The “Discouraged Worker Effect” in Public Works Programs

DOI:

[10.1016/j.worlddev.2017.07.024](https://doi.org/10.1016/j.worlddev.2017.07.024)

Document Version

Accepted author manuscript

[Link to publication record in Manchester Research Explorer](#)

Citation for published version (APA):

Narayanan, S., Das, U., Liu, Y., & Barrett, C. (2017). The “Discouraged Worker Effect” in Public Works Programs: Evidence from the MGNREGA in India. *World Development*, 100, 31-44.
<https://doi.org/10.1016/j.worlddev.2017.07.024>

Published in:

World Development

Citing this paper

Please note that where the full-text provided on Manchester Research Explorer is the Author Accepted Manuscript or Proof version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version.

General rights

Copyright and moral rights for the publications made accessible in the Research Explorer are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Takedown policy

If you believe that this document breaches copyright please refer to the University of Manchester's Takedown Procedures [<http://man.ac.uk/04Y6Bo>] or contact uml.scholarlycommunications@manchester.ac.uk providing relevant details, so we can investigate your claim.

The “Discouraged Worker Effect” in Public Works Programs: Evidence from the MGNREGA in India¹

Sudha Narayanan, Upasak Das, Yanyan Liu, Christopher B. Barrett²

Abstract

This study investigates the consequences of poor implementation in public workfare programs, focusing on the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India. Using nationally representative data, we test empirically for a discouraged worker effect arising from either of two mechanisms: administrative rationing of jobs among those who seek work and delays in wage payments. We find strong evidence at the household and district levels that administrative rationing discourages subsequent demand for work. Delayed wage payments seem to matter significantly during rainfall shocks. We find further that rationing is strongly associated with indicators of implementation ability such as staff capacity. Politics appears to play only a limited role. The findings suggest that assessments of the relevance of public programs over their lifecycle need to factor in implementation quality.

JEL Code: J08 J38

Keywords: administrative rationing, discouraged worker effect, employment guarantee, India, labor supply, MGNREGA, workfare programs

¹ This paper is based on research funded by the 3ie (International Initiative for Impact Evaluation) and CGIAR-Policies, Institutions and Markets (PIM) Program. We are grateful to the participants at the seminar “The MGNREGA in India: Taking Stock, Looking Ahead” conducted in Mumbai, March 26-28, 2014. Sourabh Ghosh, Krushna Ranaware, Parul Saboo, Christopher Marciniak and Maribel Elias assisted with securing some of the data used in this paper. Any errors or omissions that remain are ours alone.

² Sudha Narayanan is at the Indira Gandhi Institute of Development Research (IGIDR), Mumbai; Upasak Das is at the Centre for Development Studies, Trivandrum; Yanyan Liu is with the International Food Policy Research Institute (IFPRI), Washington D.C. and Cornell University and Christopher B. Barrett is with Cornell University, Ithaca.

1. Introduction

Workfare programs in developing economies have long been recognized for their role in providing social security to vulnerable populations (Subbarao, 2003; von Braun 1998). Many of these programs are self-targeting given the nature of work involved and because wage rates are typically set at lower-than-market wages. The demand-driven nature of these programs allows those who need it most to select themselves in, while those who have access to better opportunities select themselves out, thereby avoiding problems associated with targeting (Besley and Coate, 1992; von Braun, 1998; Ravallion, 2003). Some workfare programs are designed as entitlement programs, with employment on public works guaranteed on demand.

A substantial body of literature examines whether self-targeting really works. Specifically, these address whether program participants are from among the poor or whether the elite capture program benefits instead – either due to the exercise of socio-political power or to multiple market failures that cause poorer, rather than better-off, individuals to self-select out (von Braun, 1998; Barrett and Clay, 2003)¹. Other research looks at whether these programs (perhaps inadvertently) exclude potential beneficiaries who seek assistance, a phenomenon known as administrative rationing (Dutta, et al., 2012; Liu and Barrett, 2013). While these sorts of implementation failures are well-documented, the ultimate consequences for potential beneficiaries' behavior remain relatively under-researched. For example, does poor implementation undermine access to planned safety nets in ways that can affect expressed demand for public employment, leading to underutilization of the program?

Labor market research on developed countries notes a “discouraged worker effect”, whereby workers are less likely to seek work during the business cycle downturns (when the probability of getting a job is lower) since seeking work and failing to find a job would make them worse off than if they remained unemployed or worked unpaid at home (Ehrenberg and Smith, 1988, see Benati, 2001, for a review of literature). This paper examines the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), a public works program in India, to see if implementation failures discourage potential beneficiaries from seeking work.

Little systematic research of discouraged worker effects has been conducted in the context of public works programs in developing countries although this phenomenon might be widespread.

Much of the existing literature comes from India. For example, Khera (2008) documents such a phenomenon for drought relief works in the Indian state of Rajasthan. Recent evidence on the MGNREGA itself suggests that the uncertainty of securing work discourages workers from actively demanding work; instead they choose to wait passively and take up work if and when it is supplied (Drèze and Khera, 2014 in 10 states in India; Himanshu, Mukhopadhyay and Sharan, 2015 in Rajasthan). These studies document the possible presence of a discouraged worker effect but do not explicitly test for it. This paper empirically tests this hypothesis using nationally representative data.

We hypothesize that implementation failures in the MGNREGA might manifest in either or both of the following two forms: (i) administrative rationing of work – i.e., denying employment to those who apply; and (ii) delays in wage payments.² Given that work under the MGNREGA is a demand-driven, legal entitlement, these implementation problems potentially affect worker demand for employment under the program. This is especially relevant in a political context where the MGNREGA's relevance has been questioned.³

We use nationally representative household data from two rounds of India's National Sample Survey, the 66th Round (2009-10) and the 68th Round (2011-12), combined with relevant district-level data from various other sources to test for a discouraged worker effect both at the household and district levels. We find evidence consistent with a discouraged worker effect: a 10 percent increase in a district's administrative rationing rate decreases the probability that a household seeks work by 3.4-3.5%. For poor households, the discouragement effect of administrative rationing appears somewhat stronger, at 3.8-3.9%. These results hold at the district level as well: changes in district-level demand for MGNREGA employment are negatively and significantly associated with the uncertainty of obtaining MGNREGA work in the district, represented by district-level rationing rates. The district-level demand rate decreases by 8.9-9.2% in response to a 10% increase in the rationing rate.

By contrast, we find no robust evidence that delays in wage payments influence household-level demand for MGNREGA work. Payment delays appear to influence an individual household's probability of seeking work or district-level demand rates only in some model specifications. We examine reasons for this result later in the paper, but note here that this result is consistent with the widespread finding of wage inelastic labor supply (Blundell and MaCurdy 1999; Skoufias, 2004)

since payment delays effectively reduce the present value of earnings. Wage delays do matter significantly in the presence of negative rainfall shocks, however, suggesting that the labor market provides a crucial source of liquidity in the face of financial market failures.

Given that administrative rationing is consistently a significant source of discouragement, we examine the correlates of administrative rationing and find that rationing is strongly associated with indicators of implementation ability. Removing the time-invariant differences across districts using panel data that presumably strip out states' differential capacity to implement the program, politics appears to play only a limited role. The identity of the political party in power seems to matter more for pro-poor rationing, though these results are not robust. The most consistent correlate of administrative rationing appears to be negative rainfall shocks, indicating that administrative capacity is perhaps stressed and undermined with surges in demand in response to rainfall deficits.

Our paper contributes to the literature on two fronts. First, this is the first systematic effort to assess the impact of implementation failures nationwide on work seeking under the MGNREGA, even if restricted to the two dimensions of administrative rationing and wage delays. Second, the labor economics literature on the discouraged worker effect does not focus on public programs; this paper makes a novel contribution by focusing on the domain of workfare programs. In this context, although this study focuses on one program in India, it makes a broader contribution to understanding specific aspects of the life cycle of workfare guarantees and the trajectories of welfare programs in general. Do programs decline because they outlive their usefulness or do they contain ingredients (that may or may not be remediable) of their own demise?

The paper is organized as follows. Section 2 describes the MGNREGA in India and discusses the motivating issues in detail. Section 3 describes the data and model. Section 4 discusses administrative rationing and its correlates. Section 5 concludes.

2. The MGNREGA, Then and Now

The MGNREGA is arguably the largest public workfare program in the world and has generated more than 22.68 billion person-days of work, involving expenditures of Indian rupees (Rs.)

3776.7 billion (US\$58 billion) since its inception in 2006.⁴ The MGNREGA is now at an interesting juncture. When the Act was passed on September 5, 2005, its stated goal was to improve livelihood security for rural households by providing up to 100 days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work (Government of India, 2013). Permissible works, typically provided within the village, include water conservation and harvesting, land development, horticulture and plantations, and rural connectivity, to name a few. Workers are paid piece rate according to a schedule of rates established by state governments for different tasks performed in different soil conditions. The program had a phased-in rollout starting with the 200 districts deemed the poorest; from there expanded to cover all of India's districts over the three-year period from 2006-08.

Administrative data suggest that the MGNREGA peaked in 2009 and thereafter declined in both the total expenditure and person-days of employment (Figure 1). The reasons for the MGNREGA's decline are a subject of debate. One proposed explanation is that the "MGNREGA has done its job" and is perhaps no longer needed.⁵ This view stems from the hypothesis that declines in demand reflect growth in attractive alternate opportunities for workers, who therefore now self-select out of MGNREGA work more than they did previously. A second explanation is that the program is now better targeted.⁶ It is hypothesized that in the early years of the program a lot of rural workers obtained a job card to be able to work under the MGNREGA without clear expectations of the program's benefits. Exposure to the program over time reduced uncertainty about program costs and benefits, inducing many people to self-select out, even without improved alternate employment options. Both of these explanations imply that more people self-select out now than in the earlier years and that the decline in MGNREGA's scale is natural and desirable.

