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# Local institutional structure and clientelistic access to employment: the case of MGNREGS in three states of India

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## Non-Technical Summary

A considerable body of research, at least over the last two decades, has studied the impact of institutions--the rules and conventions underlying socio-political interactions within a social unit—on economic outcomes in developing countries. Our objective in this paper is to fill what we perceive to be an important gap in this body of literature: measuring institutional features of a unit like a village as an aggregation of the day-to-day interactions of the residents in the unit rather than focussing on the variations of any exogenous rules. We concentrate on the institution of patron-client relationship. We provide such a measure and then explore impacts of such institutions on one outcome: household-access to a public employment programme primarily meant for the rural poor (the famous Mahatma Gandhi Rural Employment Guarantee Scheme (MGNREGS) in India).

We collected primary data from 36 villages (selected using stratified sampling) in three states of India, with sufficiently many sampled households interviewed in each village. The survey was done in 2013. For each household, pieces of information on whom the household-members primarily depend upon for activities and help in several spheres of their daily living—like procuring inputs for production, getting informal loans, political participation etc—were collected. By aggregating such information we identified the presence and intensity of patron-client relationships. For each sample household, data on participation in MGNREGS programme ever as well as the number of job-days it got under this scheme within 12 months prior to the survey were also collected through the household interviews. Then we statistically analysed the possible association and causality.

We find that (i) clientelistic institutions, as per the measure developed by us, are not ubiquitous: while about two-thirds of our sample villages have such institutional features with varying intensity, the rest do not have this feature; (ii) clients of the patrons (called “elites'' in the paper) have better access to MGNREGS employment than non-clients and (iii) a household in a village where elites are present, on average, has higher access to MGNREGS employment than a household in a non-elite village. Complementary to our empirical exercises, we construct and analyze a theoretical model incorporating the relevant structural features of a less-developed rural economy which predicts that the elites use MGNREGS jobs to secure support of their respective clients.

Since localized elites seem to consolidate their power primarily through multifarious dependence relations on them together, our study brings home, in the context of India, once again the need of a holistic policy approach. This is in sharp contrast to the current “randomized policy trial” driven emphasis on small partial policy interventions. Our study goes toward reemphasizing a well-known textbook prescription: “If, in our reformist zeal, we do not pay enough attention to the underlying economic rationale of pre-existing institutions and their interconnections, and try to hack away parts of them, we may not always improve (and may even worsen) the lot of the poor tenant–labourer–borrower, the intended beneficiary of the reform programme” (Bardhan and Udry, Development Microeconomics, 1999, p. 111).

# Local institutional structure and clientelistic access to employment: the case of MGNREGS in three states of India*

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**Abstract**

This work is a contribution, first, toward measuring rural institutions taking multidimensional networks of socio-economic interactions in villages as the primitive and then toward exploring impacts of such institutions on household-access to a public employment programme: MGNREGS in India. Our focus is on the institution of clientelism-patronage–the presence and intensity of that. Using primary data we identify the presence of patron-client relationships, show that clients have better access to MGNREGS employment than non-clients and a household in elite-villages has higher access to MGNREGS employment. Complementary to our empirical exercises, we construct and analyze a theoretical model supporting our empirical findings.

**Keywords and Phrases**: Clientelism, Network, MGNREGS

**JEL Classification**: O12; P47

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# 1 Introduction

From onwards Acemoglu et al. [1], the role of institutions–the rules and conventions underlying socio-political interactions within a social unit–in affecting economic outcomes has been one major theme of study among economists specializing in problems of (under)development. In particular, a substantial body of works in this area has explored elite capture (for literature surveys see [39] [42]), distortion of political accountability through lobbying and cronyism that impede the choice of pro-poor policies and divert resources to elites, as a possible cause of underdevelopment. A related channel of institutional distortion, 'clientelism', quite pervasive in developing countries, (seminal study by Scott [48]) has also come to focus relatively recently ([12], [5], [51], [50]), the emphasis of these studies is predominantly on *political clientelism* though (Bardhan and Mookherjee [13] provide a very recent exhaustive survey).

(Political) clientelism refers to private transfers made by a section of elites (patrons) to a section of poor and disadvantaged group (clients) as a means of securing their political support, while facing political competition from other sections of elites. Elite patrons control government, promote benefits to their clients in a quid pro quo arrangement but leaves governance largely in the interests of the elites. Ruling patrons favour this institutional distortion because private transfers to their clients are typically cheaper than public good provision and implementation of broad-based redistribution programmes (like land reform). Clients, however, receive only short term gains at the cost of long-run development. Moreover private transfers, which are inherently discretionary (rather than programmatic) create horizontal inequity and impede collective action by the poor which in turn reinforces the stability of clientelistic distortion [15]. Clientelism, in general, is understood as such a quid pro quo structure with asymmetric power relations, but not necessarily confined within the sphere of formal political support with respect to the patrons.

The motivation behind this paper is what we reckon to be a couple of gaps in analyzing impact of institutions on development outcomes *in general* and that for clientelistic institutions *in particular*.

First, recall that usually, in economics of institutions, variations in institutions are conceptualized either as an outcome of the persistence of history (for instance [10] and [34]) or as some exogenously imposed change in the system (e.g. [20]): examples being the existence or otherwise of bodies for rural local governance (called *panchayats* in India), existence or otherwise of

a formal market within a village, rules of entitlement to land-ownership etc. We reckon that such conceptualization of institutions is more *formal* in nature. Mere existence of a market does not entail freedom to trade (especially if clientelism is present: for instance, Anderson et al. [5] show that in a part of rural India clients depend on their patrons for access to trading network, which is controlled by the dominant caste). Similarly, mere existence of electoral bodies and rulebooks governing them does not imply the existence of democratic political processes (see for instance [37]). Therefore, we consider it to be more illuminating to measure the nature and/or quality of institutions from data on the personalized day-to-day interactions of agents in the spheres of economy, society and politics.

Next, for analyzing clientelistic institutions in particular, Anderson et. al. [5] observe that 'A problem with assessing the clientelism hypothesis is the difficulty of observing it. Poor governance may arise for a number of reasons, and omitted unobserved factors may lead both to local elites running the political show and poor governance outcomes, without a causal link'. Moreover, household surveys meant to study political clientelism, directly asking questions on vote buying and political support, are likely to suffer severely from underreporting and misreporting. Thus, work on clientelism, so far, have primarily relied on indirect evidences[1]. For instance, Anderson et. al. [5] use variation in landholding and population of the dominant caste across villages in Maharashtra (a state in India) to predict when clientelism is more likely to arise. Bardhan and Mookherjee [12] rely on a dummy election conducted by the authors (as part of a household survey) to measure political support for the ruling party and relate it to private transfers received by a household. Stokes [49] also measures clientelism through reported instances of vote-buying in a household survey. Wantchekon [51] uses a field experiment in collaboration with political parties and found that clientelistic poll promises have significantly higher voter support than broadbased policies. Though these papers are extremely valuable in understanding the nature and impact of clientelism, all of them have primarily relied on indirect evidences and proxies of clientelistic practices.

Our paper aspires to fill these gaps. We offer a novel conceptualization of institutions that eases quantification and especially helps us to identify the variation and extent of rural clientelistic institutions (not merely confined to 'political' clientelism) in a *direct* manner. Then we explore one example of

[1]There are many case studies, see [38] for an overview.

the possible impacts of such institutional variations.

As mentioned above, our starting point is the data (in the form of a multi-dimensional directed network for each village) on the *personalized day-to-day interactions* of agents in a village in the spheres of economy, societal living and politics[2]. We conceptualize variations of institutional structure, in particular that of clientelism, in the structure of these possible multidimensional dependences in the spheres of economy, society and politics. We seek to explore whether such dependence (well-defined in the body of the paper below) is concentrated on a few entities dominating over a good many of the households or whether this is distributed in a sufficiently diffuse manner. Moreover, our emphasis is on such dependence at *local* level, roughly at the level of the villages of interest and the neighbouring villages and town(s).

Therefore, in our household surveys we gathered information on links each sample household (abbreviated as HH often hereafter) has for help in spheres of day-to-day economic interactions (like whom the HH primarily depends on for getting productive inputs, for selling of outputs if any, for informal loans etc), social interactions (like whom the HH primarily approaches for advices

[2]In his seminal paper on clientelism Scott [48] clearly demarcates this difference between formal institutional rules and informal personalized mesh of interactions creating the de-facto institutional structure: 'Students of politics in the new states of Africa and Asia...have been struck by the relative weakness both of interest structures to organize demands and of institutionalized channels through which such demands, once organized, might be communicated to decisionmakers. The open clash of organized interests is often conspicuously absent during the formulation of legislation in these nations'. Machine politics (Scott uses this term for political clientelism) instead is based on 'myriad of act that symbolized its accessibility, helpfulness and desire to work for the little man. The machine boss represented a patron of those at the bottom of social pyramid. Given its principal concern for retaining office, the machine was a responsive, informal context within which bargaining based on reciprocity relationships was facilitated'. Meiksins Wood [52] also emphasizes this difference while distinguishing between institutions. She observes '...only capitalism has a distinct economic sphere. This is so both because economic power is separate from political or military force and because it is only in capitalism that the market has a force of its own, which imposes on everyone, capitalists as well as workers, certain impersonal systemic requirements of competition, accumulation and profit-maximization...Although the sovereign territorial state was not created by capitalism, the distinctively capitalist separation of the economic and the political has produced a more clearly defined and complete territorial sovereignty than was possible in non-capitalist societies. At the same time, many social functions that once fell within the scope of state administration or communal regulation now belong to the economy'. Numerous case studies ([38], [35], [17]) also verify that clientelism depends on a dense network of economic-social-political interactions between patrons and clients.

on family matters and disputes, religious matters etc) as well as political ones (like whom the HH accompanies to political events, if any etc). Using this information on multidimensional linkages of our sample HHs on other HHs or entities[3] we define some variants of consequent derived unidimensional *dependence* networks for each village. The main underlying principle for constructing these dependence networks is that a (HH) node A is 'dependent', that is, has a directed edge on another node B if and only if A depends on B sufficiently strongly (in a well-defined manner the details of which are given in Section 3) and the converse is not true. An entity with sufficiently many such dependents is called a local *elite*. A village having at least one local elite is called an *elite village*. We call a HH which is dependent on a local elite a *client*. We also construct another measure of local institutions: an index measuring the presence and intensity of such elite-client dependence. This index of "elitism" (below we often call this 'elitism score'), of course, is zero for villages with no local elites. We consider several variations of this main underlying idea. A point we would like to emphasize here itself is that since the outcome variables of our empirical analysis are measures of access to MGNREGS jobs, we have not included the service-item of any help for securing such jobs while constructing the networks of dependence.

Thus, the novelty of our conceptualization is that with our method of direct measurement, institutional framework prevailing in a village is not given by merely the existence of any exogenously specified rule or body; *it is an aggregate outcome of everyday interactions of the general population within the village*. Moreover, unlike, e.g., in Banerjee et al. [9] we do not ask the respondents something like 'who the important persons in the village are as per their impression' upfront. Rather, we derive the set of such 'important' entities from the revealed behaviour of the respondents themselves in several spheres of their actual lived experiences. We also do not rely on direct queries on vote buying and corruption, which to a large extent mitigates the problem of underreporting and misreporting.

