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# Raising Consumption Through India's National Rural Employment Guarantee Scheme

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**Summary.** — The Indian National Rural Employment Guarantee Scheme (NREGS) is one of the world's largest public works programs aimed at reducing poverty. NREGS guarantees up to a hundred days of employment in public works to rural households that demand work under the program. This is one of the first papers to analyze the impact of NREGS on household wellbeing by focusing on household consumption using national-level data. By focusing on consumption, I am able to assess whether and how household use the program to improve their living standards. I exploit the cross-district rollout of the program to analyze the causal effect on household consumption. Using the Consumption Expenditure Survey data from the National Sample Survey Organization, I conduct a difference-in-difference analysis where the treatment group consists of households in 184 early implementation districts and the control group consists of households in 209 late implementation districts. I find that the program significantly increased household per capita consumption between 6.5% and 10%. For the marginalized caste group, the program increased consumption by around 12%. Therefore, historical and ongoing discrimination along with other barriers to entry have not prevented this group from benefiting from the program. I further assess the impact on household budget allocation by focusing on various consumption categories. I find that households move toward the higher caloric and more nutritional items, like protein. Finally, for households with children there was significantly greater spending on "child goods" like milk, while in households without children spending on alcohol increased.


*Key words* — National Rural Employment Guarantee Act, welfare program, public works program, household consumption, anti-poverty program, India

## 1. INTRODUCTION

In this paper, I study the impact of one of the largest anti-poverty programs in the world, the National Rural Employment Guarantee Act (NREGA), which was passed by the Indian Parliament in August 2005. The program has been highlighted by the United Nations Development Program as a way to achieve the Millennium Development Goal of tackling poverty and deprivation. Although many aspects of the study are specific to the program's timing, setting, and institutional details, the essential questions of whether and how such programs affect the wellbeing of the poor are of broad interest and importance.

Public works programs are increasingly used in low and middle-income countries to achieve the dual purposes of providing a safety net for the poor while improving infrastructure to promote long-term growth. Countries have used these programs to mitigate increases in unemployment due to macroeconomic shocks (Argentina and Latvia), drought related poverty (Ethiopia), chronic poverty (Rwanda), and to meet the challenges of HIV/AIDS by linking employment to social services (South Africa). In the Indian context, rural public works programs designed to address poverty are highly relevant because nearly 72% of the Indian population live in rural areas, and World Bank calculations show that 40% of the rural population subsists on less than $1.25 a day.

The National Rural Employment Guarantee Scheme (NREGS) is essentially a rural public works program aimed at providing a source of employment to the rural population, particularly when regular work from agriculture becomes scarce or inadequate. The budget for the program was around 8.8 billion dollars (3.8% of the government budget) in 2009–10. Since 2009, between 40 and 50 million rural households (roughly 25% of the rural households) participated in the program each year (MoRD, 2016).

The program guarantees 100 days of employment to any rural household that demands work under the program. Rather than attempt to screen and identify poor workers according to strict eligibility criteria, which is complicated and costly, NREGS is designed to attract the poor while deterring the non-poor by requiring individuals to do unskilled manual work in a public works program at the minimum wage. Under these conditions, the non-poor will have little or no incentive to participate in the program (Besley & Coate, 1992).

I assess the program's impact by focusing on changes in household consumption expenditures using cross-sectional consumption data from the Consumption Expenditure Survey conducted by the National Sample Survey Organization (NSSO). Because the NSSO imputes the value for goods and services that were not purchased by households but received as in-kind payment, the consumption expenditure data reflect the actual household consumption level.[1] The consumption data are highly detailed and allow me to observe spending on basic food items, personal goods, durable goods, medical expenses, and education.

NREGS has the potential to increase consumption of participating households directly, but the program's overall effect on local economic outcomes may be more complex. In India, approximately 90% of the workers belong to the informal sector (National Sample Survey Organisation, 2007) where they are not protected by labor laws and may work for less than the official minimum wage. Thus, even though NREGS does not exceed minimum wage, the program increases the opportunity cost of working in the informal sector. Households now allocate their time between public and private sector jobs to maximize household utility, and they may reduce the num-

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ber of days supplied in the informal sector. This might lead firms in the informal sector to increase wages to retain workers, and in this scenario, the program would benefit low-skilled workers even if they do not participate directly in NREGS.[2] Although the design of the program may lead to some crowding out of workers from the informal sector, it may also avoid the problem of disemployment that is associated with extending the minimum wage to uncovered sectors. In addition, the program's investment in durable assets that improve rural infrastructure could have positive spillovers.