[Figure 1 here]

Others contest these views, especially the former, identifying a large unmet demand that exists for MGNREGA work (Himanshu, Mukhopadhyay and Sharan, 2015; Khera, 2010; Mukhopadhyay, 2012). This claim is based mostly on survey data from workers in specific geographies that suggests that poor implementation – specifically, unmet demand for work – has undermined the demand-driven design of the employment guarantee, discouraging workers from

actively seeking work. These studies are based on surveys that ask workers how much they would like to work and/or whether or not they sought work but did not obtain it. For example, the 2013 Public Evaluation of Entitlement Programmes (PEEP) Survey asked MGNREGA workers across 20 districts in 10 states how many days of employment they would like to have over the year, assuming that they are paid on time. An overwhelming majority (83%) answered “100 days”, the maximum entitlement. However, only 8% had actually done 100 days of MGNREGA work in 2012-13 (Drèze and Khera, 2014). In an earlier survey, only 13% of the survey households in the six Hindi speaking states had secured 100 days of work (Drèze and Khera, 2011). Das (2015) and Dey and Bedi (2010) observed unmet demand in parts of West Bengal; the latter found that workers work only 10% of their desired number of days. In Surguja district in Chhattisgarh, a relatively well-performing district in terms of the average number of person-days of employment generated, 32.7% of sample workers reported that they faced problems getting any work.⁷ These findings are reinforced in a government-initiated survey of MGNREGA workers in three states (National Sample Survey, 2011).

In principle, MGNREGA is a demand-driven program in which anyone who seeks work must be granted work according to prescribed guidelines, failing which they are entitled to an allowance. In its implementation in many parts of India, however, the program appears to be supply-driven, so that work is provided by the local administration and workers do not proactively seek work. And instances have arisen of workers seeking but not getting work – i.e., they are administratively rationed out – for various reasons (Dutta et al., 2012; Liu and Barrett, 2013).

Growing evidence also suggests that MGNREGA workers often face significant delays in wage payments, ranging from anywhere between three months to over a year, even though the Act stipulates a 15 day window for wage payments. In the PEEP Survey, around 66% of respondents waited over 15 days. Similarly, close to 48% of a 1600 household survey in Surguja district, Chhattisgarh, claimed they faced problems regarding timely payments.⁸ These delays, many claim, have diminished laborers’ interest in MGNREGA employment (Khera 2010) and led to a significant loss in welfare (Basu and Sen, 2015).⁹

These latter claims offer directly testable hypotheses: do program implementation failures, represented both by the uncertainty of securing work due to administrative rationing and by wage

payments delays and/or uncertainties, cause potential beneficiaries to self-select out of the program? Further, if evidence of a “discouraged worker effect” indeed exists, what factors are associated with administrative rationing or delays in wage payment in the first place?

Much has been written about the varied record of MGNREGA implementation across states.¹⁰ Political will is often identified as a key factor and states that have better technical capacity tend to implement the MGNREGA relatively well (Narayanan and Lokhande, 2013; Comptroller and Auditor General of India, 2013). It has also been observed that poorer states tend to administratively ration more (Dutta, et al., 2012). Studies suggest that no discernible patterns relate to political party affiliation (Khera 2015; Sheahan et al., 2016). Khera (2015) points out that the better performers in terms of the average days generated were in fact the states that were administered by parties that were not in power at the center, although evidence also exists of local government power to deny wage-seekers work based on their political affiliations or proximity to the village leader (Das, 2015; Himanshu, Mukhopadhyay and Sharan, 2015).

A substantial difference arises across states not just in the extent of administrative rationing but also in the degree to which rationing favors (or at least does not disfavor) the poor (Table 1).¹¹ National Sample Survey (NSS) data, a source described in detail in the next section, suggest that relative to 2009-10, for the country as a whole, work seeking and administrative rationing fell across the whole household expenditure distribution, the latter more than the former, resulting in increased participation rates conditional on job seeking for all but the very poor households (Figures 2a-c). The NSS data indicate that a greater proportion of the poor seek work and participate in the MGNREGA relative to those who are not poor. The data also suggest that rationing rates fell by nearly half, from 44% to 23% nationwide (Table 1) and became effectively uniform across the expenditure distribution, whereas in 2009-10 rationing rates were moderately pro-poor (Figure 2b).

[Table 1 here]

[Figure 2a here]

[Figure 2b here]

[Figure 2c here]

The key hypotheses tested in this paper are therefore: Are prior administrative rationing, delayed wage payments, or both associated with reduced worker demand for MGNREGA employment? Are any such effects distributionally regressive, discouraging poor households more than non-poor households? Which district-level factors are associated with such poor implementation?

3. Testing for a Discouraged Worker Effect

3.1. *Data and Empirical Strategy*

To test the discouraged worker hypothesis, we use data from two NSS rounds, the 66th Round (2009-10) and the 68th Round (2011-12).¹² These “thick rounds” covered 59,129 and 59,700 rural households, respectively.¹³ Both rounds include questions on the sample household’s participation in the MGNREGA. Questions common to both surveys asked whether or not the household possesses a job card, whether any member of the household sought work, and whether any member of the household actually worked.

For the household-level analysis, we use household-level data from the 68th Round (2011-12) on whether or not any member of the household sought work in the past 365 days (representing a household’s expressed demand for work) and combine these with data on district-level rationing rate and district-level delays in wage payments from the 66th Round (2009-10), representing the sources of potential discouragement. These are described in detail later in the section. For the district-level analysis, we construct district-level measures from these two rounds, using the work-seeking rate at the district level as an indicator of demand.¹⁴

A few data issues merit attention. First, some districts have very few observations; the analysis was thus restricted to those districts with a sample size over 30.¹⁵ We also trimmed the bottom and top 5% of the monthly per capita expenditure (MPCE, in rupees) for the entire sample to eliminate the most likely (and influential) cases of measurement error.¹⁶ Second, discrepancies have been documented between the NSS data and the management information system data maintained by the Ministry of Rural Development (Government of India, 2013; Imbert and Papp, 2012; Narayanan

and Das, 2014). While we acknowledge these discrepancies, this work focuses on the NSS data alone and aims to provide a robust analysis of the NSS data. We do not attempt to explain or reconcile across the data sets the research questions concerning the discouraged worker hypothesis. We test the discouraged worker hypothesis first at the household level (whether or not a household seeks work in the presence of implementation failures) and then at the district level (represented by the district-level demand rate) using the econometric strategy described below.

Household Analysis

Model 1 estimates household-level demand for MGNREGA work in 2011-12 (i.e., whether or not the household sought MGNREGA work in 2011-12) as a function of lagged (2009-10) district-level rationing rates and variables representing wage payment delays. The district rationing rate represents the proportion of district households that sought but did not get work during 2009-10 pertaining to the NSS 66th Round. Under the maintained hypothesis that administrative rationing rates are relatively well-known throughout the population – if only impressionistically – the discouraged worker hypothesis would imply that higher administrative rationing rates are associated with lower subsequent probability that a household would seek MGNREGA work since workers expect a high probability of not obtaining work.¹⁷

Variables representing different aspects of delays in wage payments are constructed from administrative data reported annually at the district level. These administrative data report the proportion of muster rolls for which wage payments were delayed between 15-29 days, 30-59 days, 60-89 days, and 90 or more days. We use these data to construct three different variables: the proportion of muster rolls that are delayed for 90 days or more (representing uncertainty in wage payments); the proportion of muster rolls that have any delay; and an average number of days of delay. This last variable is a coarse measure wherein we treat the minimum of each class interval reported (i.e., 15, 30, 60, and 90 days) as the delay and weight it by the proportion of muster rolls in each class interval. This is obviously a lower-bound estimate of the average days of delay but is the best feasible estimate implementable in these data. Since it is not clear whether short delays are less

likely than long delays to discourage workers and likewise whether finite delays are tolerated more than uncertainty in payments, we investigate the use of these different variables to reflect the different aspects of wage delays, in turn representing implementation failures. As it turns out, the proportion of musters experiencing delayed wage payments is only modestly correlated with both the average delay (0.35) and with the proportion of muster rolls that are significantly delayed (0.32). The discouraged worker effect would appear as a negative and statistically significant coefficient estimate on any of these three variables, especially for the proportion of muster rolls whose delay is greater than 90 days, in the regression explaining variation in households seeking MGNREGA work. We use this latter as our preferred variable to represent delays in wage payments. The discouraged worker hypothesis implies that a higher rationing rate in the district and / or delays in wage payments would reduce the probability that a household seeks work in the MGNREGA in the following period.

In general, the prospective endogeneity of past delays in wage payments is only of moderate concern since a typical worker's desire to work under the MGNREGA itself is unlikely to cause an increase in past payment delays at the district level. Yet district-level unobservable factors that affect household demand could also influence both rationing rates and payment delays. For example, in 2009 banks waived debts for a large number of farmers who had loans and owned less than a hectare of land. Such a scheme imposed a burden on the work effort of bank staff and could have aggravated delays in wage payments routed through banks. At the same time, these debt waivers represented implicit transfers that made workers less dependent on the MGNREGA in the subsequent period. Likewise, weather shocks might persist over time, influencing demand over a longer period. We, therefore, estimate a probit model and account for the potential endogeneity of both past payment delay and rationing rates, using a set of instruments to achieve identification, as we now explain.

We instrument for delay in wage payments with commercial bank branch (CBB) expansion, which offers an exogenous source of variation that influences payment delays but should have no independent effect on MGNREGA jobseeking. CBBs are likely to be established in areas of high commercial and economic activity, while the Government of India has had a long history of promoting, even mandating, expansion of CBBs in rural areas (Kochar, 2011). More recently in 2009, the government identified unbanked districts and villages; 72,721 villages were identified for branch

expansion by 2012.¹⁸ As a result, CBB expansion is exogenous to the MGNREGA and not confined to specific types of places. It is unlikely that banks open branches in anticipation of MGNREGA payments since these are by and large no-frills zero balance accounts that hold little commercial appeal for bankers. We use district-level CBBs in urban as well as rural areas since, in practice, job seekers in rural villages often access urban branches for wage transactions. We use these data in two different forms: the number of branches per job card, the rate of expansion of branches over a two-year period (i.e., between 2011-12 and 2009-10).¹⁹ Both banks and post offices are involved in MGNREGA wage payments and their relative importance varies across regions and (somewhat less) over time. Overall, around 39% of the muster roll payments were made through post offices and the rest (61%) through banks in 2011-12 and 2009-10, as per the MGNREGA administrative data. While in principle this variable may be correlated with outside opportunities that may also contribute to demand for the MGNREGA, controls such as change in district-level MPCE and change in the composition of labor types serve as proxies for outside opportunities and should ensure that this instrument satisfies the exclusion restriction condition.