We collected data from 36 sampled villages in three states of India (Maharashtra, Odisha and the (eastern half) of Uttar Pradesh (UP)) using personal interviews at the HH level[4]. While we outline the details of our sample design

[3]As service providers we considered non-household entities like church committees also, but when we have worked with local elites below, we confined our attention to human entities only.

[4]The first phase of the HH survey, covering mainly Odisha and Maharashtra, took place during March-April, 2013 and the second phase, covering mainly UP, took place in

in Appendix C at the end, here we make a few introductory remarks on the choice of these states. First, these states are located in three parts of India: Maharashtra in the west, Odisha in the east and UP in the northern part. Next, each of these are major states with each having a major language. Further, with these states, we could get presence of several historical patterns of administrative and land-revenue systems of the colonial period–permanent settlement, princely states, taluqdari systems, ryotwari system–which have been shown to have affected the development of post-colonial institutions, and in turn, economic outcomes.

One noticeable feature of what we call (and found from our data) an elite village is that such a village consists of a small number of persons (in our data we find them to be usually less than four or five) who have control over a number of households in terms of crucial economic dimensions (like providing credit or employment) and very often these same persons dominate in the spheres of social interactions as well as in political arenas around the village. In many cases the village *sarpanch/pradhan* (the head of the rural local government, chosen through elections every five years) happens to be *one* such person. Very similar institutional features are corroborated by Ananthpur et al [4] in their micro-study in Karnataka (an Indian state different from the ones from which we collected data).

To illustrate the underlying incentive structure of clientelistic distortion we construct a theoretical model of clientelism (which has some flavour of political clientelism). One of the channels through which private transfers to clients can be made is allocation of MGNREGS jobs[5]. Job allocation under this scheme to the different HHs in a village is controlled by the village panchayat and therefore, the local elites should have a good deal of power in determining who might get jobs under this scheme (a point emphasized in [4] as well). However a theoretical model of clientelism must resolve the issue of the 'two-sided commitment' problem. How does the patron keep voters from reneging on the implicit deal where s/he distributes jobs and the client supports her/him? On the other hand how do clients ensure that

November-December, 2013. Details of the sample design can be found in Appendix C.

[5]As is well known, the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), perhaps the largest workfare programmes in the world initiated in 2006, is supposed to provide a maximum of one hundred days of unskilled manual work to each rural household in India (at a government stipulated minimum wage) on demand. We refer to the official website of this scheme- http://www.nrega.nic.in/netnrega/home.aspx for details.

the patron continues providing favours once he is elected? Unlike pervious attempts ([5], [47]), in our model we do not rely on ethnic/caste ties to solve the commitment problem[6]. In our model, as in our conceptual framework, clients have potential multiple dependence on their patrons. A patron does not renege on his job allocation promises to protect his return from other channels. Clients also vote for their patron because they know that the patron has incentive to keep his job allocation promises. We show that clientelism through job allocation can persist even when landowners (distinct from patrons or elites) are opposed to MGNREGS implementation (because it increases agricultural wage). However, if either outside opportunities or countervailing power of landowners prove sufficiently strong then clientelism breaks down in equilibrium.

Finally, we test some of our theoretical conjectures using our primary survey data. These are: $(i)$ clients of elites have better access to MGNREGS employment (measured as ever having received MGNREGS employment as well as the number of MGNREGS job-days in the last 12 months prior to our survey) than non-clients and $(ii)$ a household in an elite village (village where patron-client relationship is present), on average, has higher access to MGNREGS employment than a household in a non-elite village. We find that indeed, with one standard deviation increase in intensity of 'elitism' in a village (the value is 0.46) probability that a HH has ever worked in MGNREGS, increases by 0.12. Then we confine attention only to villages with local elites and find that in comparison to a non-client HH, a client HH has 9% higher probability of getting MGNREGS jobs ever as well as 40% more job-days in last 12 months. In other words, the kind of local institution that we measure seems to make a difference and the channel we have explored is one of the channels through which such an institution seems to be associated with development-related outcomes.

As we discuss in detail in Section 5 below, this work contributes not only to the literature on (clientelistic) institutions, but also to the bodies of literature on some other themes as well.

Section 2 contains the theoretical framework and analyses. Section 3 provides details of how we measure the local institutional characteristics. Section 4 presents our empirical analysis - this includes description of our data, main results and various robustness checks. We survey some important items of

[6]Though ethnic/caste ties can indeed ease the commitment problem. Our empirical results also indicate this effect.

the related streams of literature in Section 5 and highlight the possible novelty and significance of our contribution in light of those. Diagrams and Tables are collected at the end followed by the Appendices.

# 2 Theoretical Framework

In this section we construct and analyze a theoretical model of clientelism, where elites, who control socio-political institutions of the village, can allocate MGNREGS work to their clients as a tool for extending patronage, in return of their political support in election or village administration[7]. While the model does not attempt to capture *all* the complexities of our conceptual and empirical characterization of elites and clients outlined in the introductory section; its aim is to illustrate rigorously the *fundamental* aspects of our idea: that elites' interactions with clients via interlinked transactions helps in resolving the "two-sided commitment" problem even in a static framework (in contrast to, e.g., Gallego [27]) and items like MGNREGS jobs are useful as a tool for extending patronage. Quite naturally, our model is embedded in the structural features of the rural areas of a developing economy: especially India.

The framework, detailed below, is a one-stage game with sequential moves with two politician-lenders, many labourer-borrowers and landlords who offer employment contracts to the labourers. The local rural politician-lenders, rich enough to extend credit to poor agricultural labourers, can secure their clientele by providing informal credit; and an equilibrium behaviour is such that each client, in return, votes for the respective patron with higher probability and the patron, if s/he wins the local election, provides public employment benefit to her/his clients when needed. The main underlying story which this theoretical exercise demonstrates is as follows: having reassurance of MGNREGS payment from the winner of the local election helps her client get a more favourable wage contract; thus, a client's probability of voting for his patron increases. And on the part of the elite/patron, providing MGNREGS payment to her clients is optimal as then she can get back at least a part of her loan even if her client faces an adverse income shock. Thus, the two-sided commitment problem is resolved.

However, our model also captures some richer relevant features. Since MGNREGS work provides a kind of labour market insurance to agricultural

[7]See [14] for some additional evidence along this direction.

workers and can potentially increase the agricultural wages[8] this squeezes agricultural profit and it is likely that large and middle peasants, who primarily live on agricultural profit, may oppose the implementation of MGNREGS (see [8]). Therefore equilibrium implementation of MGNREGS in a village (and hence the extent of clientelism) will depend on two opposing forces: landed peasants' opposition to its implementation and local political elites favouring it as a channel for patronage provision; and their balance of power in local institution. Our model also gives rise to other interesting comparative statics insights. We predict that extent of clientelism has non-linear relation with some development parameters. This is similar to Scott's [48] analysis–he claimed that clientelism proliferates at the initial phase of capitalist development and urbanization but further industrialization leads to decline of clientelism. We now formalize the above ideas.

## 2.1 The Model

There are four groups of players; each group is homogeneous.
Politician-lender: Two identical politician-lenders, who compete in local election. They also lend money to agricultural workers.
Agricultural workers: Size of agricultural workers is normalized to 1. They are employed by the land owners. They also borrow money for consumption smoothing. Agricultural workers are the voters in local election.
Landowners: Landowners employ agricultural labourers. We assume that landowners are small in size and are outsiders, that is, they can not vote in local election. However they can still influence the election by taking up campaign in favour or against a politician-lender.
Moneylenders: They also lend money to agricultural workers. However moneylenders are *not* active players in this model.
We postpone the specification of payoffs and discuss the sequence of actions by the different players first.

The game is composed of three phases in the following sequence - credit arrangement for the workers, local election and operations in the labour market.
Credit market: Agricultural workers borrow money either from the politician-lenders or from the moneylenders. Borrowing is not a choice; all workers

[8]Empirical studies seem to suggest that there has been a rise in real casual laborer wages due to MGNREGS, with estimates ranging from 4% to 8% ([33],[7]).

need to borrow 1 unit of money for consumption smoothing. As we shall see later that workers may (weakly) prefer to borrow from politician-lenders than moneylenders. This will be due to the possibility that politician-lender, while in power, can provide MGNREGS jobs to workers. However, we assume that when a worker is indifferent between the two options, he will borrow from a moneylender.

The game starts with the following decision by the politician-lenders. Two politician-lenders simultaneously choose the proportion of workers they want to lend money to, denoted by $s_i$ and $s_j$[9]. Those who don't get credit from politician-lender borrow from a moneylender. We assume that not only $s_i, s_j$ but the entire matching between politician-lenders/moneylenders and agricultural workers are observed by all agents.

Election: As we have mentioned already, landowners can not affect the outcome of the election directly. However they can provide campaign fund/effort to politician-lenders thereby having potential influence over the choice of $s_i$ and $s_j$. We ignore the collective action problem of the land owners. Therefore, for all practical purpose, we can assume that there is just one landowner. Campaign effort in support of politician-lenders $i$ and $j$ are denoted by $m_i$ and $m_j$ (which are non-negative real numbers) respectively.

Next, voters (that is workers) observe their individual 'loyalty shock'. This can be thought of as a measure of voter's non-pecuniary preference for politician-lender $i$ over politician-lender $j$ (perhaps resulting from candidate's position on non-economic issues)[10]. Loyalty shock is a real number drawn independently from a uniform distribution $[-\frac{1}{2}, \frac{1}{2}]$ [11]. We assume sincere voting (to be discussed below in greater detail). The loser of this election has no further role to play in our game.

Labour market: The labour market suffers from a moral hazard problem - a landowner cannot observe the effort chosen by a worker. However, landowner

[9]Note that workers are identical and hence politician-lender can not discriminate between workers. If $s_i + s_j > 1$ (size of the agricultural workers), then each get a proportional share. However, we shall make required assumptions to rule out such uninteresting corner solution.

[10]Note that if loyalty shocks are realized before the borrowing contracts are signed, a non-trivial matching problem between agricultural workers and political-lenders would arise. Our choice of timing will avoid this unnecessary complication, which is not central to our story.

[11]Range can be easily generalized to $[-\frac{1}{2\sigma}, \frac{1}{2\sigma}]$ and our results won't change. Non zero mean may have non-trivial implication as it breaks the symmetry between two politician-lenders.

can identify those workers, who have borrowed from the incumbent and if required they are handed out a different contract from the rest of the workers. A worker chooses between two effort levels, high and low, with associated cost $e$ and 0 respectively. Probability of a successful harvest depends on effort choice; probability of success when high effort is chosen is denoted by $p_e$ while the probability of success under low effort is denoted by $p_0$. Naturally, $p_e > p_0$. More detail of labour contract follows.

Once the harvest is realized, incumbent decides the size of MGNREGS relief, that is, he chooses the fraction of population (denote it by $n$) which will receive MGNREGS work. To simplify our analysis, we assume that only workers whose harvest have failed are free to work under MGNREGS. There is no other restriction on eligibility for MGNREGS work; in particular identity of the lender is not an eligibility constraint. Sanctioned MGNREGS fund $B(n)$ is smooth, strictly increasing and strictly concave function[12]; $B(0) = 0$ and $B'(0) = \bar{b}$. This implies that $\frac{B(n)}{n}$, per capita MGNREGS relief, is a decreasing in $n$ and $\lim_{n\to 0} \frac{B(n)}{n} = \bar{b}$.

We normalize the effort cost of workers on MGNREGS work to 0. MGNREGS payments and labour contracts are realized in the penultimate stage. Finally, workers make repayment and settle their credit contracts.