Despite the growing literature on NREGA, there has not been much work studying the impact of the program at the national level on household welfare by focusing on household consumption. Given that the NREGS is an employment guarantee program, the focus of previous work has been on employment and wages. Zimmermann (2015) using a regression discontinuity design (RDD) finds small but positive effects on wages for women, but not for men, and finds no significant impact on labor force participation in the public or private sector for men or women. On the other hand, Imbert and Papp (2015) and Azam (2012) using a difference-in-difference analysis find that public sector labor force participation increases and wages for casual workers increase by around 5%. These papers use the Employment Unemployment Survey from the NSSO and focus on the section of the survey that deals with wage data. However, this section only provides information on the wages earned by the households in the last seven days. Since payments in India are not made in a timely manner (Ambasta, Shankar, & Shah, 2008), the data might not capture the actual benefit from recently working under the program. Also, a household may have used the program at a different point in time and used the income from the program to smooth consumption over time. The consumption data allow me to observe household-level expenditure over a longer timeframe and are more likely to capture changes associated with program participation.

Since the NREGS is targeted at agricultural workers, there is a growing literature that focuses on the impact on agricultural wage and productivity. Berg, Bhattacharyya, Durgam, and Ramachandra (2012) use monthly wage data from 2000 to 2011 for a panel of 250 districts across 19 Indian states and finds that on average NREGS boosts the real daily agricultural wage rates by 5.3% and this effect is gender neutral and benefits unskilled workers. Bhargava (2014) uses the new Indian agricultural census data and shows that NREGS causes a 20-percentage point shift away from labor-intensive technologies toward labor-saving ones, particularly for small farmers. Raghunathan and Hari (2014) find that farmers participating under the program tend to take more chances by adopting higher productivity but riskier crops.

The papers focusing on the impact of NREGS on poverty, food security, and well-being mainly conduct their analysis using data from one state, Andhra Pradesh (AP). Ravi and Engler (2015) use a panel data of 1,064 households from 198 villages of AP and find a 9.6% increase in the monthly per capita expenditure on food. They also see an increase of 23% in monthly per capita non-food consumption. These results are similar to Deininger and Liu (2013), who find a 10% increase in per capita consumption expenditure due to NREGS using panel data for 2,500 households in AP. Klonner and Oldiges (2014) is the only other paper that studies the impact on consumption using national data. They use a RDD method to find an increase in consumption for marginalized households in the lean agricultural season while finding no effect during the agricultural season.

In this paper, I identify the program's effects on consumption patterns by employing a difference-in-difference framework that exploits the timing in the program's rollout across districts during 2006–09. The program's early implementation districts are my treatment group, and the late implementation districts form my control group. I also use data from 2001 and 2003, before the Act was introduced, to conduct a simple falsification test. The results indicate that the trend in per capita consumption for the early implementation districts was similar to that for the late implementation districts during the pre-program period. The common pre-trend for the two groups suggests that the late implementation districts are a valid control group in the difference-in-difference framework, which lends credibility to the identification strategy.

The consumer expenditure dataset does not identify which households participated in the program. Therefore, I use all the households in a district and estimate the "intent-to-treat" effect of access to the program. This allows me to assess the overall impact by capturing the direct effect and the indirect effects on consumption.

The main finding of the paper is that NREGS increased rural household per capita consumption expenditure between 6.5% and 10%. Although Figure 1 shows that households predominantly use the program during the lean agricultural months (November to July), the gains from the program are not concentrated in the months that they work under the program. Consumption increases both during the lean season (by

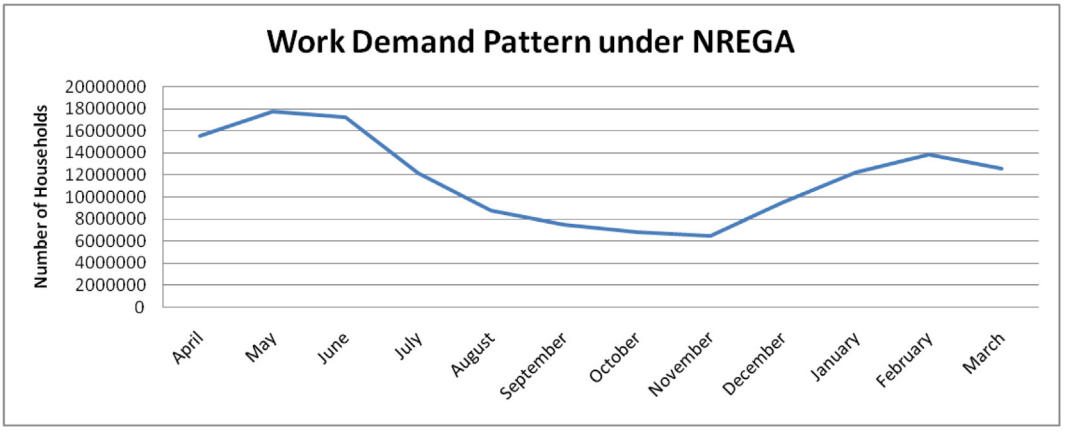


Figure 1. *Work Demand Pattern under NREGA in 2010–11. Source: NREGA website. http://164.100.129.6/netnrega/demand_emp_demand.aspx?lflag=eng&file1=dmd&fin=2010-2011&fin_year=2010-2011&page=S&Digest=cZN2lUULOPd8nLPfrWENfg. Accessed on 9/6/2013.*

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