We instrument for lagged rationing rate with indicators of staffing constraints. Qualitative research suggests that a “technical capacity deficit” exists in many states (Shrivastava, 2015). Evidence also suggests these staffing constraints are due to the political priorities of the state rather than of lack of suitable personnel to fill the posts and are therefore unlikely to be related to district characteristics such as backwardness. For example, there is often a unilateral rejection of the MGNREGA itself by higher-level state functionaries.²⁰ We argue that staffing shortages undermine state capacity to implement the program and manifest as higher rationing rates.²¹ In theory, it is possible that the greater the number of MGNREGA staff, the greater the awareness of the program among potential workers. Hence it is plausible that staff shortages have a direct effect on demand. While a proactive village functionary (Gram Rozgar Sewak) can influence and raise awareness within the village, staff at the district and block levels are far less likely to influence demand rates directly and we use the latter set of variables. Another reason this is not a concern is that staff are not paid based on performance indicators. In Maharashtra, an incentive system was introduced only recently in 2013, whereby village functionaries are offered a bonus for the number of person-days generated.

This is not the case during the period studied here, though. Further, the roles defined for each of the MGNREGA functionaries do not include activities that would likely influence demand patterns systematically.

The estimated Model 1 is therefore:

$$Pr(Y_{hit} = 1) = F(\beta_0 + \beta_1 R_{it-1} + \beta_2 P_{it-1} + \beta_3 X_{hit} + \beta_4 Z_{it} + \beta_5 W_i + \varepsilon_{hit}) \quad (1)$$

$$R_{it-1} = \gamma_1 + \gamma_2 Staff_{it-1} + \gamma_3 Z_{it-1} + \gamma_4 W_i + \epsilon_r \quad (2)$$

$$P_{it-1} = \pi_1 + \pi_2 CB_{it-1} + \pi_3 Z_{it-1} + \pi_4 W_i + \epsilon_p \quad (3)$$

where $Y_{hit} = 1$ if any individual in household h in district i sought work in time t (2011-12) and $Y_{hit} = 0$ otherwise. $F(.)$ is cumulative distribution function of the standard normal distribution. R_{it-1} is the rationing rate for district i at $t-1$ (2009-10), which may be endogenous. So in equation (2) we instrument for R_{it-1} using the instrument $Staff_{it-1}$, which comprises the proportion of block-level MGNREGA positions that are left vacant and block-level MGNREGA staff per village. P_{it-1} is the extent of wage delays, which could likewise be endogenous. We therefore instrument for it in equation (3) using CB_{it-1} , the growth of CBB expansion over the preceding two years. The discouraged worker hypothesis would imply negative and statistically significant coefficient estimates for β_1 and β_2 . We include as controls the vector X_{hit} , which includes household-level characteristics drawn from the NSS data, and district-level characteristics – both those that vary over time (Z_{it}) and those that do not (W_i). These district-level characteristics include the proportion of marginalized communities in the district (specifically, those that belong to the Scheduled Tribes and Scheduled Castes), district literacy rate, and the timing of the program's introduction in the district (whether it is a Phase 1, 2, or 3 district), among others. All these variables control for both general awareness level relating to the program and the economic status of the district, both of which might influence worker interest in the MGNREGA and work seeking. We also include a binary variable for districts that come under the Integrated Action Plan (IAP).²²

To account for weather shocks, we include the annual positive and absolute value of negative deviation of rainfall from its decadal average divided by the standard deviation of the decadal annual

rainfall. These enter separately to capture possible asymmetries in the relationship. We also use a measure of the relative attractiveness of the MGNREGA, which would influence current demand, proxied by the wage gap, at the district level, between the MGNREGA and a relevant alternative (the average wage of the bottom decile of the wage distribution for casual labor in agriculture and off farm).

Alongside the probit model, we estimate a Linear Probability Model (LPM) version for Model 1 (Model 1a), both as an alternate specification and to test the validity of instruments used in Model 1. Equation 1 therefore becomes:²³

$$Y_{hit} = \beta_0 + \beta_1 R_{it-1} + \beta_2 P_{it-1} + \beta_3 X_{hit} + \beta_4 Z_{it} + \beta_5 W_i + \varepsilon_{hit} \quad (4).$$

Equation (4) is estimated along with Equations (2) and (3). We cluster the standard errors at the district level in the probit model and use robust standard errors for the LPM.

In addition to the above, we estimate versions of Models 1 and 1a to allow for interaction effects of average delay in wage payments with rainfall shocks to allow for the possibility that when there is no negative rainfall shock, delays in wage payments might be better tolerated and might not generate a discouraged worker effect. But if wage payment delays occur when households are already suffering from a negative rainfall shock and especially dependent on MGNREGA earnings for essential cash liquidity, payment delays may have a more adverse effect on subsequent labor supply. Given that the measure of delayed wage payment data is not available for all districts in the analysis, we use a missing data dummy to avoid dropping observations from the analysis.²⁴ We run these models separately for the subpopulation that is poor, with MPCE below the official poverty line in the state of domicile.

District-level Analysis

We supplement the household analysis with district-level analysis, testing for a discouraged worker effect using the district demand rate in the context of poor MGNREGA implementation

relative to other explanations that might attenuate worker interest in the program. The dependent variable is the difference in the MGNREGA work demand rate in the district between 2011-12 and 2009-10. The demand rate for district i in year t ($D_{it} \in [0,1]$) is the proportion of sampled rural households in the district that reported “seeking” work under the MGNREGA. We test whether the district’s past MGNREGA implementation record – reflected by the 2009-10 administrative rationing rate and wage payments delays – is negatively and statistically significantly associated with change in worker demand over time.

We implement a “naive” least squares model that regresses the difference in demand rate between the 68th and 66th Round ($\Delta D_i \equiv D_{i,t} - D_{i,t-1}$) on administrative rationing and payment delays in the 66th Round, controlling for other the labor market attributes such as the wage gap and changes in the sectoral distribution of workers.²⁵

$$\Delta D_i = \beta_0 + \beta_1 R_{it-1} + \beta_2 P_{it-1} + \beta_3 D_{it-1} + \beta_4 \Delta Z_{it} + \beta_5 W_i + \varepsilon_i(5)$$

One potential issue is that a district may suffer a fall in MGNREGA job seeking if it had an extraordinarily high demand rate in 2009 due to time-varying idiosyncratic factors (e.g., weather shocks, among others) not controlled for in differencing the dependent variable. To control for possible mean reversion, the model includes the demand rate in 2009-10 (66th Round) as a control. For example, if the demand rate was very high in 2009-10, the fall in demand to 2011-12 might be high as well, conditional on other factors, generating a negative regression-to-the-mean effect in the demand rate. The demand rate for 2009-10 may also independently affect implementation, for example by overtaxing administrative staff or the financial infrastructure, such that both rationing rates and delays in wage payments might be associated with the level of demand as a result. We therefore need to control for the demand rate in 2009-10 while testing for a discouraged worker effect.

We also control for the change from 2009-10 to 2011-12 in time-varying district characteristics, ΔZ_i , that might separately induce intertemporal change in job seeking. To represent change in the availability of alternate employment opportunities we use a proxy for the district’s economic growth, computed as the difference in the average MPCE between the two years. Further

we include alternate measures: the inter-temporal difference in the proportion of workers whose main work in the week before the survey was farming, non-farm occupations, casual work in agriculture, or casual work in non-farm sectors.²⁶ These variables would only measure associations since these could be partly influenced by the operation of the MGNREGA itself, although estimates suggest that the scale of the MGNREGA relative to the overall rural labor market is too small to make a large impact on the sectoral distribution of workers. Moreover, given that we study MGNREGA demand or work-seeking, not actual participation, the case is stronger for their inclusion. Variables representing the wage gap differences are meant to reflect the fact that the nominal MGNREGA wage did not increase very much until 2012 over this period even as other wages rose. So working under the MGNREGA would seem less attractive in 2011-12 relative to 2009-10.

The extensive set of controls mitigates significantly – but not entirely – the likely problem of endogeneity of wage payment delays and administrative rationing rates. Since the lagged terms are predetermined, we control for base period demand and for a host of other factors that might independently affect change in MGNREGA job seeking and also be correlated with lagged payment delays or administrative rationing. There could nevertheless be more unobservable factors that induce bias in the estimates of interest.

We attempt to estimate models that address the potential endogeneity of delays in wage payments, rationing rate and demand by relying on a Two Stage Least Squares (2SLS) model using instruments for the endogenous variables to achieve identification. We used the same set of instruments as with the household-level analysis, with CBB presence and expansion in the lagged delayed payment equation and number of staff at the block level for lagged rationing rates. In addition we use Growing Degree Days (GDD) for the dominant crop for the major cropping season in the district as a control for lagged demand rate. GDD measures the cumulative exposure of a crop to temperature and thus has a close relationship to plant physiological growth and yields and hence to agricultural income shocks.²⁷ In addition, we use the number of days in the growing period when the temperature stayed above the maximum threshold and the number of days the temperature remained above the optimum for the crop's yield levels. These thresholds and the optimal range of temperatures differ across crops and we compiled these norms relevant to India from scientific experiments

conducted by agronomists).²⁸ The GDD has a close correlation with crop loss and hence agricultural distress (Harou et al, 2017; Lobell, Sibley, and Monasterio, 2012). Moreover, this is perhaps a more sophisticated measure for the district, since across a district one would expect less variation in temperature than with rainfall, which is known to vary widely across villages within the same district. This can therefore be expected to influence the rationing rate that year if this is associated with a surge in demand. But one would not expect it to have an independent effect on demand rate two years later, especially when rainfall shocks are included as explanatory variables for demand in 2011-12.