We describe the credit and labour contracts below.
Credit contracts: Both moneylenders and politician-lenders can only offer a limited liability contract and there is no collateral. Rate of interest is exogenously fixed. Recall that, both moneylenders and politician-lenders lend 1 unit. A worker, if his harvest is successful returns $r$ ($r > 1$) to the lender; otherwise if harvest is not successful, returns 0. Politician-lender, while in power, however differs from moneylenders in his abilities to provide MGNREGS relief. If MGNREGS relief is provided, the politician-lender can extract his dues from the relief payment.
Labour contract: If a harvest is successful, it generates a revenue $q$ for the land owners, while failed harvest generates no revenue. We also assume that labour contracts have limited liability. Therefore a worker is paid $w$ if the harvest is successful and 0 otherwise. Naturally $w$ is a strategic choice by landowners and as noted above may vary across type of workers - those having credit contract with the incumbent and the rest. Workers also have an outside option to work in non-agricultural sector. The wage (net of effort

[12]Although MGNREGS wage is fixed, we assume that number of sanctioned work-days and hence the total fund is an increasing and concave function of $n$.

cost) in non-agricultural sector is exogenously fixed at $\underline{w}$.

Payoffs of agents are as follows. All agents are risk-neutral.
Politician-lenders: Politician-lenders have two sources of income, namely, holding the political office and money lending. A Politician-lender earns a political rent $R$ if he wins the election and zero otherwise. We shall assume that $R$ is sufficiently large (Assumption A1). Politician-lenders also earn from the credit market. Recall that he lends 1 unit of money to an agricultural worker. With probability $p$ ($p$ can be either $p_e$ or $p_0$, depending on worker's effort choice), $r$ is repaid by a worker. In case of a harvest failure (with probability $(1-p)$), repayment is as follows. If the politician-lender wins election and if he offers MGNREGS work to a borrower then $\min\{\frac{B(n)}{n}, r\}$ is recovered; otherwise he gets nothing. We shall assume $\lim_{n\to 0} \frac{B(n)}{n} = \bar{b} > r$, otherwise (given limited liability credit contract) there is no incentive for workers to seek MGNREGS jobs.

Suppose that politician-lenders can earn an amount $\rho$ by investing 1 unit outside the rural sector. We assume that opportunity cost of capital for politician-lender is higher than that for rural moneylenders, that is, $\rho \geq p_e r$ [13]. Let $\bar{\rho}$ be the upper bound of $\rho$, thus $\rho \in [p_e r, \bar{\rho}]$.
Landowners: Recall that if a harvest is successful, it generates a revenue $q$ for the land owners, while failed harvest generates no revenue. A land owner maximizes his expected profit from production net of campaign effort cost, which is $\frac{1}{2}(m_i + m_j)^2$.
Agricultural workers: They earn from two sources - labour contract and MGNREGS jobs. As voters, workers engage in sincere voting. Following probabilistic voting models (for instance [29]), individual voting decision in our model will be influenced by following factors - expected payoff if candidate $i$ or $j$ wins[14], campaign influence and loyalty shock. Campaign influence in favour of candidate $i$ is given by $\alpha(m_i - m_j)$, where $\alpha$ denotes the effectiveness of campaign effort. The parameter $\alpha$ can also be interpreted as a measurement of clout of landowners. We assume $0 \leq \alpha \leq 1$.

[13] Those workers who have borrowed from a moneylender will choose high effort in equilibrium (to be illustrated later) and hence expected payoff of moneylenders is given by $p_e r$.

[14] similar to payoff from candidates' policy position in a probabilistic voting model.

## 2.2 Results

We are interested in *symmetric* subgame perfect Nash equilibrium of this game. As usual, we use backward induction to compute SPNE. Let us introduce a new notation at this point. Let $S_i$ and $S_j$ be the set the agricultural workers who have borrowed from political-lender $i$ and $j$ respectively. As mentioned before, measures of $S_i$ and $S_j$ are $s_i$ and $s_j$. Let $S_M$ be the rest of workers, that is those who have borrowed from a moneylender.

The last strategic choice is by the incumbent, who chooses $n$, fraction of population that will receive MGNREGS work. Without loss of generality, suppose that $i$ is the incumbent. By offering MGNREGS work to a worker in $S_i$ (that is those who have already borrowed from $i$), whose harvest has failed, $i$ recovers $\min\left\{\frac{B(n)}{n}, r\right\}$. Offering MGNREGS to a worker outside $S_i$ does not bring $i$ any extra payoff. Thus $i$ will offer MGNREGS work to only workers in $S_i$ and he will be indifferent between providing and not providing MGNREGS work to the rest. We follow equilibrium where only workers in $S_i$ receive MGNREGS work[15]. Since only those whose harvest has failed are eligible for relief, we have $n = s_i(1-p)$; $p$ can be either $p_0$ or $p_e$. Thus a politician-lender, once elected, favours his own clients for MGNREGS work over the rest. Credit market 'interlinkage' thus helps politician-lenders to solve their commitment problem.

Next we shall compute optimal labour contracts. Since MGNREGS benefits act as an insurance in the case of a harvest failure, optimal contact for members of $S_i$ - when $i$ is the incumbent - can differ from the rest. Note that, if harvest fails, then, by our assumption of symmetric action choices, a member of $S_i$ gets MGNREGS relief worth $\frac{B(s_i(1-p))}{s_i(1-p)}$. Due to limited liability, total repayment is capped at $\min\left\{\frac{B(s_i(1-p))}{s_i(1-p)}, r\right\}$. Let us introduce a new notation:

$$z(s) = \max\left\{\frac{B(s)}{s} - r, 0\right\} \text{ for all } 0 < s \leq 1 \text{ and } z(0) = \bar{b} - r$$

Note that $z(s)$ is continuous and weakly decreasing for all $s$. Let $\bar{s}$ be the smallest positive value of $s$ such that $z(s) = 0$. We shall assume that $\bar{s} \leq \frac{1}{2}(1-p_e)$ (Assumption A2).

[15] A small effort cost (towards implementation of MGNREGS work) on the incumbent can also be incorporated to break this indifference. It won't change our result.

First we find the optimal labour contract that will be offered to the members in $S_i$. The optimal contract will be designed in such a fashion that each member of $S_i$ finds it incentive compatible and individually rational to choose effort $e$. That is, when everyone else in $S_i$ except $k$ is expected to choose $e$, it should be optimal for $k$ to choose the same. This point is worth emphasizing because unlike the standard moral hazard model, utility of a worker here is dependent on other workers' choice through the volume of MGNREGS relief. Thus incentive compatibility constraint for members in $S_i$ is given by,

$$\begin{aligned} p_e\left(w-r\right)+\left(1-p_e\right)z\left(s_i(1-p_e)\right)-e \geq \\ p_0\left(w-r\right)+\left(1-p_0\right)z\left(s_i(1-p_e)\right) \end{aligned} \tag{ICW}$$

First line of this inequality represents the expected utility of an agent in $S_i$ when he chooses $e$: if a harvest is successful then he receives $w$ and repays debt $r$. Otherwise he receives MGNREGS relief worth $z(s_i(1-p_e))$. Similarly, the second line represents the expected utility of an agent in $S_i$ when he chooses 0 effort while other workers choose $e$.
Individual rationality of agent in $S_i$ is given by,

$$p_e\left(w-r\right)+\left(1-p_e\right)z\left(s_i(1-p_e)\right)-e \geq \underline{w}-r \tag{IRW}$$

where $\underline{w}$ is the wage (net of effort cost) in non-agricultural sector. We assume that outside payment is large enough to cover for the loan repayment that is $\underline{w} \geq r$.
(ICW) implies that $w \geq \left[\frac{e}{p_e-p_0}+r+z\left(s_i(1-p_e)\right)\right]$ and (IRW) implies that $w \geq \left[\frac{1}{p_e}\left[\underline{w}+e-r-z\left(s_i(1-p_e)\right)\right]+r+z\left(s_i(1-p_e)\right)\right]$.
We now compute the optimal contract for agricultural workers who have not borrowed from the incumbent. Incentive compatibility and individual rationality constraints are given by

$$p_e\left(w-r\right)-e \geq p_0\left(w-r\right) \tag{ICO}$$

$$p_e\left(w-r\right)-e \geq \underline{w}-r \tag{IRO}$$

Equation (ICO) implies that $w \geq \left[\frac{e}{p_e-p_0}+r\right]$ and Equation (IRO) implies that $w \geq \left[\frac{1}{p_e}\left[\underline{w}+e-r\right]+r\right]$. Following observations are immediate - $(i)$ if $w$ satisfies (ICW) then $w$ satisfies (ICO), $(ii)$ if $w$ satisfies (IRO) then $w$ satisfies (IRW)

We partition our parameter space as follows. Recall that we have already assumed $\underline{w} \geq r$.
$(i)$ $r \leq \underline{w} \leq \frac{ep_0}{p_e - p_0} + r$: In this zone, in the optimal contract, incentive constraint will be binding for agricultural workers who are not client of the incumbent. This follows from comparing lower bound on $w$ under (ICO) and (IRO). Moreover, incentive constraint will also be binding for clients of the incumbent, because (ICW) $\Rightarrow$ (ICO) $\Rightarrow$ (IRO) $\Rightarrow$ (IRW) (first and third '$\Rightarrow$' follows from our earlier observations).
$(ii)$ $\frac{ep_0}{p_e - p_0} + \bar{b} > \underline{w} > \frac{ep_0}{p_e - p_0} + r$ (Recall that $\bar{b} > r$): Since $\underline{w} > \frac{ep_0}{p_e - p_0} + r$, individual rationality constraint, that is (IRO), is binding for workers who are not client of the incumbent, while (ICW) is binding for clients of the incumbent.
$(iii)$ $\underline{w} \geq \frac{ep_0}{p_e - p_0} + \bar{b}$: In this zone, individual rationality constraints are binding for all agents. That is both (IRW) and (IRO) are binding. This follows from comparing lower bound on $w$ under (ICW) and (IRW).

We are now ready to state our main result. Under (A1) $R$ is sufficiently large[16] and (A2) $\bar{s} \leq \frac{1}{2}(1 - p_e)$,

**Proposition 1** *For every value of $\rho \in [p_e r, \bar{\rho}]$, we can find a cutoff on $\underline{w}$, denoted by $\underline{w}^\star$, such that for all $\underline{w} < \underline{w}^\star$ there exists an interior symmetric equilibrium where both politician-lender have a clientele. Clients are more likely to vote for their patrons and only those workers who have borrowed from the incumbent get MGNREGS work. For all $\underline{w} \geq \underline{w}^\star$ there is no clientelism in equilibrium. The cutoff is characterized as follows. If $\rho \leq \frac{1}{2} r(1 + p_e)$ then the cutoff is independent of $\rho$ and coincides with zone $(iii)$, that is $\underline{w}^\star = \frac{ep_0}{p_e - p_0} + \bar{b}$. For $\rho > \frac{1}{2} r(1 + p_e)$, cutoff $\underline{w}^\star$ is a function of $\rho$ and belongs to zone $(ii)$, that is, $\frac{ep_0}{p_e - p_0} + r < \underline{w}^\star < \frac{ep_0}{p_e - p_0} + \bar{b}$.*

Here we provide a quick sketch of the proof, Appendix A contains the full detail. In zone $(iii)$, both individual rationality constraints (IRW) and (IRO) are binding. Thus insurance of MGNREGS job does not play any role and given our assumption that indifferent workers will borrow from moneylenders, we can rule out clientelistic equilibrium. Therefore when outside option for workers is high enough, clientelism will disappear, irrespective of the opportunity cost of capital. In zone $(i)$, workers prefer to borrow from the politician-lenders because MGNREGS job provides insurance. Since a

[16] See Appendix A for a lower bound on $R$.

politician-lender does not renege on his commitment after winning an election, clients also prefer to vote for their respective patron. As a consequence, probability of winning the election increases in $s.z\left(s(1-p_e)\right)$. A politician-lender has an incentive to increase $s$ as far as it increases winning probability through $s.z\left(s(1-p_e)\right)$. However, an increase in $s$ may increase his losses in the credit market. These two opposing forces determine the client size in equilibrium. Intuition for zone $(ii)$ is similar to zone $(i)$ but has an important difference. Since individual rationality constraint (IRO) is binding in this zone, extent of MGNREGS insurance benefit and hence winning probability decreases with an increase in outside opportunity $\underline{w}$. Thus we obtain a cutoff on $\underline{w}$ above which clientelism disappears in equilibrium. Naturally, higher the opportunity cost of capital, lower is the cutoff.

