-0.6	(-1.3)		-0.8	(-0.8)	
HH labor, males age 10-13	-0.2	(-0.7)		1.0	(-0.5)	*	0.0	(-0.4)		-1.0	(-0.7)		0.1	(-0.5)		-0.5	(-0.4)	
HH labor from paid non-NREGA work, total	5.5	(-5.6)		-9.4	(-5.4)	*	-4.1	(-3.3)		3.5	(-5.7)		-3.4	(-5.6)		-4.4	(-3.5)	
HH labor from private casual labor, total	6.3	(-4.9)		-10.8	(-5.1)	**	-2.9	(-3.1)		9.9	(-5.0)	**	-0.3	(-5.4)		0.3	(-3.4)	
HH labor from farm servant labor, total	2.6	(-1.8)		-0.4	(-1.6)		0.1	(-1.0)		1.5	(-2.1)		0.3	(-1.6)		-0.8	(-1.0)	
HH labor from non-farm self-employ, total	-1.0	(-2.7)		2.0	(-2.7)		-2.0	(-1.7)		-4.4	(-2.6)	*	0.2	(-2.7)		-4.1	(-1.8)	**
HH labor from migration labor, total	-1.0	(-1.4)		-0.6	(-1.2)		-0.1	(-0.7)		0.3	(-1.4)		0.0	(-1.1)		0.1	(-0.7)	
HH labor from salaried labor, total	-1.4	(-2.8)		0.4	(-2.3)		0.8	(-1.4)		-1.4	(-2.9)		-1.5	(-2.4)		0.1	(-1.5)	
HH labor from unpaid non-NREGA work, total	-3.7	(-4.2)		-1.9	(-3.8)		2.3	(-2.5)		-1.9	(-4.1)		0.0	(-3.7)		4.6	(-2.4)	*
HH labor from own-farm labor, total	-3.8	(-3.5)		-1.6	(-3.4)		1.4	(-2.0)		-2.2	(-3.4)		0.3	(-3.1)		3.1	(-1.9)	
HH labor from HH work, total	0.0	(-2.5)		-0.4	(-2.0)		0.8	(-1.3)		0.5	(-2.4)		-0.2	(-2.0)		1.6	(-1.3)	

Notes: Related to estimates displayed in Table 4 of the main text.

Table A.8: Test for parallel trends in outcome variables prior to MGNREGS (male participation)

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	5.0	(-7.2)		-6.6	(-7.4)		-5.3	(-4.2)		9.9	(-7.1)		0.0	(-6.9)		-2.1	(-4.3)	
HH labor, females age 18+	-2.7	(-4.4)		-7.3	(-4.4)	*	-4.9	(-2.6)	*	0.1	(-4.3)		-4.7	(-4.1)		-2.9	(-2.5)	
HH labor, females age 14-17	0.2	(-1.7)		-2.5	(-1.7)		-0.8	(-0.9)		0.7	(-2.0)		-0.7	(-1.6)		-0.5	(-0.9)	
HH labor, females age 10-13	1.1	(-1.3)		0.9	(-1.2)		0.8	(-0.6)		0.0	(-1.3)		-0.4	(-1.2)		0.0	(-0.6)	
HH labor, males age 18+	7.7	(-4.0)	*	1.7	(-4.5)		-1.0	(-2.5)		11.4	(-4.0)	***	6.2	(-4.3)		1.1	(-2.6)	
HH labor, males age 14-17	-0.8	(-1.6)		-1.0	(-1.8)		0.2	(-1.0)		-1.1	(-1.7)		-0.9	(-1.8)		0.2	(-1.1)	
HH labor, males age 10-13	-0.6	(-0.8)		1.6	(-0.7)	**	0.4	(-0.5)		-1.1	(-0.9)		0.5	(-0.7)		0.0	(-0.5)	
HH labor from paid non-NREGA work, total	3.3	(-6.1)		-10.6	(-6.2)	*	-7.5	(-3.6)	**	7.0	(-6.0)		-5.3	(-5.9)		-5.7	(-3.6)	
HH labor from private casual labor, total	5.3	(-5.8)		-11.7	(-6.1)	*	-4.6	(-3.5)		11.7	(-5.8)	**	-2.2	(-5.8)		-0.3	(-3.6)	
HH labor from farm servant labor, total	6.1	(-2.6)	**	1.3	(-2.0)		0.4	(-1.2)		4.0	(-2.6)		-0.8	(-1.7)		-0.1	(-1.2)	
HH labor from non-farm self-employ, total	-5.9	(-2.9)	**	-3.1	(-3.2)		-3.7	(-1.8)	**	-5.9	(-3.0)	**	-1.4	(-3.1)		-4.8	(-1.9)	***
HH labor from migration labor, total	0.8	(-1.2)		0.9	(-1.0)		0.0	(-0.7)		0.2	(-1.1)		-0.1	(-0.9)		-0.5	(-0.6)	
HH labor from salaried labor, total	-3.0	(-2.8)		2.0	(-2.2)		0.2	(-1.5)		-3.1	(-2.8)		0.0	(-2.0)		-0.1	(-1.5)	
HH labor from unpaid non-NREGA work, total	1.7	(-5.0)		4.0	(-4.4)		2.2	(-2.8)		3.5	(-5.0)		5.4	(-4.2)		3.6	(-2.7)	
HH labor from own-farm labor, total	5.1	(-4.2)		5.7	(-3.9)		1.2	(-2.4)		4.9	(-4.1)		5.8	(-3.7)		2.1	(-2.2)	
HH labor from HH work, total	-3.4	(-2.7)		-1.6	(-2.5)		1.0	(-1.5)		-1.1	(-2.8)		0.0	(-2.4)		1.0	(-1.5)	