Model 2 is thus estimated as:

$$R_{it-1} = \gamma_1 + \gamma_2 Staff_{it-1} + \gamma_3 D_{it-1} + \gamma_4 Z_{it-1} + \gamma_5 W_i + \epsilon_r (6)$$

$$P_{it-1} = \pi_1 + \pi_2 CB_{it-1} + \pi_3 D_{it-1} + \pi_4 Z_{it-1} + \pi_5 W_i + \epsilon_p (7)$$

$$D_{it-1} = \phi_1 + \phi_2 GDD_{it-1} + \phi_3 Z_{it-1} + \phi_4 W_i + \epsilon_d (8)$$

where R_{it-1} is the district 2009-10 rationing rate, and P_{it-1} represents the measure(s) of delay in wage payments in 2009-10, each reflecting the information that becomes available to prospective MGNREGA workers subsequent to their demand for work in 2009-10. Controls include D_{it-1} , the 2009-10 demand rate, a range of time-invariant district characteristics, W_i , and changes of a set of time varying district level characteristics measured both in 2009-10 and in 2011-12 (ΔZ_i). Details of Model 2 are available in Appendix 3.

We also used a control function approach (Model 3) as an alternative for addressing endogeneity assuming, somewhat restrictively, that the endogenous variables are generated independently of one another (Wooldridge, 2015). We use staff capacity, CBB expansion, and GDD as sources of exogenous variation. We report these in Appendix 1 and 3. The results do not appear to be very different from the 2SLS model. Coefficients estimated from the district-level regression models should be interpreted as correlational relationships and not causal. These models are estimated for both the whole sample and for just the subsample of districts for which delay in payment data are available.

The descriptive statistics for data used in Models 1-3 at the household land district-level are presented in Table 2 and Table 3, respectively. A complete list of the data sources and metrics computed available in Appendix 1.

[Table 2 here]

[Table 3 here]

3.2. Results and Discussion

The household-level estimated average marginal effects (Model 1) and the IV coefficients from the second stage in the LPM (Model 1a), both reported in Table 4, suggest that household interest in MGNREGA employment, represented by whether or not it seeks work, is negatively and significantly associated with the lagged administrative rationing rate in the household's district, controlling for a host of confounding household and district-level characteristics.²⁹ A 10% increase in rationing rates at the district level reduces the probability that a household seeks work by 3.4% to 3.9%. The LPM coefficients suggest a decline in work seeking probability relative to a 10% increase in rationing rate in the range of 8.4-9.2%.³⁰ Instrument validity tests based on the LPM suggest that the instruments are valid and the model is identified,³¹ justifying a causal interpretation of this relationship.

[Table 4 here]

In contrast, no consistent evidence emerges that the discouragement effect on account of payment delays matters, except in the LPM model – which strongly suggests that wage delays are another source of discouragement. Even there, wage delays seem to be comparatively less influential in determining the chances that a household seeks work. A Shorrocks-Shapely decomposition of the pseudo-R-squared from the IV-Probit model, following Shorrocks (1982), indicates that the lagged rationing rate accounts for about 38.6% of the pseudo R-squared, whereas the variables associated with delayed payments account for about 4%.

Table 5 presents the results for district-level analysis from Models 2 and 3 with full results presented in Appendix Table 8. The details of the model are given in Appendix 3. Tests for over

identifying restrictions in the overidentified model failed, suggesting that the instruments are invalid. Lagged administrative rationing is indeed negatively and statistically significantly associated with a decline in demand rates at the district level across both the “naïve” least squares, 2SLS, and the control function models (Model 2, Table 5). A 10% increase in the rationing rate is associated with suppressed job seeking by 2.2-4.0%.³² Variables representing delays in wage payments have the expected sign in some specifications (Table 5) but not in others and not across the variables that represent these delays. In the district-level analysis, payment delays have a statistically significant negative effect on MGNREGA labor supply when a negative rainfall shock hits, signaling that individual workers’ confidence in the MGNREGA as a safety net is lessened by payment delays and gets reflected in district demand rates (Table 5).

[Table 5 here]

In general, one would expect variables representing aspects of wage delays to be a key source of discouragement, especially for poor households, for whom payment delays are likely most costly due to binding liquidity constraints that drive up their shadow interest rate. One plausible reason for the absence of evidence of a discouraged worker effect for wage payment delays could be the problem of missing data; we are able to secure data only for around half of the districts for the years considered. A second reason is that these data represent delays for wages paid and do not include those wages that were left unpaid. To the extent that we do not factor in the proportion of wage liabilities that remain, presumably a strong source of discouragement, these results reflect this. A third reason could be that delays in wage payments have been an entrenched feature of the program since its inception so that payment delays are likely to be subsumed into people’s expectations; the 2009-10 payment delays were thus consistent with people’s priors, so this did not discourage workers in 2011-12 relative to 2009-10.³³

The lagged demand rate, a pre-determined endogenous variable included to control for possible mean reversion, is negatively associated with change in demand and statistically significant in some specifications. As one would expect, negative rainfall shocks are associated with increase in demand, indicating that shocks tend to push people to seek employment under the MGNREGA.

Districts, in which the proportion of tribal population is high, tend to have higher demand, as do districts with higher literacy rates, a proxy for awareness.

There is limited evidence to support the hypothesis that as general economic conditions improve, demand for MGNREGA work tends to fall. The change in the proportion of the district workforce employed in agriculture, either as farmers or as casual farm workers, is positively and statistically significantly associated with change in demand for the MGNREGA. These seem to suggest that the alternate explanations for the decline of MGNREGA uptake are perhaps not credible.

4. Administrative Rationing, Pro-Poor Rationing and its Correlates

The results in the previous section suggest that administrative rationing is a consistently important factor that depresses worker interest in MGNREGA program participation, whether demand for work is studied at the level of district aggregates or individual households. This section therefore attempts to identify correlates of administrative rationing.³⁴ Are there systematic factors associated with administrative rationing rates? Further, to what extent are these factors related to whether such rationing is pro-poor? Specifically, we are interested in understanding if any such correlates are largely political in nature or if they are more related to district-level administrative capacity relative to demand for the program.

To answer these questions, we use the NSS data as a district-level panel dataset for 2009-10 and 2011-12. The panel data enables us to difference out some time-invariant unobservable factors (such as chronic administrative capacity deficit) that might affect inter-district variation in administrative rationing or wage payment delays, as well as MGNREGA labor supply. In Model 4 below, we use the rationing rate for each district in each round (R_{it}) as the dependent variable and model these as a function of various time-varying characteristics at the district level (Z_{it}), including district fixed effects (α_i). Demand rate (D_{it}) is instrumented with GDD, as in previous models.

$$R_{it} = \alpha_i + \delta D_{it} + \varphi Z_{it} + \varepsilon_{it} \quad (9)$$

$$D_{it} = \phi_1 + \phi_2 GDD_{it-1} + \phi_3 Z_{it-1} + \phi_4 W_i + \epsilon_d \quad (10)$$

To capture weather shocks, we include in Z_{it} the annual positive deviation of rainfall from its decadal average divided by the standard deviation of the decadal annual rainfall as well as the annual negative deviation. In the absence of time-varying data at the district level, on MGNREGA staffing and administrative vacancies,³⁵ to capture an aspect of implementation efficiency, we use a proxy – performance in achieving project targets in the area of sanitation. The Nirmal Bharat Abhiyan (NBA) is the total sanitation campaign launched by the Government of India in 1999. NBA falls under a different department than the MGNREGA but under the same ministry. NBA’s goal is to achieve complete coverage of all habitations; hence, by design it is not selective.³⁶ We use data on the percentage of planned or targeted facilities installed that have been completed to reflect bureaucratic efficiency of the ministry implementing the MGNREGA in the district.

Political factors – e.g., the political party in power, election victory margins – could potentially play a substantial role in determining who gets work and who does not. Recent evidence suggests that politics plays only a limited role (Sheahan et al., 2016), although substantial literature suggests that patronage and clientelism play a significant role in public policy implementation. Other time-invariant controls include variables that represent the socioeconomic profile of the district – the proportion of population belonging to the Scheduled Castes and Tribes, whether or not it is an IAP district, etc.

We gauge whether such rationing is pro-poor through three approaches, each involving a different subsample for Model 4. The analysis is first restricted to households below the official poverty line of the specific state. The second approach obtains the proportion of poor households in the district and uses these as weights to compute weighted rationing rates.³⁷ Third, we use the inverse of MPCE as household weights to obtain a weighted rationing rate.³⁸ These are denoted as Models 5, 6 and 7, respectively. Table 6 presents the results of these three sub-sample regressions along with the full sample regression. Here too we use an IV approach, where demand is instrumented with GDD and the number of days in the growing period that experience greater than optimum and threshold temperatures.³⁹

[Table 6 here]

Demand rates in a district are positively and statistically significantly associated with rationing rates only in the Least Squares models; in the IV models, the coefficient estimates all turn statistically insignificant and are negative. The strongest correlate of the administrative rationing rate appears to be idiosyncratic shocks coming from rainfall deficits. Considering that this association exists controlling for demand rates, it appears therefore that rainfall shocks make extraordinary demands on district administrations independently of MGNREGA demand. This is conceivable since drought relief is typically the responsibility of the district administration and is often undertaken without an expansion in staff capacity.⁴⁰

Explicit proxies for bureaucratic efficiency are not significantly associated with rationing rates. This needs to be interpreted in light of the fact that differences across states in administrative capacity, which presumably does not change quickly over time, have already been differenced out. The presence of banking infrastructure is negatively associated with rationing rates, suggesting that payment infrastructure helps obviate district administrations' tendency to ration work, ostensibly because processing payments is smoother, although anecdotal evidence from the field and the very small size of these effects suggest that this is limited.

Political factors are only weakly associated with rationing rates. While the identity of the political party representing the district matters, it is true only for certain variables that reflect United Progressive Alliance (UPA) representation and they are not robust. For example, while the share of UPA votes seems to be associated with lower rationing rates, neither the proportion of constituencies under UPA rule seems to matter, nor does whether or not UPA won any seat in the district.⁴¹ The identity of the party seems to matter more for pro-poor rationing. When the proportion of constituencies within a district under UPA control increases to 1 from 0, the proportion of household below the poverty line rationed falls by a statistically significant 14.8%, with smaller and less precisely estimated impacts when rationing rates are weighted by the proportion below the poverty line. Districts that have had elections more recently have lower rationing rates than those for which elections were held in the more distant past.⁴² These findings are in line with previous observations that politics have limited influence over MGNREGA allocation decisions at the local administration level (Sheahan, et al., 2016).