Proposition 1 also illustrates the impact of outside opportunities on equilibrium outcome. Let us now add how the clout of landowners ($\alpha$) play an important role. Observe that in zone $(i)$ (similar argument in zone $(ii)$) incentive constraints are binding for all workers, which means clients of the incumbent get $\left[\frac{e}{p_e-p_0}+r+z\left(s(1-p_e)\right)\right]$ in case of a successful harvest while others get only $\left[\frac{e}{p_e-p_0}+r\right]$. Thus landowners have to pay an extra wage bill of $s.z\left(s(1-p_e)\right)$ and consequently they campaign for the politician-lender with lower $s.z\left(s(1-p_e)\right)$ value. Naturally, given such tradeoff, effectiveness of campaign parameter $\alpha$ affect the equilibrium client size. However, unlike outside opportunities parameters $\rho$ and $\underline{w}$, clout parameter $\alpha$ does not have a linear relation with equilibrium outcome. If $\rho$ is sufficiently small, credit market gains tempt the politician-lenders to expand the client size although it reduces winning probability. Here an increase in the clout of landowners make credit market gains more attractive and increases client size. The opposite happens when opportunity cost of capital $\rho$ is high; equilibrium client size decreases in $\alpha$. These results are reminiscent of Scott's [48] scheme of institutional development - he argued that clientelism increases at the initial phase of capitalist development and urbanization but further industrialization leads to decline of clientelism. Our results are also consistent with the historical pattern of institutional changes in India. While land ownership gradually shifted from landlords to rich farmers and increased their influence in rural society (particularly after green revolution), outside opportunities for investment and employment have remained relatively stagnant. These economic preconditions along with electoral competition and increasing possibility of

rent extraction through local governance may have led to proliferation of clientelism in India.

Proposition 2 compiles our comparative statics results; a proof can be found in Appendix A.

**Proposition 2** *Let $s^\star$ be the equilibrium size of clientele in symmetric equilibrium. (a) Everything else remaining the same an increase in $\underline{w}$ decreases $s^\star$. (b) Everything else remaining the same an increase in $\rho$ decreases $s^\star$. (c) An increase in $\alpha$ increases $s^\star$ when $\rho \leq \tilde{\rho}$ and decreases $s^\star$ otherwise. In zone (i), $\tilde{\rho} = \frac{1}{2}(1+p_e)r$ and in zone (ii), $\tilde{\rho} < \frac{1}{2}(1+p_e)r$.*

We end this section with a few comments on our theoretical structure and assumptions. First, we chose to model the agricultural labour market as a principal-agent problem rather than as a spot-market. We admit this does not tally entirely with ground realities within India. However, the principal-agent set up can be a useful short-hand for capturing (possibly performance-based) complexities that can not be explained by a spot-market modelling. Here are a few such examples: agricultural wages typically depend on type of task - number of days a household gets employment in a particular type of task vary across households; landowners delay payment or extend advance payments at their discretion etc. Next, our model uses MGNREGS jobs as a possible channel of patronage provision. However it must be noted that it is *one of many possible channels*; we are far from implying that clientelism arises as a by-product of the MGNREGS programme or that it will disappear if MGNREGS is rescinded! Finally, we repeat that our model (and empirical results) is not intended to capture welfare implication of clientelism; therefore we ignore its impact on public good provision, accountability of elected representatives etc., in this paper.

# 3 Local Institutional Structure: Dependence, Elites, Clients

Conceptual formalization and quantification of 'localized dependence' is quite rare in Economics. Our formalization is based on the following core components. First, dependence is embedded in mundane day-to-day activities, both economic and socio-political. Accessing inputs of production, market access for produced goods, dispute resolution and participation in political process

are a few examples of such activities. The second aspect of dependence is *personalized interaction*. This is distinct from formal institutional interactions. Borrowing from banks, approaching police station for dispute resolution etc. are instances of formal institutional interactions, while borrowing from informal lenders, approaching local political leaders for dispute resolution are personalized interactions. These two aspects together imply that the dependence structure we are exploring is *essentially* localized in nature. Finally, in our conceptualization, high concentration and interlinkage of dependence links are indicators of stronger localized power.

Recall that the primitives in this context in our set-up are the households' links for getting help in social, economic and political spheres. If HH $M$ receives an economic, social or political service from HH $N$, then HH $M$ is said to have an **outgoing service link** to household $N$. We also classify outgoing service links into two groups - *crucial and non-crucial*, based on their relative importance. This classification is based on our own perception and judgment. For instance, a service-link of seeking advice for resolution of household disputes is categorized as non-crucial whereas seeking advice for profession-related disputes is categorized as crucial. Admittedly, this classification is subjective but not arbitrary. The full list of services, classified as $(i)$ economic/social/political and $(ii)$ crucial/non-crucial can be found in Table 2.1. Since we ask survey households whether such services are reciprocated, we also have data on outgoing links from Household $N$ to Household $M$. In case Household $M$ is also part of our sample, we have some opportunity of an independent verification of such claims (we could not make such cross-verification *in general* though)[17]. We repeat that since the outcome variables of our empirical analysis are measures of access to MGNREGS jobs, we have not included the service-item of any help for securing such jobs while constructing the networks of dependence.

Note that, in the primitive network data outlined above, there can be multiple such service-links between two nodes: i.e., households. A next step toward quantifying the institutional structure we aggregate these possible multiple dimensions to a single dimension, called **dependence-connection**. To capture relative strength of dependence relation, we classify dependence-connections into three types.

Type $A$: HH $M$ is said to have Type $A$ outgoing dependence-connection to

[17]In case of mismatch, though such instances are rare, claims of the household which has received the service is accepted.

HH $N$ only if $M$ has exactly one crucial outgoing service-link to $N$. A single non-crucial link is unlikely to be an indicator of clientelistic relation.
Type $B$: HH $M$ is said to have Type $B$ outgoing dependence-connection to HH $N$ only if $M$ has at least two outgoing links to $N$ that are of similar kind, either all economic or all social or all political. This captures interlinkages in received services *of similar kinds*.
Type $C$: HH $M$ is said to have Type $C$ outgoing connection to HH $N$ only if $(i)$ $M$ has at least two outgoing links to $N$ and $(ii)$ not all of them are similar kind (economic/social/political) of services. This captures interlinkage in *different* spheres of daily/usual interactions.

The resulting *network of dependence connections* (with HHs as the nodes) is the next tool for our formalization of institutional structure. Since (clientelistic) dependence should be conceived as an asymmetric power relation (in contrast to a reciprocal relationship like friendship), we exclude all bilateral, mutual outgoing dependence-connections from this network.

Our crucial conceptual tool is that of *dependence*: HH $M$ is said to be **dependent** on HH $N$ if $(i)$ HH $M$ has an outgoing dependence-connection of at least one type to HH $N$ and $(ii)$ HH $N$ does not have any outgoing dependence-connection to HH $M$. This completes our description of (weighted, directed, single dimensional) network of dependence relations. *One important point to emphasize is that in this final network of dependence relations some nodes may be (and in general, are) present who are outside the set of the sample HHs we interviewed and in some cases, these node HHs may not reside even in the sample village itself. But these additional HH nodes are still local, because, by the nature of the service links we investigated, their physical location is usually in a near-by village or a near-by town.*

Next we use this network of dependence connections to identify the presence and pattern of clientelistic instituions of sampled villages. If a clientelistic institutional structure is present then that should be characterized by patrons and clients. It is expected that clients will be dependent on patron(s) for various (often interlinked) services and a number of clients will be dependent on a patron. Thus, one or more 'hub and spoke' type (sub-)networks are expected to be present in such villages. To this end, we define a patron, called **elite**, as follows. If more than five percent of the sampled households are dependent on a household X then X is potentially an important patronage-provider in the village and is called an elite. Presence of at least one elite for a village captures concentration of dependence for the village concerned. A household which is dependent on at least one elite is called

a **client**. Any household, which is neither a client nor an elite will be called a **non-client**. In Diagrams 2.1 and 2.2 we plot dependence-connection network of two of our sample villages, one with presence of elites and another without. The status of being a *client* will be one of the most important explanatory variables in our subsequent analysis.

On a few rare occasions, an elite HH J was found to be dependent on a HH K, while the HH K did not initially qualify as an elite HH (because of having too few dependents of its own). We call such HHs like K's, having an elite HH as dependent, *super-elites*. Any *non-elite* HH dependent on a super-elite HH is also considered as a client HH.

A few comments are due at this stage. First, a remark on how we chose the sample HHs in the villages for interviewing (the details of our entire sample design is described in Appendix C). In villages where the total number of households was less than 100 all households were selected for survey. In each village where the total number of households was more than 100, upto 110 households were selected using simple random sampling. The sampling frame used was the most recent electoral roll for those villages. The target was to interview at least 100 households in each village and at most 110 households. In some cases, due to attrition, non-response etc with the initially chosen sample of HHs, additional households were selected from the remaining households in the village again using simple random sampling to reach the target sample size. Next, this implies that for several of our sample villages, we did not conduct survey for *each* of the HHs. Many of the HHs reported that they received services (of one kind or another) from HHs or entities who are local, but residing in a near-by village or in a town nearby; *not necessarily in the sample village itself*. For these reasons, we only see the village dependence networks *partially*. We can not rule out presence of additional hubs in dependence network and our elite-client identification could be incomplete. Thus, it is possible that some households in our sample who justifiably can be called clients are getting incorrectly categorized as non-clients. Thirdly, our derived *dependence*-network and the central characterizing variables (elite/client) for the nodes being somewhat complicated, we do not have any correction for sampled links (as in [19]). Therefore, in our regression analysis below, while "client"-status is often our central explanatory variable of interest, we run identical regressions replacing whether a HH is client or not by the feature whether *a sample HH is at all dependent or not on another HH* (in the Tables, if a HH M has a dependence connection on a HH N, we mention N as a 'patron', distinct from an 'elite').