Notes: Related to estimates displayed in Table 5 of the main text.

Table A.9: ATET estimate of female MGNREGS participation (binary) on household labor supply outcomes, sub-sample where households with male MGNREGS participation are dropped

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	8.7	(-9.2)		5.2	(-7.8)		10.6	(-5.1)	**	3.4	(-8.8)		0.3	(-7.6)		12.7	(-5.1)	**
HH labor, females age 18+	4.4	(-5.3)		7.4	(-4.4)	*	14.6	(-2.8)	***	2.8	(-5.0)		6.2	(-4.4)		15.4	(-2.8)	***
HH labor, females age 14-17	1.8	(-2.1)		0.9	(-1.4)		0.0	(-1.0)		2.7	(-2.2)		2.2	(-1.5)		0.7	(-1.1)	
HH labor, females age 10-13	-0.8	(-1.5)		-2.6	(-1.3)	**	0.1	(-0.7)		1.7	(-1.7)		-1.5	(-1.3)		-0.1	(-0.7)	
HH labor, males age 18+	2.8	(-5.2)		0.1	(-4.8)		-2.7	(-3.5)	†	-3.5	(-5.1)		-5.2	(-4.7)		-0.2	(-3.5)	
HH labor, males age 14-17	-0.1	(-1.7)		-0.7	(-1.4)		-0.8	(-0.8)		-0.2	(-1.7)		-1.7	(-1.5)		-1.8	(-0.9)	**
HH labor, males age 10-13	1.7	(-1.2)		1.1	(-0.9)		0.7	(-0.4)		0.8	(-1.3)		0.6	(-0.9)		0.0	(-0.4)	†
HH labor from paid non-NREGA work, total	-9.7	(-6.9)		-7.8	(-6.3)		-2.7	(-4.6)		-6.8	(-6.9)		-10.9	(-6.3)	*	-4.2	(-4.5)	
HH labor from private casual labor, total	-13.2	(-6.7)	**	-4.8	(-5.9)	†	-2.7	(-4.0)		-4.4	(-6.9)		-3.8	(-5.9)		-1.0	(-4.0)	
HH labor from farm servant labor, total	6.3	(-3.2)	**	3.3	(-2.5)		1.4	(-1.2)		6.1	(-3.2)	*	3.4	(-2.3)		1.0	(-1.2)	
HH labor from non-farm self-employ, total	0.4	(-3.7)		-6.3	(-2.9)	**†	-0.4	(-2.2)		-4.4	(-3.7)		-7.1	(-2.8)	**	-1.3	(-2.2)	
HH labor from migration labor, total	0.4	(-2.1)		0.3	(-1.9)		0.1	(-1.2)		1.5	(-1.9)		0.6	(-1.6)		0.5	(-1.2)	
HH labor from salaried labor, total	-3.6	(-4.5)		-0.3	(-3.9)		-1.2	(-2.4)		-4.4	(-4.3)		-3.5	(-3.8)		-2.6	(-2.3)	
HH labor from unpaid non-NREGA work, total	1.3	(-5.8)		-1.0	(-4.9)		-3.3	(-2.7)		-6.4	(-5.5)		-2.8	(-4.8)		0.6	(-2.8)	†
HH labor from own-farm labor, total	5.3	(-4.3)	†	1.3	(-3.8)		-2.4	(-2.1)		-1.4	(-4.1)		-1.6	(-3.7)		0.4	(-2.2)	†
HH labor from HH work, total	-3.9	(-3.6)		-2.3	(-2.6)		-0.8	(-1.8)		-4.4	(-3.5)		-0.5	(-2.4)		-0.4	(-1.8)	

Notes: See notes for Table 3 of the main text. †= does not pass parallel trend tests (full test results available upon request). Any households with male MGNREGS participation in the 2008 data are dropped. New sample size: 2,506 households in kharif, 2,575 in rabi, 3,122 in summer.