5. Concluding Remarks

This paper explores the consequences of implementation failures of public workfare programs, as manifested in administrative rationing of eligible participants and in wage payment delays, using the example of the MGNREGA in India. In particular, we find strong support for the “discouraged worker” effect in both district- and household-level data with respect to administrative rationing, but no clear support for the hypothesis arising from wage payment delays. We examine the correlates of administrative rationing and found that rationing is associated most strongly with (i) implementation ability arising from the density of the supporting banking infrastructure and (ii) the extraordinary demands on district administration arising from drought shocks. Politics appear to play only a limited role in administrative rationing.

Given the large and growing body of evidence on the many positive impacts of the program for the poor (Klonner and Olidges, 2012; Deininger and Liu, 2012; Imbert and Papp, 2015; Ravi and Engler, 2015; Zimmerman 2012, Reddy et al., 2014, for example), a focused effort on addressing implementation failures pertaining to rationing and wage payment delays is essential. This is best addressed by ensuring availability of adequate and well-trained staff at multiple administration levels so that work can scale up effectively and promptly when demand spikes and measures are made to disburse payments in a timely manner (Aggarwal, 2016, for example). A growing concern pertains to the fund flow mechanism from the central government to workers. Existing evidence suggests that composite reform including an organizational aspect (e.g., a new fund flow mechanism) and a technological aspect (e.g., biometric authentication through the use of a smartcard) can deliver speedy payments with less leakage (Muralidharan, et al., 2016; Banerjee, et al., 2014 for example). At the same time, it has been pointed out that the use of technology where infrastructure is inadequate can have the opposite effect (Drèze and Khera, 2016; Aggarwal, 2016).

Where safety net programs, such as the MGNREGA, offer temporary interventions in times of crisis, the ability to scale up a program during stress periods is critical. If increased administrative rationing is a natural consequence of drought shocks that temporarily overwhelm local governments

and if such rationing discourages workers from subsequently seeking guaranteed employment under the program, implementation capacity can undermine program performance, especially affecting the neediest households. Because declining demand for the program can be readily (mis)interpreted as an indicator of program success – for example, as graduating people from needing an employment guarantee – or of growing program irrelevance – due to growth in alternate employment options – these findings are critically important for nuanced and accurate interpretation of the observed decline in MGNREGA participation. Program decline may largely be a result of local implementation failures that discourage workers despite the continuing need for the employment guarantee program as a safety net.

The presence of a discouraged worker effect in public works programs such as the MGNREGA offers a cautionary tale in assigning causes to program uptake, especially those that are purported to be demand driven. It is possible, in theory, that a decline in participation is misconstrued as a measure of a program's success. But the decline could actually reflect decay instead, suggesting that it is important to investigate the factors that drive the lifecycle trajectories of programs rather than tracking outcome indicators without scrutiny.

References

- Aggarwal, A. (2016). The MGNREGA in crisis: Insights from Jharkhand. *Economic and Political Weekly*, 51(22), 38-43.
- Banerjee, A., Duflo, E., Imbert, C., Mathew, S. & Pande, R., (2014). Can e-governance reduce capture of public programs? Experimental evidence from a financial reform of India's employment guarantee. *economics. mit. edu/files/10557*. Accessed on February 15, 2017).
- Bardhan, P., & Mookherjee, D. (2000). Capture and governance at local and national levels. *American Economic Review*, 90(2), 135-139.
- Barrett, C.B., & Clay, D.C. (2003). Self-targeting accuracy in the presence of imperfect factor markets: evidence from food-for-work in Ethiopia. *Journal of Development Studies*, 39(5), 152-180.
- Basu, P. & Sen, K. (2015). *Welfare implications of India's employment guarantee programme with a wage payment delay*. IZA Discussion Paper 9454. The Institute for Study of Labor. Accessed on

January, 2016.

Benati, L. (2001). Some empirical evidence on the 'discouraged worker' effect.. *Economics Letters*, 70(3), 387-395.

Besley, T., & Coate, S. (1992). Workfare versus welfare: Incentive arguments for work requirements in poverty-alleviation programs. *American Economic Review*, 82(1), 249-261.

Blundell, R., & MaCurdy, T. (1999). Labor supply: A review of alternative approaches. *Handbook of Labor Economics*, 3, 1559-1695.

Comptroller and Auditor General of India (2013). *Report of the Comptroller and Auditor General of India on performance audit of Mahatma Gandhi National Rural Employment Guarantee Scheme*, Report no.-6 of 2013-Union Government. New Delhi: Ministry of Rural Development.

Das, U. (2015). Does political activism and affiliation affect allocation of benefits in the rural employment guarantee program: Evidence from West Bengal. *World Development*, 67, 202-217.

Deininger, K. & Liu, Y. (2013). *Welfare and poverty impacts of India's National Rural Employment Guarantee Scheme: Evidence from Andhra Pradesh*. Policy Research Working Paper 6543, World Bank, Washington, D.C.

Dey, S. & Bedi, A. S. (2010). The National Rural Employment Guarantee Scheme in Birbhum. *Economic and Political Weekly*, 45(41), 19-25.

Drèze, J. & Khera, R. (2011). The battle for employment guarantee. In Khera, R. Khera (Ed.), *Battle for Employment Guarantee*, Oxford University Press, New Delhi. Drèze, J. & Khera, R. (2014). Water for the leeward India. *Outlook*, <http://www.outlookindia.com/article/water-for-the-leeward-india/289801>. (Accessed on March 2015).

Drèze, J. and Khera, R. (2016). Recent social security initiatives in India, June 26. Available at SSRN: <https://ssrn.com/abstract=2800699>. (Accessed on February 2, 2017).

Drèze, J and Oldiges C. (2007). Commendable Act. *Frontline*, 24(14), July 14-27. Retrieved from <http://www.frontline.in/static/html/fl2414/stories/20070727001804100.htm> (Accessed on March 2017).

Dutta, P., Murgai, R., Ravallion M. & Van De Walle, D. (2012). Does India's employment guarantee scheme guarantee employment?. *Economic and Political Weekly*, 47(16), 55-64.

Ehrenberg, R. & Smith, R. (1988). *Modern Labor Economics: Theory and Public Policy*. Scott, Foreman and Co., 3rd edition.

Government of India (2013). *Mahatma Gandhi national Rural Employment Guarantee Act, 2005 (Mahatma Gandhi NREGA): Operational Guidelines 2013*. New Delhi: Ministry of Rural Development.

Harou, A., Liu, Y., Barrett, C. B., & You, L. (2017). Variable returns to fertilizer use and the geography of poverty: Experimental and simulation evidence from Malawi. *Journal of African Economies*. In press.

Himanshu, Mukhopadhyay, A., & Sharan, M. R. (2015). The National Rural Employment Guarantee Scheme in Rajasthan: Rationed funds and their allocation across villages. *Economic and Political Weekly*, 50(6), 52-62.

Imbert, C. & Papp, J. (2015). Labor market effects of social programs: Evidence from India's employment guarantee. *American Economic Journal: Applied Economics*, 7(2), 233-263.

Imbert, C. & Papp, J., (2011). Estimating Leakages in India's Employment Guarantee Using Household Survey Data. In Khera.R. Eds. *Battle for Employment Guarantee*, Oxford University Press, New Delhi.

Khera, R. (2008). Self-targeting on employment programs. *The Indian Journal of Labour Economics*, 51(2), 205-228.

Khera, R. (2010) Wages of delay, *Frontline*, 27(10), Retrieved from <http://www.frontline.in/static/html/fl2710/stories/20100521271010500.htm>. (Accessed on January 10, 2015).

Khera, R. (2014) The whys and whats of India's rural jobs scheme, *India Spend*,. Available at <http://www.indiaspend.com/cover-story/the-whys-and-whats-of-indias-rural-jobs-scheme-99284>. (Accessed on November 14, 2015).

Klonner, S. & Oldiges, C. (2012). *Employment guarantee and its welfare effect in India*. http://www.uni-heidelberg.de/md/sai/wiw/team/klonner/klonner_oldiges_2012.pdf (Accessed on March 12, 2017)

Kochar, A. (2011). The distributive consequences of social banking: a microempirical analysis of the Indian experience. *Economic Development and Cultural Change*, 59(2), 251-280.

Liu, Y. & Barrett, C. B. (2013). Heterogeneous pro-poor targeting in India's Mahatma Gandhi National Rural Employment Guarantee Scheme. *Economic and Political Weekly*, 48(10), 46-53.

Lobell, D. B., Sibley, A., & Ortiz-Monasterio, J. I. (2012). Extreme heat effects on wheat senescence in India. *Nature Climate Change*, 2(3), 186-189.

Mann, N., & Pande, V. (2012). *MGNREGA Sameeksha: An Anthology of Research Studies on the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 2006–2012*. Orient Blackswan Private Limited.

Mukhopadhyay, A. (2012). Mahatma Gandhi National Rural Employment Guarantee Scheme: Falling demand or funds crunch?. http://www.ideasforindia.in/article.aspx?article_id=29, August 8, 2012 (Accessed on March 12, 2017).

Muralidharan, K., Niehaus, P., and Sukhtankar, S. (2016). Building state capacity: Evidence from biometric smartcards in India. *The American Economic Review*, 106(10), 2895-2929.

Narayanan, N. C., & Lokhande, N. (2013). Designed to falter: MGNREGA implementation in Maharashtra. *Economic and Political Weekly*, 48(26-27), 61-66.