Note that for ascertaining the *dependent*-status of a HH (or otherwise), unlike that for client-status, we do not have to take care of the *entire structure of the possible (and unobserved) dependence network*. Throughout our empirical analysis below, **dependent**-status of a HH is used as a proxy for the variable representing clientelistic connection. We name this dummy "dependant" in the Tables showing the empirical results. Moreover, in some regression specifications, we use **degree of dependence** as another alternative to client/non-client categorization. Degree of dependence of a Household $M$ is the total number households on which $M$ is dependent, irrespective of whether the service provider is an elite or not. Formally, *degree of dependence* of Household M is defined as $D_M = |\{N|$ HH M is dependent on HH N $\}|$. This is yet another (imperfect) proxy, as, if the degree of dependence of a HH goes up, its propensity of being a client is expected to go up. Fourth, other than mutual dependence, higher order directed cycles are rare in our village networks. Therefore centrality measures (see, for instance, [31]) are somewhat superfluous for our purpose and we choose to stick to the simple definition of elites described above.

Finally, we introduce a weighting scheme to characterize further the institutional structure of a sample village. This completes our description of the ingredients of the dependence network for a village. Interlinkage of service provision in multiple types of spheres is assigned the maximum weight, followed by interlinkage in one sphere only and that by only one crucial dependence-connection. Formally,
$W_{MN} = 3$: $(i)$ HH $M$ is dependent on HH $N$ and $(ii)$ $M$ has Type $C$ outgoing dependence-connection to $N$.
$W_{MN} = 2$: $(i)$ HH $M$ is dependent on HH $N$ and $(ii)$ $M$ has Type $B$ outgoing dependence-connection to $N$.
$W_{MN} = 1$: $(i)$ HH $M$ is dependent on HH $N$ and $(ii)$ $M$ has Type $A$ outgoing dependence-connection to $N$.
otherwise, $W_{MN} = 0$

To measure the *intensity or pervasiveness* of patron-client-type institutional structure in a village we use the following index, *Nclscore*, for each sample village:

$$Nclscore = \frac{1}{n} \sum_{\{i|i \text{ is a client of elite } j\}} W_{ij} \ ,$$

where $n$ is our sample size for that village and $W_{ij}$ is described as above. Note that the we are adding weights only over links where $i$ is a client of an

elite $j$. Intuitively, we ignore all dependence links where the service provider is not a hub of the dependence network. Naturally, those villages where there is no such hub: that is, there is no elite, have $Nclscore = 0$. We use $Nclscore$ (written also as *elitism score*) as an index for measuring 'degree of elitism' in a village. Table 2.2a provides the frequency distribution of $Nclscore$ by state. In our empirical analysis we do some robustness checks of our results by changing the weighting schemes for the connections. In Table 2.2b we provide the distribution of the average number of dependence connections for the villages. The median of these aveages is 0.57.

As Table 2.2a shows, in our sample 14 villages have no-elites and 22 villages have at least one elite. We have identified 61 elites and 481 clients in those 22 villages. Table 2.3 documents a few characteristics of elites and clients . Here caste, religion and occupational information of elites are based on household reports (and therefore, for some, some items of information are missing). Table 2.3 underscores the asymmetric nature of dependence connections. Most of the elites are either upper caste or OBC whereas most clients are SC, ST and OBC. Elites are mostly engaged in farming and business whereas almost half of the clients are labourers. We underline that our dependence network is quite different from other social networks (for example friendship) that have homophily as a primary feature.

# 4 Empirical Analysis

## 4.1 Data Description

In this subsection we provide a short description of the survey data used and the details of the outcome and explanatory variables in our analysis.

MGNREGS provides a maximum of 100 days of unskilled manual work to each rural household at a government stipulated minimum wage. We consider two indices of access to MGNREGS employment: the outcome variable of our interest; (i) number of days a household had MGNREGS employment in the year prior to our survey (to be precise, within 12 months before our survey) and (ii) whether a household has ever participated in MGNREGS work since its inception. We call these indices *wdaysnum* and *wdaysever* respectively. We have *wdaysever* data for our entire sample but *wdaysnum* only for the first phase of our survey, that is for the villages in the states of Maharashtra and Orissa. This is due to a change in survey question in

the second phase where instead of asking the exact number of days worked last year, we used intervals. So, we excluded the villages of UP from the estimation of *wdaysnum* models. Table 3.1 and Diagram 3.1 provide the descriptive statistics of MGNREGS employment for our sample by client status. Note that 66% of all client households have worked in MGNREGS at least once, whereas only 33% non-client households have ever worked in MGNREGS. In last 12 months prior to our survey, clients received about 16 days of MGNREGS work, while non-clients got 7 days of work, on average.

MGNREGS work is supposed to be available on demand. However, it has been widely documented that the program is not demand-driven *in practice* (see, e.g., Dutta et al (2015; [26])). In any case, to control for demand-side factors we use various household and village characteristics in our regressions. Below we provide the list of explanatory variables, other than the central institution/network-related ones which we have already discussed in the previous section.

*Caste/Religion* of a household: As caste and/or religion of a HH can influence access and opportunities in India, we control for caste/religion in our models. We classify the various castes/religion into five categories. Hindus are divided into three categories 'Lower' (including SC (Scheduled Castes), ST (Scheduled Tribes), NT (Nomadic Tribes)), 'OBC' (Other Backward Classes) and 'Upper' (Brahmin and other 'general' upper castes). If a household has reported *jati*-name instead of the above categories we match that with administrative lists of SC, ST, NT and OBC lists for the corresponding states and districts. For religion, we use self-reported religion. Since apart from Hindu and Muslim, there are very few households of other religions, we use 'Muslim' as our fourth category and club all other religion as 'Other'.

We use several variables to capture the economic condition of a household. These are, land ownership, an index of non-land assets and the (self-reported) main occupation of the HH. Amount of *land* owned by a household is measured in acres. *Non-land* asset for a household is measured by aggregating indicators of 6 types of asset-items so that the score for each household varies between 0 and 6. These six items are ownership of a *pucca* house for residence in the village, (additionally) owning a house in a town or a city, possessing television, possessing some kind of automobile, having expensive bed (*palang*) in the premises and owning trees.

Households reported on its main occupation from a list of six broad categories: farming, artisans or having a production-unit like a factory, shop-

keeper or running a business of some type, working as labourers, working at an office for a salary, collecting and selling forest products, other. Most commonly reported categories were farming and working as an agricultural or non-agricultural labourer, followed by business/factory/ production unit and/or salaried position; to a small extent occupations like collection of forest product and somewhat casual types of jobs as working as a priest etc. We classify the main occupation (self-reported by the HH) into two categories: stable and other. *Stable* occupation includes running a business/factory/ production unit and/or salaried position in some organization.

Further, availability of informal insurance is captured through a *remittance from outside* variable. This is a dummy, which takes the value 1 if someone living outside the village sends money to the household.

Since MGNREGS work involves only unskilled manual labour, presence of less-educated but able-bodied members in a household who may not get an opportunity to work in the formal sector, can be an important demand-side factor. We use number of household members between age 16 and 60 years and educated up to secondary level at most, as an indicator for this determinant. Naturally, education is also important for awareness of a household about its legal rights as well asabout government schemes. We use the level of the maximum education among all the members of a household as the corresponding explanatory variable. This can take three values in our model: up to higher-secondary level (pre-university) education, undergraduation or equivalent degrees and above undergraduation.

Apart from its position in the dependence/clientelistic network, a household may have other formal and informal channels through which it may affect collective decisions. Membership of formal institutional bodies such as political parties and offices of local government, capacity to organize collective actions, can, presumably, earn a household a larger share of MGNREGS work compared to others. We use three dummy variables to capture these channels. First, *socio-political influence*, which takes the value 1 if a household has at least one member who either is (was) a member of local government or is a member of a political party/labour union. We also use two more dummy variables to capture the 'voice' of a household in community matters. The variable *advice given* takes the value 1 if a household mediates in community disputes, while *experience with local administration* takes the value 1 if a household has experience of visiting administrative offices or other such formal institutions.

We also control for some village level characteristics likely to affect our

dependent variables. Information on some of these were collected in the short village survey we conducted in each village simultaneously with the household surveys in that village. Some other items of data have been taken from the Census of India, 2011 or other governmental sources. Village characteristics used in our regressions are as follows: *distance to town* (distance to the nearest town measured in km), *average rainfall* (average rainfall in the neighborhood of the village measured in mm), *irrigation* (the net sown area of the village which is irrigated) and *percentage labour* (percentage of households in the village for which agriculture and/or working as agricultural labour is the main occupation).

A summary list of all variables used in our estimations along with a short description for each can also be found in Appendix B.

Our initial sample consisted of all 36 villages for estimation for the dependent variable *wdaysever* and 24 villages in Maharashtra and Orissa for *wdaysnum*. While the interview for each HH was conducted with the (self-reported) head of the household, in a few cases, when the head was not likely to be present in near future, another household member responded on her/his behalf. We checked the age and gender of the respondent and found that if the respondent was female as well as below 18 years of age, then items of information missing were significantly higher. Therefore, we excluded from our set of sample HHs the units for which the respondent is female as well as aged less than 18 years of age as they seemed not to have been well-informed about the household. For HH level regressions below, we also excluded the elite and super-elite HHs from our sample. Finally, we excluded all HHs for which any of the dependent or explanatory variables was missing. Additionally, restrictions are imposed for testing Hypothesis (i) (see below).

## 4.2 Empirical Results: Association between Clientelistic Institutional Structure and MGNREGS Jobs

In this section, we use our measures/indicators of institutional characteristics as identifiers of the structure of power in surveyed villages and examine whether some of our theoretical predictions are supported empirically. Villages, where dependence connections are pervasive and elites are present, we would expect a small group to exercise control over resources and local government. In contrast, absence of elites and scarcity of dependence con-

nections are indicative of diffused power structure, which is consistent with a control of relatively larger group of rich and middle peasants.

We have already mentioned that MGNREGS work is usually planned and executed by the local government and the bureaucratic personnel. Although peoples' participation in planning through gram-sabhas (village meeting of the local government) is recommended and work allocation is supposed to be demand-driven, in practice, common villagers have very little control over the process (see, for example, [32]). A deserving household, in practice, is not guaranteed to receive MGNREGS work and MGNREGS job-cards (unlike, say, the BPL (Below Poverty Line) cards, for subsidized food-grains and items of grocery) do not furnish any entitlement, but are used to keep records only. Moreover, since the scheme was *supposed* to be demand-driven, there is also no mandated rationing rule for allocation of MGNREGS work to households. It is quite possible that some households are offered MGNREGS work every year while others are denied. These features, along with the perishable nature of the benefit (unlike, say one-time grants) make MGNREGS jobs highly conducive for clientelistic transfer.

Our theoretical framework led us to the following hypotheses

(i) In villages where patron-client relation is pervasive, a client is likely to get more MGNREGS work in comparison to a non-client;

(ii) On average, a resident is likely to get more MGNREGS work in a village where elite-client relation is more pervasive.

**Hypothesis** $(i)$:
For analyzing the impact of being a client household on getting MGNREGS employment, we restrict our sample to the elite villages (recall that there are 22 such villages), that is to those villages with at least one elite (and hence clients). This restriction is required because we want to measure the impact of being a client in securing MGNREGS jobs in comparison to being a non-client within the same institutional environment of an (elite) village. Moreover, again to ensure that a village has some non-negligible implementation of the MGNREGS programme, we restrict our regression to those villages for which *wdaysever* (similarly for *wdaynum*) takes non-zero values for at least 5 households. This restricts our sample to 21 villages (out of the 22 elite villages) for *wdaysever* and 11 villages (out of the possible 14 elite villages

in Maharashtra and Odisha) for *wdaysnum*. The basic regression equation has the following form

$$y_{ij} = \beta_0 + \beta_1 client_{ij} + \alpha_2 X_{ij} + \alpha_3 Z_j + \varepsilon_{ij} \quad (1)$$

where $client_{ij}$ is a dummy variable which takes value 1 if households $i$ of village $j$ is a client and 0 otherwise. The errors are clustered at the village level. We also use state dummy to control state-specific effects.