Table A.10: ATET estimate of male MGNREGS participation (binary) on household labor supply outcomes, sub-sample where households with female MGNREGS participation are dropped

Dependent variable (all measured in days)	DID									DID-PSW								
	(1) Kharif			(2) Rabi			(3) Summer			(4) Kharif			(5) Rabi			(6) Summer		
	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig	coef	se.	sig
HH labor, total	-4.3	(-13.6)		-20.3	(-14.0)		7.7	(-7.8)		6.9	(-12.7)		-3.6	(-12.2)		4.5	(-7.9)	
HH labor, females age 18+	2.8	(-6.8)		-3.6	(-7.6)		9.4	(-4.0)	**†	-0.5	(-6.4)		-1.3	(-6.6)		1.9	(-4.0)	†
HH labor, females age 14-17	-0.8	(-3.1)		0.1	(-3.1)		-0.8	(-1.2)		-0.6	(-2.8)		1.8	(-2.6)		-1.6	(-1.3)	
HH labor, females age 10-13	0.3	(-1.8)		-0.2	(-1.3)		1.0	(-0.9)		0.0	(-1.8)		0.5	(-1.1)		0.0	(-0.7)	
HH labor, males age 18+	-8.0	(-8.1)	†	-16.7	(-8.5)	**†	1.3	(-5.3)		4.9	(-7.3)	†	-3.4	(-7.3)	†	5.0	(-5.3)	†
HH labor, males age 14-17	3.5	(-2.8)		2.2	(-2.5)		-1.8	(-1.5)		5.3	(-2.8)	*	3.0	(-2.5)		-0.4	(-1.5)	
HH labor, males age 10-13	0.4	(-0.7)	†	-0.8	(-0.9)		-0.2	(-1.0)		-0.3	(-0.6)	†	-0.9	(-0.7)		0.1	(-0.9)	
HH labor from paid non-NREGA work, total	-15.1	(-10.5)		-12.8	(-8.1)		-4.0	(-7.0)		-8.0	(-9.5)		-12.4	(-8.0)		-9.0	(-7.1)	
HH labor from private casual labor, total	-14.2	(-8.8)		-0.8	(-8.1)	†	-2.6	(-5.5)		-3.7	(-8.3)		5.5	(-8.2)		-3.3	(-5.3)	
HH labor from farm servant labor, total	-0.5	(-3.5)		-1.3	(-2.5)	†	-1.9	(-2.0)		0.9	(-2.7)		-3.2	(-2.1)		-2.7	(-1.9)	
HH labor from non-farm self-employ, total	1.2	(-5.5)		-7.5	(-4.3)	*	-0.1	(-2.8)		-1.0	(-5.3)		-10.2	(-3.8)	***	-2.3	(-2.5)	
HH labor from migration labor, total	1.6	(-3.2)		0.2	(-3.5)		1.1	(-1.0)		2.2	(-3.1)		0.7	(-3.6)		0.2	(-1.0)	
HH labor from salaried labor, total	-3.1	(-5.5)		-3.3	(-5.0)	†	-0.4	(-3.3)		-5.7	(-5.2)		-5.2	(-4.9)		-0.9	(-3.3)	
HH labor from unpaid non-NREGA work, total	-3.8	(-8.8)		-18.1	(-10.0)	*	-0.5	(-4.0)		1.1	(-8.7)		-3.3	(-8.5)	†	1.9	(-3.9)	
HH labor from own-farm labor, total	-8.7	(-7.4)		-19.7	(-8.0)	**†	-3.3	(-3.4)		-3.0	(-7.4)		-10.2	(-6.9)	†	-0.2	(-3.3)	
HH labor from HH work, total	4.9	(-4.2)	†	1.6	(-4.9)		2.9	(-2.5)		3.1	(-3.9)		7.3	(-4.7)		1.5	(-2.4)	

Notes: See notes for Table 3 of the main text. † does not pass parallel trend tests (full test results available upon request). Any households with male MGNREGS participation in the 2008 data are dropped. New sample size: 2,366 households in kharif, 2,440 in rabi, 2,954 in summer.