- Narayanan, S., & Das, U. (2014). Women participation and rationing in the employment guarantee scheme. *Economic and Political Weekly*, 49(46), 46-53.
- National Sample Survey (2011). *Survey on MGNREGA, Volumes 1, 2, 3*. New Delhi: Ministry of Statistics and Programme Implementation, Government of India..
- Nayak, N. (2017). Workers or beneficiaries: The varied politics of NREGA implementation in south-west Madhya Pradesh, in R. Nagaraj and Sripad Motiram (editors), *The Political Economy of Contemporary India*, New Delhi: Cambridge University Press.
- Platteau, J. P. (2004). Monitoring elite capture in community-driven development. *Development and Change*, 35(2), 223-246.
- Ravallion, M. (2003). *Targeted transfers in poor countries: revisiting the tradeoffs and policy options*. Vol. 3048. World Bank Publications. World Bank, Washington, D.C.
- Ravi, S. & Engler, M. (2015). Workfare as an effective way to fight poverty: The case of India's NREGS. *World Development*, 67, 57-71.
- Reddy, D. N., Reddy, A. A., & Bantilan, M. C. S. (2014). The impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on rural labor markets and agriculture. *India Review*, 13(3), 251-273.
- Saxena, N.C. (2016). *Why PMGSY has performed better than MGNREGS*. Inclusion: Mainstreaming the Marginalised. Retrieved from <http://inclusion.skoch.in/story/739/why-pmgsy-has-performed-better-than-mgnregs-1039.html> (Accessed on March 13, 2017)
- Sheahan, M., Liu, Y., Barrett, C.B., & Narayanan, S. (2016). Preferential resource spending under an employment guarantee: The political economy of Mahatma Gandhi National Rural Employment Guarantee Scheme spending in Andhra Pradesh. *World Bank Economic Review*. doi: 10.1093/wber/lhw044. First published online: August 28, 2016.
- Shorrocks, A.F. (1982). Inequality decomposition by factor components. *Econometrica*. 50(1), 193-211.

Shrivastava, H. (2015). *Analysis of technical capacity deficit in Mahatma Gandhi National Rural Employment Guarantee Act and cluster facilitation teams as a solution to address the Implementation Challenges*. Master's Thesis. Indian Institute of Technology, Mumbai. Unpublished.

Singh, S. (2016). Evaluation of world's largest social welfare scheme: An assessment using non-parametric approach. *Evaluation and Program Planning*. 57, 16-29.

Skoufias, E. (1994). Using shadow wages to estimate labor supply of agricultural households. *American Journal of Agricultural Economics*, 76(2), 215-227.

Subbarao, K. (2003). *Systemic shocks and social protection: Role and effectiveness of public works programs*. Social Protection Discussion Paper Series, No.0302, World Bank, Washington, D.C.

von Braun, J. (1995). *Employment for poverty reduction and food security*. International Food Policy Research Institute, Washington, D.C.

Wooldridge J. M. (2015). Control function methods in applied Econometrics. *Journal of Human Resources*, 50(2), 420-445.

Zimmerman, L. (2012). *Labor market impacts of a large-scale public works program: Evidence from the Indian employment guarantee scheme*. IZA Discussion paper 6858. Institute for the Study of Labor (IZA).

Table 1: Seeking, Rationing and Participation rates (2011-12 and 2009-10)

2009-10						2011-12				
Share of total households						Share of total households				
States	Job card	Seeking work	Participated	Rationing Rate*	Rationing Rate (poor)*	Job card	Seeking work	Participated	Rationing Rate*	Rationing Rate (poor)*
Andhra Pradesh	0.434	0.472	0.354	0.249	0.240	0.495	0.384	0.321	0.165	0.139
Arunachal Pradesh	0.220	0.515	0.215	0.582	0.627	0.406	0.383	0.352	0.080	0.105
Assam	0.287	0.413	0.182	0.559	0.539	0.364	0.312	0.230	0.262	0.313
Bihar	0.172	0.461	0.099	0.785	0.788	0.223	0.184	0.105	0.428	0.448
Chhattisgarh	0.589	0.69	0.479	0.306	0.259	0.727	0.617	0.561	0.091	0.078
Goa	0.161	0.077	0.022	0.719	0.664	0.041	0.041	0.041	0.000	0.000
Gujarat	0.300	0.382	0.215	0.438	0.353	0.238	0.144	0.066	0.541	0.482
Haryana	0.066	0.195	0.051	0.738	0.735	0.058	0.050	0.046	0.081	0.02
Himachal Pradesh	0.454	0.418	0.334	0.202	0.177	0.498	0.386	0.334	0.135	0.165
Jammu & Kashmir	0.187	0.334	0.097	0.709	0.693	0.368	0.324	0.297	0.081	0.058
Jharkhand	0.306	0.517	0.192	0.628	0.635	0.352	0.304	0.218	0.283	0.302
Karnataka	0.151	0.228	0.08	0.648	0.506	0.202	0.150	0.097	0.351	0.307
Kerala	0.196	0.232	0.112	0.517	0.362	0.291	0.198	0.186	0.060	0.037
Madhya Pradesh	0.697	0.646	0.406	0.371	0.327	0.643	0.317	0.205	0.352	0.321
Maharashtra	0.134	0.277	0.044	0.84	0.769	0.167	0.116	0.048	0.582	0.593
Manipur	0.729	0.805	0.765	0.049	0.034	0.775	0.744	0.736	0.010	0.007
Meghalaya	0.506	0.611	0.457	0.253	0.208	0.717	0.706	0.660	0.065	0.022

2009-10						2011-12				
Share of total households						Share of total households				
States	Job card	Seeking work	Participated	Rationing Rate*	Rationing Rate (poor)*	Job card	Seeking work	Participated	Rationing Rate*	Rationing Rate (poor)*
Mizoram	0.914	0.949	0.913	0.038	0.000	0.951	0.950	0.939	0.012	0.020
Nagaland	0.667	0.747	0.588	0.213	0.424	0.937	0.882	0.859	0.026	0.022
Orissa	0.404	0.507	0.22	0.567	0.532	0.469	0.355	0.238	0.331	0.312
Punjab	0.086	0.312	0.052	0.833	0.115	0.121	0.106	0.073	0.312	0.339
Rajasthan	0.710	0.732	0.618	0.155	0.144	0.674	0.517	0.409	0.210	0.168
Sikkim	0.458	0.460	0.441	0.041	0.025	0.631	0.593	0.578	0.026	0.020
Tamil Nadu	0.396	0.414	0.335	0.19	0.115	0.483	0.425	0.398	0.064	0.038
Tripura	0.801	0.860	0.782	0.091	0.052	0.797	0.786	0.772	0.018	0.004
Uttar Pradesh	0.211	0.35	0.162	0.536	0.504	0.264	0.227	0.191	0.159	0.142
Uttaranchal	0.343	0.406	0.292	0.28	0.357	0.358	0.316	0.276	0.128	0.159
West Bengal	0.593	0.658	0.432	0.344	0.305	0.599	0.516	0.381	0.261	0.249
India	0.348	0.447	0.249	0.444	0.423	0.384	0.300	0.231	0.231	0.232

Source: National Sample Survey, 66th Round and 68th Round.

Notes: *Rationing rate is the total households seeking but not getting work/total households seeking work. Rationing rate for the poor is the total number of households below the poverty line that seek but do not get work as a fraction of total households below the poverty line that seek work. This is computed using the entire sample, without trimming.

Figure 1: MGNREGA implementation in India, 2006-07 to 2014-15

Source: Government of India (2013); www.nrega.nic.in. Accessed May, 2015.

Figure 2a :Workseekingrates in the MGNREGA, 2009-10 and 2011-12

Note: The dashed vertical lines represent the Tendulkar poverty lines for each year, the red for 2011-12 and the blue for 2009-10. The dashed lines associated with each local polynomial regression are the 95% confidence intervals.

Figure 2b: Rationing rates in the MGNREGA, 2009-10 and 2011-12

Note: The dashed vertical lines represent the Tendulkar poverty lines for each year, the red for 2011-12 and the blue for 2009-10. The dashed lines associated with each local polynomial regression are the 95% confidence intervals.

Figure 2c: Participation rates in the MGNREGA, 2009-10 and 2011-12

Note: The dashed vertical lines represent the Tendulkar poverty lines for each year, the red for 2011-12 and the blue for 2009-10. The dashed lines associated with each local polynomial regression are the 95% confidence intervals.

Table 2: Summary Statistics for household level analysis (Model 1)

Variable	Mean/Proportion	Standard Deviation
Rationing Rate (2009-10)	0.48	0.31
Average days of delay in wage payment (2009-10)	17.17	22.02
Average proportion of payments with over 90 days delay (2009-10)	8.47	16.80
Average percentage of wage payments delayed (2009-10)	9.25	18.80
Proportion of Scheduled Tribe households	0.16	
Proportion of Scheduled Caste households	0.17	
Proportion of Other Backward Class households	0.40	
Proportion of Upper Caste households	0.27	
Proportion of Hindu households	0.76	
Proportion of Muslim households	0.12	
Proportion of households belonging to other religions	0.11	
Proportion of landless households (0 hectares)	0.44	
Proportion of marginal landholders (0 to 1 hectares)	0.37	
Proportion of small landholders (1 to 2 hectares)	0.09	
Proportion of other landholders (More than 2 hectares)	0.09	
Proportion of households engaged in agricultural and non-agricultural labor	0.23	
Proportion of households self-employed in non-agriculture	0.26	
Proportion of households self-employed in agriculture	0.28	
Proportion of households engaged in other occupations	0.23	
Age of the household head (years)	46.89	14.14
Proportion of female household heads	0.16	
Proportion of households where head is illiterate	0.32	
Proportion of households where head is educated below primary level	0.11	
Proportion of households where head is educated between primary and middle level	0.31	
Proportion of households where head is educated between secondary and higher secondary level	0.18	
Proportion of households where head is educated above higher secondary level	0.08	
Monthly per capita consumption ('000 Rs.)	1.365	0.591
Number of adult earning members	3.00	1.56
District-level Variables used in the Household Analysis		
Proportion of people from Scheduled Caste (districtwise)	0.17	0.10
Proportion of people from Scheduled Tribes (districtwise)	0.17	0.261
Literacy rate in the district	0.61	0.10
Integrated Action Plan district (1=Yes)	0.09	
MGNREGA Phase 1 district (1=Yes)		
MGNREGA Phase 2 district (1=Yes)	0.26	
MGNREGA Phase 3 district (1=Yes)	0.40	
Positive deviation of rainfall in 2011-12 (in standard deviation units)	9.30	2.75
Absolute value of negative deviation of rainfall in 2011-12 (in standard deviation units)	8.49	1.77
Positive deviation of rainfall in 2009-10 (in standard deviation units)	6.48	2.79
Absolute value of negative deviation of rainfall in 2009-10 (in standard deviation units)	10.61	1.92
Proportion of target in toilet construction achieved over the past three years	0.13	0.30
Difference between NREGA wages and bottom decile wages in 2011-12 (rupees)	-58.13	27.60