Client dummy has positive and significant effect on both *wdaysever* and *wdaysnum*. See Model 1 in Table 5.1 and Model 1 in Table 5.3 for results of *wdaysever* and *wdaysnum* respectively. Clients are 9% more likely to work in MGNREGS ever compared to non-clients. Table 3.2 shows that about 46% non-client household in these villages have ever worked in MGNREGS - that is clients are at least 18% more likely to get work in comparison to the rest. A client HH also got more than 5 extra days of work compared to non-clients in 12 months prior to our survey. Non-clients, on average, received 14 days of work in this period, which means clients got nearly 40% more work than non-clients. Since for many households *wdaysnum* is zero (note that for non-client households median is 0), we run Tobit regression too; which also shows positive and significant client effect (see Table A.13).

As we mentioned and explained in Section 3 above, we have taken for a HH the status of having a dependence connection (represented in the Tables as the dummy "dependant") as an alternative approximate proxy for "client" status. Therefore, we ran the identical regressions, on the same sample, using "dependant" as a dummy rather than the client dummy. The result for *wdaysever* is reported as Model 1 in Table 5.2 and that for *wdaysnum* as Model 1 in Table 5.4. For *wdaysever*, the direction of association remains identical and significant. However, merely "dependant" HHs do not perform significantly better for *wdaysnum*. Below we shall discuss this feature, the different effect for client status vis-a-vis merely "dependant" status in a little more detail.

Next we reckon that allocation of MGNREGS work being a politico-administrative decision at the village level, a local elite with experience/connection with formal political activities might have greater influence in securing such jobs to their clients. In Model 2 of the respective regression tables (Tables 5.1 and 5.3), we divide the households into three categories, non-client, client of at least one elite who either is/was part of local government or is a member of a political party, and client of an elite with no political

connection/affiliation[18]. We find our conjecture to be true for *wdaysever*: clients of political elites have significantly higher *wdaysever* compared to non-clients while clients of non-political elites are not significantly different from non-clients in this respect. However in *wdaysnum* we find similar positive significant effect for both types of clients (political and non-political). This is indicative of a notable feature of our exercise. Note that unlike for the existing literature dealing with *political* clientelism, our identification and measurement of clientelistic institutions is more all-embracing. This association indicates that elites are likely to be powerful in extending patronage in such spheres of temporary public job allocation even when they do/did not hold any formal political post.

With a similar analysis–by splitting HHs into three categories, non-client, client of at least one elite whose main occupation is some kind of business, and client of elites with some other profession, we find that the former kind of clients perform better in getting MGNREGS jobs ever. However, such differential effects are not present with respect to *wdaysnum*.

Further, it has been observed that in rural India horizontal linkages through caste results in economic gains (e.g. [43]) for a household. Therefore, we check whether a client of the same caste/religion as the village pradhan/sarpanch gets significantly more MGNREGS jobs. Here we divide the households into four groups: non-clients with the village *pradhan* (head of village administration) having the same caste/religion, clients with the village *pradhan* having the same caste/religion, client with pradhan having a different caste/religion and the rest as the reference category. Model 3, in Tables 5.1 and Table 5.3, show that only clients who are of same caste/religion as the village pradhan get significantly higher *wdaysnum* and *wdaysever* compared to the omitted category, but for non-clients, merely having the same caste/religion as the pradhan does not increase the MGNREGS job-access significantly.

Model 6 in Tables 5.1 and 5.3 splits clients into types of dependence connections. The results show that clients with *interlinked* dependence connections (those with Type B, Type C or multiple types) are more likely to get jobs or get relatively more jobs. Thus, stronger dependence connections–those based on interlinkage, rather than a single crucial connection, are more

[18]For such variations of regression models, in the Tables for Model $k$, we denote by Model $k'$ the result of the baseline regression: i.e., the result for Model 1 restricted to the sample relevant for Model $k$.

effective in clientelism to work in this sphere.

As before, we replicated *all* the regressions we ran with "client"s with the "dependant" dummy *on the identical samples.* The results are summarized in Tables 5.2 (for *wdaysever*) and 5.4 (for *wdaysnum*). Notice that being "dependant" (of any of the various sub-categories) always increases significantly the probability of a HH getting MGNREGS jobs ever. However, this "dependant" effect gets attenuated for *wdaysnum*. Therefore, in Model 7 of Table 5.3, we put in both the dummies and we find that a "client" HH gets significantly more MGNREGS workdays but a non-client and merely "dependant" HH does not. Therefore, this result seems to indicate that having dependence connection on elites–"important persons" is more effective in some respects rather than just having *some* dependence connections. Replacing the "client" dummy for the HHs by "degree of dependence", i.e., the number of dependence connection each HH has, shows the same feature: the positive association of clientelism on *wdaysever* persists but for *wdaysnum*, *degree of dependence* does not have significant positive effect any more.

However, we explored the association between a HH having a dependence connection and its access to MGNREGS jobs further. As reported in Table A.10, in the extended sample of both elite and non-elite villages, being "dependant" (of any types) increases the *wdaysever* of a HH significantly. And by interacting this with a dummy giving whether the village is elite or not shows that this association is stronger for an elite village. This gives another verification that dependence connection has differential effect on the outcome of job-access depending on the institutional structure we measured.

**Hypothesis** (*ii*):
In Table 5.5, we report the results of LPM/OLS regression with *wdaysever*/ *wdaysnum* as the dependent variables and the degree of elitism, $Nclscore$, as the main explanatory variable of interest. Moreover, to ensure that a village has some non-negligible implementation of the MGNREGS programme, we restrict our regression to those villages for which *wdaysever* (similarly for *wdaynum*) takes non-zero values for at least 5 households. This restricts our sample to 30 villages (out of a total possible 36) for *wdaysever* and 13 villages (out of a total possible 24) for *wdaysnum*. The regression equation has the following form

$$y_{ij} = \alpha_0 + \alpha_1 Nclscore_j + \alpha_2 X_{ij} + \alpha_3 Z_j + \varepsilon_{ij} \tag{2}$$

Where $y_{ij}$ is the MGNREGS employment variable for household $i$ in village $j$; $Nclscore_j$ measures the degree of elitism in village $j$, $X_{ij}$ represents the

household-level controls and $Z_j$ represents the village-level controls. The errors are clustered at the village level. We find that $Nclscore$ has a positive and significant impact on $wdaysever$. A unit increase in $Nclscore$ in a village increases the probability of a household having ever worked in MGNREGS by 0.25. By replacing $Nclscore$ by another variant, such as, a dummy for elite villages (which takes value 1 if a village has at least one elite, and 0 otherwise), does not change the direction of association and the increase remains significant. However, for $wdaysnum$ this association goes to the opposite direction or fails to have any significant effect.

We verify the above results with hierarchical modeling (see, e.g., [18]). The level 1 is that of the households in each village and the higher level is that of the villages. The results remain exactly the same. See Table 5.6.

Here we might note one more point: in Anderson et al. ([6]) they find that in the villages where "elites", as identified by them (members from the dominant Maratha castes), wield political power, pro-poor guaranteed rural employment gets suppressed. We find the opposite for the same state Maharashtra: i.e., we find that as the "degree of elitism" goes up, a household is likely to get more MGNREGS employment. We guess that this might be due to the quite different kinds of definitions used by us for defining elites and the degree of elitism.

## 4.3 Further Results: Checking for Robustness, Causality and Alternative Explanations

Results in the previous subsection suggest that clientelism, as defined and measured by us, is associated with both the availability and allocation of MGNREGS jobs. However, alternative explanations, a priori, could be consistent with our findings. In this section, we try to rule out such possibilities.

First, it is possible that although elites may be providing MGNREGS work to their clients selectively, but it is merely due to name-recognition rather than any underlying political-economic calculations. It has been observed that clientelistic patronage tend to use perishable consumables, such as temporary jobs, to retain patron's control (see [12], [13]) over the clients. In contrast, a one-time lump-sum favour is useless as a commitment device. If biased allocation of MGNREGS work is merely due to name recognition, then we should expect a similar pattern of association for one-time welfare benefits like BPL cards and assistance through Indira Awas Yojana (a one-

time public grant for providing house to a poor HH). We run regressions, which are otherwise identical to our previous analysis, on one-time benefits. We find that "dependant" as well as nearly all the client-status indicating variables are not significant any more. This is consistent with clientelism explanation. See Table A.6 and A.7 for the detailed results.

Next, it is also conceivable that awareness, rather than clientelism, is driving our results. Clients, being connected with elites, perhaps, are better informed about MGNREGS work-schemes compared to non-clients. To look into this possibility, we use an index of awareness about the MGNREGS scheme as a dependent variable and run a regression, exactly similar to our basic specification (Equation 1). We find that neither the dependant nor the client dummy has any significant positive association with awareness. See Table A.8 and A.9 for details.

Next, as a robustness check we used alternative measures of the degree of elitism and its effectiveness. The first alternative proxy for $Nclscore$ we use is the average number of dependence connections in the village. Tables A.4 and A.5 show that the results are exactly along the same direction as for $Nclscore$. Next, the theoretical model predicts that if the clout of big farmers–those who cultivate relatively larger chunks of land by employing agricultural labourers–go up, then that would reduce the effectiveness of clientelism and, in turn, its impact on MGNREGS allocation. Toward this end, we first measure the proportion of the sampled households in a village who are *big farmers*. We considered three definitions of a big farmer (i) bfscore1: proportion of HHs whose main occupation is farming and who owns land that is greater than a certain threshold, (ii) bfscore2: proportion of HHs whose main occupation is farming and who owns land that is greater than a certain threshold and who employs agricultural labourers more than a certain threshold, and (iii)bfscore3: proportion of HHs whose main occupation is farming and who owns land that is greater than a certain threshold or who employs agricultural labourers more than a certain threshold. The land threshold is the maximum of the village average and 2 acres. The agricultural labourers' threshold is the maximum of the village average and 10. Our regression results, reported in Table A.4 and A.5 show that, as expected, an increase in the clout of big farmers in a village is asociated with a decrease (but not always statistically significant) in a resident HH's access to MGNREGS employment.

Finally, our key household-level explanatory variable–the dummy "client" (or its proxy "dependant")–is potentially endogenous. For example, there

can exist unobservable household characteristics, such as household preferences, which may induce a household both to have dependence connection with (influential) people around a village as well as be prone for taking up workfare jobs. To take care of that we introduce an instrumental variable in the following manner:
Step 1: for a non-elite sample HH $i$ (of village $v$), the following intermediate variables were computed:
$Numdep90_i^{vp}$:=90th percentile of the distribution of the number of dependent connections of households with the same caste/religion as household $i$ in the village $v$;
$Numdep90_i^{v}$:=90th percentile of the distribution of the number of dependent connections of *all* households other than $i$ in the village $v$.
Step 2: Then the instrumental variable (denoted simply as IV in Table A.12) for client/dependant dummy for HH $i$ is computed as: $Numdep90_i^{vp}/Numdep90_i^{v}$. This suggested IV captures the idea that if the peers of a HH $i$ (for which, in Indian villages, members of the same caste/religion category should be a good approximation) have relatively higher propensity of dependence behaviour, then that would affect the dependence behaviour of $i$. The choice of the 90th percentile was made to ensure that the denominator remains non-zero for every HH in our sample. A relatively higher propensity of dependence of $i$'s peers can affect js dependence behaviour and then MGNREGS jobs. If there are some other unobserved channels through which the behaviour of $i$s (caste/religion)peers might affect the HH's access to MGNREGS jobs, then that is already controlled for by the *caste/religion* variable.