Table A.11: “Crowding out” estimates of other activities on account of days spent on MGNREGS (youth outcome variables)

	Total household MGNREGS labor days			Female MGNREGS labor days			Male MGNREGS labor days		
	Kharif	Rabi	Summer	Kharif	Rabi	Summer	Kharif	Rabi	Summer
<i>Youth female labor from all work</i>	-0.01	-0.02	0.01	0.03	0.01	0.02	-0.09	-0.11 *	0.01
<i>Youth female labor from paid work</i>	-0.02	-0.02	0.01	0.00	-0.01	0.02	-0.07	-0.07 *	0.02
<i>Youth female labor from unpaid work</i>	0.01	0.00	0.00	0.03	0.01	0.00	-0.02	-0.04	-0.01
Youth female labor from private casual labor	-0.02	-0.02	0.02	0.00	0.00	0.02	-0.07	-0.07 *	0.02
Youth female labor from farm servant labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Youth female labor from non-farm self-employ	-0.01	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00
Youth female labor from migration labor	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Youth female labor from salaried labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 *
Youth female labor from own-farm labor	0.01	0.00	0.00	0.03	0.00	-0.01	0.00	-0.02	0.01
Youth female labor from HH work	-0.01	0.00	0.00	0.00	0.01	0.00	-0.02	-0.02	-0.02
<i>Youth male labor from all work</i>	-0.01	0.02	0.00	-0.01	0.02	-0.02	-0.01	0.07	0.03
<i>Youth male labor from paid work</i>	-0.02	-0.02	0.01	0.00	-0.01	0.02	-0.07	-0.07 *	0.02
<i>Youth male labor from unpaid work</i>	-0.03 ***	-0.01	-0.01	-0.03 **	-0.02	-0.01	-0.06 **	-0.02	-0.03
Youth male labor from private casual labor	0.00	0.02	0.01	-0.02	0.00	0.00	0.04	0.08	0.05
Youth male labor from farm servant labor	-0.01	0.01 **	0.01	0.01	0.02 **	0.01	-0.05	0.02	0.01
Youth male labor from non-farm self-employ	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.01	-0.04	-0.01
Youth male labor from migration labor	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.01	0.00
Youth male labor from salaried labor	0.03 *	0.02 *	0.00	0.04	0.02 *	-0.01	0.04 *	0.03	0.02
Youth male labor from own-farm labor	-0.01 *	0.00	-0.01 *	-0.01	-0.01	-0.01 *	-0.02	0.01	-0.03 *
Youth male labor from HH work	-0.02 **	-0.01 **	0.00	-0.02	-0.01	0.00	-0.03 **	-0.03 *	0.00

Notes: See Table 6 of main text for notes.

Table A.12: “Crowding out” estimates of other activities on account of days spent on MGNREGS (child outcome variables)

	Total household MGNREGS labor days			Female MGNREGS labor days			Male MGNREGS labor days		
	Kharif	Rabi	Summer	Kharif	Rabi	Summer	Kharif	Rabi	Summer
<i>Child female labor from all work</i>	-0.02	0.02	-0.01	-0.05	-0.01	-0.03	0.01	0.10	0.00
<i>Child female labor from paid work</i>	0.00	0.01	-0.01	0.00	0.00	-0.02	0.00	0.06 *	0.00
<i>Child female labor from unpaid work</i>	-0.02	0.01	0.00	-0.05	0.00	-0.01	0.01	0.04	-0.01
Child female labor from private casual labor	0.00	0.01	0.00	0.01	0.00	-0.01	-0.01	0.05 *	0.00
Child female labor from farm servant labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Child female labor from non-farm self-employ	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Child female labor from migration labor	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
Child female labor from salaried labor	0.00	-0.01	0.00	0.00	-0.03	0.00	0.00	0.00	0.00
Child female labor from own-farm labor	-0.02	-0.01	0.00	-0.04	-0.01	-0.01	0.00	-0.01	-0.01
Child female labor from HH work	0.00	0.02	0.00	-0.01	0.01	0.00	0.01	0.05	0.00
<i>Child male labor from all work</i>	0.01	-0.02	0.00	0.01	0.00	0.00	0.01	-0.07 *	-0.01
<i>Child male labor from paid work</i>	0.00	0.01	-0.01	0.00	0.00	-0.02	0.00	0.06 *	0.00
<i>Child male labor from unpaid work</i>	-0.01	-0.01	0.00	-0.01	-0.01	-0.01	0.00	-0.03	-0.01
Child male labor from private casual labor	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-0.03	-0.01
Child male labor from farm servant labor	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Child male labor from non-farm self-employ	0.00	-0.01	0.00 **	0.00	-0.01	0.00 **	0.00	-0.01	0.00 **
Child male labor from migration labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Child male labor from salaried labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Child male labor from own-farm labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Child male labor from HH work	-0.01	-0.01	0.00	-0.02	-0.01	-0.01	0.00	-0.02	0.00

Notes: See Table 6 of main text for notes.