Table 3: Summary Statistics of district-level variables (Models 1-3)

Variable	2009-10		2011-12	
	Mean	Standard Deviation	Mean	Standard Deviation
Demand rate	0.40	0.21	0.28	0.21
Rationing rate	0.50	0.31	0.26	0.26
Participation rate	0.22	0.20	0.24	0.20
Weighted rationing rate (See Appendix 1 for details)	0.20	0.17	0.11	0.13
Demand rate among households below poverty line	0.52	0.25	0.38	0.25
Rationing rate among households below poverty line	0.46	0.33	0.25	0.28
Participation rate among households below poverty line	0.30	0.26	0.30	0.25
Proportion among households below the official state poverty line	0.41	0.20	0.40	0.20
Average MPCE (Rs.)	1066	314	1422	413
Proportion with agriculture as the main occupation	0.29	0.10	0.30	0.10
Proportion with non-agriculture as the main occupation	0.23	0.09	0.25	0.09
Proportion with agricultural labour as the main occupation	0.12	0.07	0.09	0.06
Proportion with non-agricultural labour as the main occupation	0.17	0.09	0.15	0.09
Commercial Bank branches (hundreds)	137.2	126.4	159.9	148.5
Bank branch expansion over the two years preceding 2009-10, as percentage of branches in 2007-08	11.8	7.5	17.2	11.9
Absolute value of positive rainfall deviation	6.5	2.8	9.4	2.9
Absolute value of negative deviation of rainfall (in standard deviation units)	10.7	2.0	8.4	1.7
Proportion of targets in toilet construction achieved over the past three years under the Nirmal Bharat Abhiyan	0.14	0.28	0.12	0.08
Percentage of wage payments delayed	11.6	20.8	11.6	20.8
Approximate average delay in payment (days)	20.2	22.3	20.2	22.3
Proportion of payments with over 90 days delay	9.8	17.1	9.8	17.1
Growing Degree Days (GDD) current year	4959.9	1514.1	4816.0	1505.2
Growing Degree Days (GDD) lagged year	4911.6	1511.4	4858.9	1495.1
Job cards (in `0000 numbers)	17.73	15.08	22.44	18
Time invariant characteristics	Mean	Standard		
	/Proportion	Deviation		
Proportion of people from the Scheduled Castes	0.17	0.10		
Proportion of people from the Scheduled Tribes	0.19	0.28		
Literacy rate	0.59	0.10		
Integrated Action Plan district (1=Yes)	0.11	0.31		
MGNREGA Phase 1 district (1=Yes)	0.36			
MGNREGA Phase 2 district (1=Yes)	0.24			
MGNREGA Phase 3 district (1=Yes)	0.41			
Number of post offices (delivery) in 2015	254.7	172.7		
UPA victory in the district (1=Yes)	0.37			
Proportion of constituencies in the district won by UPA	0.34	0.34		
Ratio of UPA votes to non-UPA votes	0.90	1.97		
Share of seats reserved for SC/ST	0.35	0.31		
Proportion of electorate who voted (relative to eligible population)	0.67	0.14		
Years elapsed since previous election	3.1	1.35		
Election coincides with survey year (1=Yes)	0.31			

Source: Appendix 1 for data sources and description. Some of the district-level variables are used as explanatory variables in Models 1 and 1a.

Table 4: The Discouraged Worker: Household-level analysis Second stage results of IV Probit and IV Linear Probability Model (Model 1 and 1a)

Dependent variable: Seeking work	Probit (estimated average marginal effects, with standard errors in parentheses, clustered at district level)				Linear Probability Model (With robust standard errors)			
Sample & Specification (Columns) Variables of interest (Rows)	(a) All households	(b) All households (with rain-delay interaction)	(c) Poor households	(d) Poor households (with rain-delay interaction)	(e) All households	(f) All households (with rain-delay interaction)	(g) Poor households	(h) Poor households (with rain-delay interaction)
Lagged Rationing Rate (2009-10)	-0.357** (0.142)	-0.341** (0.137)	-0.394** (0.174)	-0.382* (0.220)	-0.891*** (0.051)	-0.922*** (0.055)	-0.853*** (0.086)	-0.920*** (0.125)
Proportion of payments with over 90 days delay in 2009-10	0.00315 (0.0652)	-0.0249 (0.0597)	0.000032 (0.0711)	-0.0302 (0.0875)	-0.043** (0.018)	-0.040** (0.016)	-0.029 (0.028)	-0.038 (0.036)
Average delay in wage payments interacted with the absolute value of negative deviation in rainfall (in standard deviation units) in 2009-10		-0.0434 (0.0725)		-0.0458 (0.138)		-0.020 (0.023)		-0.055 (0.067)
Number of observations	47131	47131	15476	15476	47131	47131	15476	15476
Wald chi-squared test of exogeneity	Chi-2(2) 4.9*	Chi-2(3) 16.08***	Chi-2(2) 3.73	Chi-2(3) 7.63*				
Underidentification test: Kleinberg Papp rank LM statistic					414.11***	735.444***	153.819***	98.328***
Weak instrument test: Kleinberg Papp Wald F statistic					203.024 7.03 (10% maximal IV size)	257.696 Not available	81.878 7.03 (10% maximal IV size)	16.186 Not available
Stock and Yogo critical values								

Notes: For coefficients on the probit regression and for the full set of regression results and for the Linear Probability Model with diagnostics for IV, please see Appendix Tables 2 to Appendix Table 7. Poor households refer to households whose monthly per capita expenditure (MPCE) is below the official state poverty line. These regressions are therefore for the subsample of poor households. For marginal effects, standard errors in parentheses and for linear model, t-statistic in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The instrument validity tests are conducted for the LPM model and reported here. Instruments: For the IV delay in payments and rationing rate have been instrumented with proportion of block level MGNREGA positions vacant and the percentage change in bank branches over the two years preceding 2009-10 for (a), (c), (e) and (g) and when rain-delay interaction is included this is instrumented with number of block-level MGNREGA staff per village for (b), (d), (f), and (h).

Table 4: The Discouraged Worker Effect: District level analysis (Model 2 and Model 3)

Dependent variable: Change in district level demand rate	Least Squares		Two stage least squares (Model 2)		Control function approach (Model 3)	
	Full sample	Sample with no missing data	Full sample	Sample with no missing data	Full sample	Sample with no missing data
Lagged Rationing Rate (2009-10)	-0.257*** (0.02)	-0.242*** (0.03)	-0.400*** (0.07)	-0.334*** (0.07)	-0.234*** (0.08)	-0.223 (0.14)
Proportion of payments with over 90 days delay in 2009-10	-1.358** (0.56)	-1.817*** (0.61)	0.077 (2.32)	1.924 (1.64)	-0.028 (1.32)	0.374 (1.91)
Average delay in wage payments interacted with the absolute value of negative deviation in rainfall (in standard deviation units) in 2009-10	-24.629*** (7.21)	-29.524*** (8.30)	-8.251 (20.13)	-33.446*** (10.30)	-20.391** (9.91)	-33.280** (14.05)
Demand Rate (2009-10)	-0.638*** (0.03)	-0.685*** (0.05)	-0.618*** (0.05)	-0.764*** (0.08)	-0.464*** (0.09)	-0.626*** (0.15)
Predicted error term from the control function					-0.145* (0.09)	0.032 (0.14)
Number of Observations	550	283	551	284	522	267
R-squared	0.630	0.681			0.608	0.643

Notes: For the full set of regression results and other diagnostics, and for alternate estimations using Two Stage Least Squares and Control Function, please see Appendix Table 8, Appendix 3: tables 3.1 and 3.2 respectively. Variables used in the 2SLS and control function as controls for the endogenous variables include the following: Lagged rationing rate: A set of variables including proportion of block staff vacant, the number of block-level staff per village, block and per job card, bank branches per job card, GDD; for proportion of payments with over 90 days delay in 2009-10, delayed interacted with absolute value of negative deviation in rainfall in 2009-10 we use block-level vacancy and block staff per village and expansion of bank branches; and for demand rate in 2009-10 we use GDD variables, village-level functionaries per job card and per village and program expenditures per job card and per village.