However, as Table A.12 shows, for 2SLS, this IV is better suited for the variable "dependant" rather than the variable "client" and when used for *wdaysever*. With "dependant" as the explanatory variable, we find that the positive coefficient for *wdaysever* sustains, but it is no more significant. Therefore, while we can indicate the positive association of MGNREGS jobs with some variables representing clientelism, we still cannot assert causality unambiguously.

# 5 Discussion of Our Contribution to the Existing Literature and Concluding Remarks

As we mentioned in the Introduction, this work contributes to several streams of research apart from political economy of clientelism. Below we mention the significant works related to this work and remark on what new we introduce to the existing literature.

*Impact of institutions on development-related outcomes*
We repeat that one of our central goals is to emphasize studies in 'measuring' institutions *not in terms of some exogenously given characteristics* but *endogenously*, by using data on day-to-day interactions as the primitive. In this respect our work is different from apparently similar works like Acemoglu et al. [2] which looks into the impact of connection with 'elites'. 'Elites' in their case are historically given. Moreover, unlike, for example, as in Goldstein and Udry [28] we do not measure the impact of having power only in the sphere of formal politics (more on this, especially in the context of allocation of MGNREGS jobs, below). We conceptualize the exercise of power (and the reciprocal idea of dependence) as dominance in several dimensions.

*Value of connections or important nodes*
A set of literature exists on the value or impact of connections: very notable among them Bandeira et al. [11], Munshi and Rosenzweig [43], Markussen and Tarp [41]. Our contribution, naturally, falls also into this terrain of research. We find that it is not that merely connections matter but connection with (endogenously) powerful entities matters. Banerjee et al. [9] is especially notable in our context as it also explores the role of 'powerful' nodes. However, the kinds of day-to-day socio-economic relations they took as primitive are more or less 'symmetric': i.e., links for their study represent 'friendship'. In contradistinction, we, by our research question, explicitly concentrate on 'asymmetric' power relation.

*(Mis)Targetting of welfare schemes*
Our paper also adds to the large literature on (mis)targetting of welfare schemes. Besley, Pande and Rao [16] and Markussen [40] provide evidence of political distortion in the allocation of below-poverty-line (BPL) cards in India. Platteau [46] and Pan and Christiaensen [45] find similar instances of mistargetting in Africa. In contrast, Alatas et al. [3] do not find evidence of political capture in identification of 'poor families' in Indonesia. Our paper

shows that apart from the problem of clientelistic distortions, allocation of MGNREGS work is reasonably well-targetted towards the poor. For instance households whose maximum education among all the members is upto the pre-university level are significantly more likely to work under MGNREGS than those households where at least one member has university education. Similarly, households with either salaried position or ownership of business are less likely to work under MGNREGS compared to agricultural labourers and farmers. In contrast, access to MGNREGS does not significantly change with land ownership. Another consistent pattern that emerges from our analysis and suggests possible mistargetting is the following. Muslim households, but not 'OBC' and (in some cases) even 'upper caste' households, are significantly less likely to work under MGNREGS (and get fewer days of work in 12 months prior to our survey) compared to 'lower caste' households. See, e.g., Table A.3 for details.

*Allocation of MGNREGS jobs*

MGNREGS, being the largest of such workfare programmes ever, has attracted a lot of analysis. While much of the existing analyses deal with the *results* of this intervention (e.g., [33], [36]) there is a small set of literature dealing with factors affecting allocation of NREGS jobs. Studying a few villages in a district in West Bengal (another state in India) Das [22] found evidence of the positive impact of political clientelism in securing such jobs -households, which are politically active and supporters of the local ruling political party, are more likely to receive the benefits in terms of participation, number of days of work and earnings from the program. Dey and Bedi [23] reinforce such a finding. In contrast Chau et al. [21] find that all activists, irrespective of their political affiliation, receive higher benefits compared to politically inactive households. A related but conceptually distinct literature on 'pork-barrel' type allocation of MGNREGS funds is also available. This literature focuses on how political affiliation distorts fund targetting across administrative units. For instance Gupta and Mukhopadhyay [30] finds that larger funds are allocated to blocks where Indian National Congress (a centrist political party) has lower initial vote share. Dey and Sen [25] find a similar feature in MGNREGS fund-targetting from panchayat-levels to the (lower) village-levels in West Bengal.

Our study generalizes such findings in several dimensions. First, we find such evidence for a larger sample spreading over three states of India with quite diverse economic and political histories. Next, we find that not only

dependence on elites with formal political power entails in securing better MGNREGS job-prospects, but also, elites with no such formal political positions are also able to extend clientelism in form of such jobs. This, we repeat, seems to be in conformity with Ananthpur et al. [4] that traditionally dominant households, even without formal positions in political office, can still influence decisions of rural local governments in India. Here we also mention the recent work by Dey and Imai [24] which seems complementary to our findings. Dey and Imai find that increased participation in MGNREGS positively affects getting of local credit at the household level. That may precisely be owing to the possibility that at least a section of such creditors, being local elites, provide more jobs to their clients to ensure smooth repayment of debt which is in conformity to our findings. Our work also partially reinforce the findings in a growing literature on the presence of corruption in the MGNREGS programme (e.g., [44]).

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# Tables and Diagrams

**Table 2.1: Classification of services by type**

| Services | Economic, Social or Political | Crucial or Non crucial |
|---|---|---|
| Lease-in land or sharecropping | Economic | Crucial |
| Purchase input of production | Economic | Not crucial |
| Sale output | Economic | Crucial |
| Getting employment | Economic | Crucial |
| Getting informal credit | Economic | Crucial |
| Paying bribe for governmental welfare services | Economic | Crucial |
| Assistance for welfare | Political | Crucial |
| Household related dispute mediation | Social | Not crucial |
| Employment related dispute mediation | Social | Crucial |
| Guidance on political matter (like whom to vote or accompanying to political meetings or rallies) | Political | Crucial |
| Guidance on religious matter | Social | Not crucial |

**Table 2.2a: State-wise frequency distribution of elitism score across villages**

| | Elitism Score (*Nclscore*) | | | |
|---|---|---|---|---|
| State | Zero | Less than or equal to 0.2 | Greater than 0.2 | All |
| Maharashtra | 6 | 2 | 4 | 12 |
| Odisha | 4 | 3 | 5 | 12 |
| Uttar Pradesh | 4 | 2 | 6 | 12 |
| Total | 14 | 7 | 15 | 36 |

**Table 2.2b: State-wise frequency distribution of average number of dependence connections in village**

| State | Less than or equal to 25$^{th}$ percentile (0.37) | From 25$^{th}$ percentile (0.37) to median (0.57) | Greater than the median (0.57) | All |
|---|---|---|---|---|
| Maharashtra | 5 | 1 | 6 | 12 |
| Odisha | 3 | 4 | 5 | 12 |
| Uttar Pradesh | 1 | 4 | 7 | 12 |
| Total | 9 | 9 | 18 | 36 |

**Table 2.3: Elite and client characteristics**

| | Elites | Clients |
|---|---|---|
| Caste and religion | | |
| Upper caste | 42.6 | 8.4 |
| OBC | 27.8 | 45.5 |
| Other caste and religion | 29.6 | 46.1 |
| Number of observations | 54 | 477 |
| Occupation | | |
| Farming or Business | 86.9 | 51.1 |
| Other | 13.1 | 48.9 |
| Number of observations | 61 | 481 |
| Land ownership in acres | | |
| Mean | 2.9 | 1.4 |
| Standard Deviation | 3.4 | 2.0 |
| Number of observations | 21 | 481 |
| Non-land assets (wealth indicator) | | |
| Mean | 3.0 | 1.6 |
| Standard Deviation | 1.3 | 1.2 |
| Number of observations | 21 | 481 |

**Table 3.1: Summary statistics of MGNREGS days worked by client status**

| | Clients | Non-clients in elite villages | Non-clients in non-elite villages | Non-clients in all villages |
|---|---|---|---|---|
| Ever did MGNREGS work (*wdaysever*) | | | | |
| Proportion | 65.83% | 43.01% | 20.70% | 33.17% |
| Number of observations | 480 | 1637 | 1290 | 2927 |
| MGNREGS days worked in the last 12 months (*wdaysnum*) | | | | |
| Mean | 15.94 | 8.97 | 4.29 | 6.92 |
| Median | 8.00 | 0.00 | 0.00 | 0.00 |
| Standard Deviation | 22.44 | 20.62 | 16.44 | 19.04 |
| Number of observations | 385 | 1225 | 952 | 2177 |

Table 3.2: Summary statistics of MGNREGS days worked by client status ***in analysis samples***

| | Clients | Non-clients in elite villages | Non-clients in non-elite villages | Non-clients in all villages |
|---|---|---|---|---|
| Ever did MGNREGS work (*wdaysever*) | | | | |
| Proportion | 68.43% | 45.53% | 32.83% | 41.19% |
| Number of observations | 453 | 1520 | 789 | 2309 |
| MGNREGS days worked in the last 12 months (*wdaysnum*) | | | | |
| Mean | 18.05 | 12.42 | 14.03 | 12.86 |
| Median | 13.00 | 0.00 | 0.00 | 0.00 |
| Standard Deviation | 22.97 | 22.85 | 26.68 | 23.95 |
| Number of observations | 309 | 695 | 260 | 955 |