Table 5: Correlates of rationing and pro-poor rationing: district-level panel data (Model 4, 5, 6, and 7)

Dependent variable: Rationing /Weighted rationing rate at the district level	All (Model 4)		Poor subpopulation (Model 5)		Weighted by proportion below poverty line (Model 6)		Weighted by inverse monthly per capita expenditure (Model 7)	
	Naive	IV Second Stage	Naive	IV Second Stage	Naive	IV Second Stage	Naive	IV Second Stage
Demand Rate	0.378*** (0.080)	-1.024 (0.760)	0.184** (0.078)	-0.420 (0.305)	0.195*** (0.041)	-0.368 (0.314)	0.277** (0.131)	-0.959 (0.835)
Whether UPA won any seat in the district (1=Yes)	0.064 (0.055)	0.090 (0.081)	0.089 (0.060)	0.113 (0.070)	0.013 (0.022)	0.024 (0.031)	0.101 (0.071)	0.134 (0.093)
Proportion of constituencies under UPA	-0.100 (0.075)	-0.150 (0.107)	-0.148* (0.083)	-0.194** (0.096)	-0.042 (0.032)	-0.062 (0.042)	-0.120 (0.096)	-0.170 (0.121)
Share of UPA votes	-0.009 (0.008)	-0.012** (0.005)	0.001 (0.012)	-0.001 (0.011)	-0.007*** (0.002)	-0.008* (0.004)	-0.010 (0.012)	-0.012 (0.008)
Years since election	0.018** (0.007)	0.023** (0.010)	0.020** (0.008)	0.021** (0.008)	0.014*** (0.004)	0.016*** (0.004)	0.017* (0.010)	0.019* (0.011)
Survey year is an election year (1=Yes)	0.002 (0.019)	0.058 (0.038)	0.019 (0.020)	0.042* (0.024)	0.021** (0.009)	0.044** (0.017)	-0.017 (0.027)	0.026 (0.042)
Polling percentage (divided by 10)	0.017 (0.040)	0.053 (0.057)	0.011 (0.037)	0.018 (0.043)	-0.013 (0.019)	0.001 (0.025)	-0.004 (0.052)	0.020 (0.065)
Proportion of seats reserved for SC/ST candidates	0.157 (0.189)	0.029 (0.211)	0.298 (0.217)	0.189 (0.225)	0.135 (0.107)	0.084 (0.105)	0.074 (0.296)	-0.054 (0.299)
Monthly per capita expenditure (INR `000)	-0.086 (0.055)	-0.211** (0.098)	-0.025 (0.059)	-0.046 (0.067)	-0.109*** (0.023)	-0.159*** (0.041)	-0.085 (0.090)	-0.198 (0.122)
Absolute value of negative deviation of rainfall	0.041*** (0.006)	0.068*** (0.016)	0.047*** (0.006)	0.062*** (0.010)	0.018*** (0.003)	0.029*** (0.007)	0.044*** (0.008)	0.067*** (0.017)
Positive deviation of rainfall	0.006 (0.004)	0.006 (0.005)	0.006 (0.004)	0.006 (0.004)	0.001 (0.002)	0.002 (0.002)	0.003 (0.006)	0.003 (0.006)
Proportion of targets achieved in sanitation	0.019 (0.106)	0.237 (0.173)	-0.012 (0.092)	0.109 (0.114)	0.037 (0.037)	0.124* (0.068)	0.135 (0.151)	0.316 (0.202)
Number of commercial bank branches (`000s)	-0.022*** (0.001)	-0.038*** (0.012)	-0.024*** (0.006)	-0.031*** (0.008)	0.001 (0.003)	-0.005 (0.005)	-0.028*** (0.009)	-0.042*** (0.015)
Number of job cards (`00,000)	-3.272 (2.033)	-4.691 (2.881)	-3.371 (2.222)	-4.856* (2.509)	-1.084 (0.977)	-1.654 (1.158)	-1.592 (2.744)	-2.880 (3.322)
Constant	0.116 (0.301)		0.009 (0.285)		0.048 (0.140)		0.411 (0.419)	
N	1054	1026	1030	984	1054	1026	1072	1060
Test of endogeneity		5.59***		4.56**		4.195***		2.919*
Underidentification test: Kleiberg Paap rank LM statistic		9.20***		19.82***		9.20***		10.8***
Weak instrument test: Cragg-Donald Wald F statistic		9.1		28.18		9.103		10.55
KleibergPaap Wald F statistic		9.65		26.95		9.648		11.21

Stock and Yogo critical values	8.96 (15% maximal IV size)	16.38 (10% maximal IV size)	8.96 (15% maximal IV size)	8.96 (15% maximal IV size)
--------------------------------	-------------------------------------	--------------------------------------	-------------------------------------	-------------------------------------

Note: See Appendix 1 for details on computation of the weighted rationing rate. In all the IV regressions we use as the instrument for demand rate the number of days that the temperature was above the optimal threshold for the dominant crop in the district over the cropping season for that year.

Notes

¹ The broader questions of elite capture in development programs are discussed in Bardhan and Mookherjee (2000) and Platteau (2004).

² These are by no means the only types of implementation failures. The complexity of the MGNREGA devolves multiple responsibilities on grassroots local governments, where inadequate and poorly paid staff are often obstacles to implementation (Aggarwal, 2016, for instance). There is some literature too on examining efficiency, technical and scale efficiencies of the program nationwide (Singh, 2016). Saxena (2016), for example, argues the structure and design of the program, including the system of fund allocation and monitoring of assets built under the program is flawed and are reasons behind its unsuccessful implementation.

³ The MGNREGA was implemented in 2005 by the United Progressive Alliance (UPA). Since the Bharatiya Janata Party (BJP) won the general elections in India in 2014, whether or not the MGNREGA should continue has been a subject of debate. The year 2014 saw a historical low in the allocation to the MGNREGA at Rs. 321.39 billion. As of 2017, this debate seems to have largely been resolved in favor of retaining the program, with allocations in 2016-17 of Rs. 457.74 billion, higher (in nominal terms) than in 2014-15.

⁴ Days generated are as on March 14, 2017 in cumulated nominal terms valued at the exchange rate of Rs.65=US\$1. http://mnregaweb4.nic.in/netnrega/all_lvl_details_dashboard_new.aspx published on March 14, 2017.

⁵ Former Member of the Planning Commission at a seminar titled “Labour Dynamics in India” organized by the International Crop Research Center in the Semi Arid Tropics (ICRISAT) in New Delhi, September 15, 2014.

⁶ A Ministry of Rural Development official’s statement in a conference titled “The MGNREGA in India: Taking Stock, Looking Ahead,” held March 26, 2014.

⁷Baseline report (unpublished) of Stanford University’s Liberation Technology Program project titled “Combating Corruption with Mobile Phones.”

⁸*Ibid.*

⁹This has been reported fairly widely in the popular press. See, for example, <http://www.thehindu.com/sunday-anchor/is-the-mgnrega-being-set-up-for-failure/article7265266.ece>, accessed May 31, 2015.

¹⁰ See Drèze and Oldiges (2007) for an early assessment across states and Mann and Pande (2012) for an annotated bibliography of studies.

¹¹ Discerning readers will note that in 2009-10 in some states the share of households seeking work exceeded that holding job cards. However, 2009-10 was a drought year and the program was still in its early stages, suggesting that not all people who wanted work due to the weather shock had already applied for job cards.

¹² The NSS 68th Round (July 2011 - June 2012) and 66th Round (July 2009 - June 2010) surveys include schedules on Employment and Unemployment and Household Consumer Expenditure.

¹³ These surveys included information on 281,237 individuals in 2009-10 and 280,763 in 2011-12.

¹⁴ See Appendix 1 for Data Sources and Methods.

¹⁵ Data from the NSS are representative at the district level only since the 61st Round (2004-05).

¹⁶ The figures 2a, 2b and 2c plot households on a scale of log MPCE, ranging from 5 to 9.

¹⁷ Work is obtained under the MGNREGA via a written application submitted to the Gram Rozgar Sewak or Field Assistant in the village. While no fee is associated with applying for work, the cost involved in terms of time and effort could be non-trivial.

¹⁸ For details see Circular F. No.21/13/2009-FI, Government of India Ministry of Finance Department of Financial Services.

¹⁹ Likewise, we also use the number of post office branches with delivery services per job card, but do not present these results. We have data on job cards for all the years but post offices data only for 2015. In the absence of annual data for post offices, we use the 2015 data for post offices and job card data for 2009-10 under the maintained hypothesis that the post office network did not expand over these years.

²⁰ Shrivastava (2015) points out that the “capacity deficit” is sometimes because of an outright rejection of the Act. In the state of Uttar Pradesh, a senior functionary reportedly said “If matters were in my hand, I would have thrown away the existing contractual staff under MGNREGA, [and] forget about hiring any more” (pg.64, *ibid.*). Elsewhere in Madhya Pradesh, Nayak (2017) documents similar problems. In the authors’ own fieldwork in Maharashtra, local functionaries mentioned that if they did try to implement the MGNREGA they would be in trouble.

²¹ We test for this in a very basic sense by estimating a cross section regression of district-level rationing rate on various factors that could potentially explain rationing and find the block-level staff availability is a significant correlate (Appendix Table 1).

²² The IAP was a package of assistance directed at selected tribal and backward districts under the Backward Region Grant Fund (BRGF) program.

²³ In the absence of apparent consensus on whether or not the probit or the LPM should be privileged in the context of IV estimation, we estimate both and report the correlation between the predicted probabilities from the two models.

²⁴ The proportion of observations for which data are missing ranges from 0.46 to 0.48. It is possible that a systematic difference exists between those states that report these data and those that do not. The results on delayed payments must therefore be interpreted with care.

²⁵ This model is formulated to reflect closely the articulation of the discouraged worker hypothesis. We also estimate a model on levels, using demand rate in 2011-12 instead of the difference in demand rate as a dependent variable.

²⁶ The recall window is not a concern since the survey is balanced across seasons across the districts.

²⁷ See Appendix 2 for details.

²⁸ See Appendix 2.

²⁹ Full results are presented in Appendix Tables 2-7.

³⁰ The correlation coefficient between the predicted probability of seeking work in the LPM and the probit model is high at 0.77 to 0.84 but not high enough to render the choice of model irrelevant.

³¹ See Appendix Table 5-7.

³² Estimating this model in levels instead of differences yields qualitatively similar results. We also run the model for the subsample for which there is no missing payments delay data and the results do not change. These are not presented in the paper but can be obtained from the lead author by request.

³³ Conversations with consultants based in the Ministry of Rural Development suggest that this may be the case in several states.

³⁴ We do not attempt a similar analysis with delays in wage payments for these years due to missing data.

³⁵ These get differenced out in the panel; see Appendix Table 1.

³⁶ After 2012, the Government of India allowed construction of toilets under the NBA as a permissible work of the MGNREGA. Since our data are from 2011-12, we can treat NBA as functionally unrelated and therefore exogenous to MGNREGA implementation.

³⁷ As described in detail in Appendix 1.

³⁸ For details of these computations, see Appendix 1.

³⁹ Explained in Appendix 2 with full results reported in Appendix Tables 9.

⁴⁰ Expansion of MGNREGA entitlements, for example from 100 days per household to 150 days per household, is often a part of drought relief packages.

⁴¹ The MGNREGA was the UPA's flagship social welfare program; the Indian National Congress, which headed the alliance, has historically been viewed as pro-poor.

⁴² While it is the case that larger numbers mean that a district is closer to the next election, the years for which we have data are such that for no district is this figure higher than two.