**Table 5.1: Estimated coefficients from a model of ever worked for MGNREGS (*wdaysever*) among households in elite villages; estimated using LPM**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.14* | -0.14* | -0.14* | -0.13* | -0.13* | -0.12+ | -0.14* | -0.14* | -0.16** | -0.14* | -0.13* |
| Uttar Pradesh | -0.32** | -0.32** | -0.32** | -0.31** | -0.30** | -0.28* | -0.32** | -0.32** | -0.34** | -0.32** | -0.31** |
| Elitism score (*Nclscore*) | 0.12 | 0.12 | 0.12 | 0.12 | 0.12+ | 0.13+ | 0.12 | 0.12 | 0.16+ | 0.12 | 0.13+ |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client | 0.09* | 0.09* | | 0.10* | | | 0.09* | | 0.19* | | |
| Client X Elitism score (*Nclscore*) | | | | | | | | | -0.13 | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client of non-political elite | | | 0.09 | | | | | | | | |
| Client of political elite | | | 0.09* | | | | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Pradhan of different caste | | | | | 0.04 | | | | | | |
| Client, Pradhan of same caste | | | | | 0.15* | | | | | | |
| Client (Ref: Non-client, Pradhan different caste) | | | | | | | | | | | |
| Not client, Pradhan of same caste | | | | | | 0.06 | | | | | |
| Client, Pradhan of different caste | | | | | | 0.06 | | | | | |
| Client, Pradhan of same caste | | | | | | 0.18* | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Elite's main occupation is not business | | | | | | | | 0.08 | | | |
| Client, Elite's main occupation is business | | | | | | | | 0.09* | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Dependence of Type A only | | | | | | | | | | 0.06 | |
| Client, Dependence of Type B only | | | | | | | | | | 0.04 | |
| Client, Dependence of Type C only | | | | | | | | | | 0.15* | |
| Client, Dependence of multiple types | | | | | | | | | | 0.10+ | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Dependent but not Client | | | | | | | | | | | 0.16** |
| Client | | | | | | | | | | | 0.14** |
| Number of observations | 1973 | 1973 | 1973 | 1922 | 1922 | 1922 | 1973 | 1973 | 1973 | 1973 | 1973 |
| R-squared | 0.205 | 0.205 | 0.205 | 0.202 | 0.204 | 0.206 | 0.205 | 0.205 | 0.208 | 0.207 | 0.222 |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table 5.2: Estimated coefficients from a model of ever worked for MGNREGS (*wdaysever*) among households in elite villages; estimated using LPM**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.13* | -0.13* | -0.13* | -0.13* | -0.12* | -0.11+ | -0.14* | -0.14* | -0.14* | -0.13* | -0.13* |
| Uttar Pradesh | -0.31** | -0.31** | -0.31** | -0.30** | -0.29** | -0.27* | -0.32** | -0.31** | -0.32** | -0.31** | -0.32** |
| Elitism score (*Nclscore*) | 0.12 | 0.12 | 0.12 | 0.12 | 0.12+ | 0.13+ | 0.12 | 0.12 | 0.17+ | 0.12 | 0.12 |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | |
| Dependant | 0.15** | 0.16** | | 0.16** | | | 0.16** | | 0.20** | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | -0.08 | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant of non-political patron | | | 0.16** | | | | | | | | |
| Dependant of political patron | | | 0.15** | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 0.13** | | | | | | |
| Dependant, Pradhan of same caste | | | | | 0.18** | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 0.08 | | | | | |
| Dependant, Pradhan of different caste | | | | | | 0.16** | | | | | |
| Dependant, Pradhan of same caste | | | | | | 0.22** | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 0.17** | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 0.15** | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | 0.15** | |
| Dependant, Dependence of Type B only | | | | | | | | | | 0.12** | |
| Dependant, Dependence of Type C only | | | | | | | | | | 0.18** | |
| Dependant, Dependence of multiple types | | | | | | | | | | 0.17** | |
| Number of dependence connections | | | | | | | | | | | 0.09** |
| Number of observations | 1973 | 1961 | 1961 | 1922 | 1922 | 1922 | 1959 | 1959 | 1973 | 1973 | 1973 |
| R-squared | 0.222 | 0.223 | 0.223 | 0.218 | 0.219 | 0.222 | 0.223 | 0.223 | 0.223 | 0.222 | 0.222 |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table 5.3: Estimated coefficients from a model of number of days worked for MGNREGS in the last 12 months (*wdaysnum*) among households in elite villages; estimated using OLS**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | 1.23 | 1.23 | 0.95 | 0.81 | 2.89 | 1.85 | 1.23 | 2.07 | 3.13 | 0.58 | 1.35 |
| Elitism score (*Nclscore*) | 4.08 | 4.08 | 4.85 | 3.58 | 5.76 | 4.74 | 4.08 | 5.11 | 11.04* | 3.83 | 4.24 |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client | 5.67+ | 5.67+ | | 5.46+ | | | 5.67+ | | 18.16* | | |
| Client X Elitism score (*Nclscore*) | | | | | | | | | -13.24* | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client of non-political elite | | | 14.63+ | | | | | | | | |
| Client of political elite | | | 4.18+ | | | | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Pradhan of different caste | | | | | 2.13 | | | | | | |
| Client, Pradhan of same caste | | | | | 7.56* | | | | | | |
| Client (Ref: Non-client, Pradhan different caste) | | | | | | | | | | | |
| Not client, Pradhan of same caste | | | | | | -1.25 | | | | | |
| Client, Pradhan of different caste | | | | | | 1.62 | | | | | |
| Client, Pradhan of same caste | | | | | | 6.74* | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Elite's main occupation is not business | | | | | | | | 8.24+ | | | |
| Client, Elite's main occupation is business | | | | | | | | 4.36+ | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Dependence of Type A only | | | | | | | | | | 3.76 | |
| Client, Dependence of Type B only | | | | | | | | | | 8.62* | |
| Client, Dependence of Type C only | | | | | | | | | | 5.99+ | |
| Client, Dependence of multiple types | | | | | | | | | | 4.66 | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Dependent but not Client | | | | | | | | | | | 0.63 |
| Client | | | | | | | | | | | 5.87* |
| Number of observations | 1004 | 1004 | 1004 | 973 | 973 | 973 | 1004 | 1004 | 1004 | 1004 | 1004 |
| R-squared | 0.125 | 0.125 | 0.131 | 0.127 | 0.13 | 0.131 | 0.125 | 0.127 | 0.141 | 0.127 | 0.125 |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table 5.4: Estimated coefficients from a model of number of days worked for MGNREGS in the last 12 months (*wdaysnum*) among households in elite villages; estimated using OLS**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | 1.4 | 2.16 | 2.16 | 0.87 | 1.85 | 1.76 | 1.62 | 1.62 | 1.9 | 0.92 | 0.96 |
| Elitism score (*Nclscore*) | 6.24 | 7.11 | 7.47 | 5.53 | 6.42 | 6.33 | 6.27 | 6.25 | 9.53+ | 5.1 | 6.16 |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | |
| Dependant | 3.37 | 3.41 | | 3.13 | | | 3.54+ | | 6.55+ | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | -4.32 | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant of non-political patron | | | 3.99+ | | | | | | | | |
| Dependant of political patron | | | 2.94 | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | 2.23 | | | | | | |
| Dependant, Pradhan of different caste | | | | | 3.77 | | | | | | |
| Dependant, Pradhan of same caste | | | | | | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | -0.15 | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 2.16 | | | | | |
| Dependant, Pradhan of different caste | | | | | | 3.67 | | | | | |
| Dependant, Pradhan of same caste | | | | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 3.52+ | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 3.56 | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | 0.35 | |
| Dependant, Dependence of Type B only | | | | | | | | | | 5.34 | |
| Dependant, Dependence of Type C only | | | | | | | | | | 5.45 | |
| Dependant, Dependence of multiple types | | | | | | | | | | 3.83 | |
| Number of dependence connections | | | | | | | | | | | 1.24 |
| Number of observations | 1004 | 999 | 999 | 973 | 973 | 973 | 997 | 997 | 1004 | 1004 | 1004 |
| R-squared | 0.12 | 0.12 | 0.121 | 0.122 | 0.123 | 0.123 | 0.12 | 0.12 | 0.122 | 0.123 | 0.117 |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table 5.5: Estimated coefficients from models of MGNREGS days worked in the last 12 months (*wdaysnum*) and ever worked for MGNREGS (*wdaysever*) among households in elite and non-elite villages, estimated using OLS and LPM, respectively**

| | Ever worked for MGNREGS (*wdaysever*) | | Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) | |
|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | |
| Odisha | -0.06 | -0.13 | -5.3 | 1.29 |
| Uttar Pradesh | -0.08 | -0.22+ | | |
| Elitism Score (*Nclscore*) | 0.25** | | -12.97* | |
| Elite Village Status (Ref: Non-elite village, *Nclscore*=0) | | | | |
| Elite Village (*Nclscore*>0) | | 0.19* | | -0.92 |
| No. of Observations | 2762 | 2762 | 1264 | 1264 |
| R-squared | 0.185 | 0.166 | 0.123 | 0.094 |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table 5.6: Estimated coefficients from models of MGNREGS days worked in the last 12 months (*wdaysnum*) and ever worked for MGNREGS (*wdaysever*) among households in elite and non-elite villages estimated using multilevel modelling techniques**

| | Ever worked for MGNREGS (*wdaysever*) | | | | Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) | | | |
|---|---|---|---|---|---|---|---|---|
| | Random Intercepts Model | | Random Slopes Model | | Random Intercepts Model | | Random Slopes Model | |
| | Coefficient | p-value | Coefficient | p-value | Coefficient | p-value | Coefficient | p-value |
| State (Omitted: Maharashtra) | | | | | | | | |
| Odisha | -0.06 | 0.61 | -0.02 | 0.85 | -5.65 | 0.26 | -6.18 | 0.22 |
| Uttar Pradesh | -0.1 | 0.36 | -0.09 | 0.36 | | | | |
| Elitism Score (*Nclscore*) | 0.25** | 0 | 0.29** | 0 | -13.79** | 0 | -14.19** | 0 |
| lns1_1_1 | -1.79 | | -3.64 | | 1.56 | | -2.07 | |
| lnsig_e | -0.87 | | -0.88 | | 3.08 | | 3.08 | |
| lns1_1_2 | | | -1.66 | | | | 1.52 | |
| atr1_1_1_2 | | | -0.76 | | | | 7.01 | |
| Number of observations | 2762 | | 2762 | | 1264 | | 1264 | |

Note: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01.

**Table A.1: Summary statistics of the Ever worked for MGNREGS (*wdaysever*) and Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) samples (includes elite and non-elite villages) by client status**

| | Ever worked for MGNREGS (*wdaysever*) sample | | | Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) sample | | |
|---|---|---|---|---|---|---|
| Variables | Non-Client | Client | All | Non-Client | Client | All |
| ***Dependent variables:*** *wdaysever/wdaysnum* | 0.41 | 0.68 | 0.46 | 12.86 | 18.05 | 14.13 |
| ***Household level characteristics*** | | | | | | |
| Caste | | | | | | |
| Upper | 0.16 | 0.09 | 0.15 | 0.14 | 0.07 | 0.13 |
| SC/ST | 0.34 | 0.35 | 0.34 | 0.37 | 0.32 | 0.36 |
| Muslim | 0.05 | 0.06 | 0.05 | 0.00 | 0.01 | 0.00 |
| OBC | 0.43 | 0.47 | 0.44 | 0.46 | 0.57 | 0.49 |
| Other | 0.02 | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 |
| Land owned in acres | 1.47 | 1.40 | 1.46 | 1.33 | 1.17 | 1.29 |
| Number of non-land assets owned | 1.82 | 1.63 | 1.79 | 1.73 | 1.63 | 1.71 |
| Highest education in the household | | | | | | |
| Completed class 12 or less | 0.78 | 0.85 | 0.79 | 0.83 | 0.85 | 0.83 |
| Bachelors | 0.17 | 0.12 | 0.16 | 0.14 | 0.12 | 0.14 |
| Higher than Bachelors | 0.05 | 0.03 | 0.05 | 0.03 | 0.03 | 0.03 |
| No. of 16-59yr olds in the household with low education (completed less than class 11) | 2.56 | 2.42 | 2.54 | 2.59 | 2.31 | 2.52 |
| In a stable occupation (Artisans or have a factory, Shop-keeper or running business of some type, Working at an office for a salary) | 0.14 | 0.03 | 0.12 | 0.09 | 0.03 | 0.08 |
| If at least one household member lives away and sends money home | 0.18 | 0.11 | 0.17 | 0.10 | 0.04 | 0.09 |
| If at least one household member is or was a Panchayat or a political party member | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| If head of household had given advice to villagers or workers on own farm or business | 0.22 | 0.21 | 0.22 | 0.15 | 0.11 | 0.14 |
| If the household has ever availed of the services of the police station or block office | 0.27 | 0.29 | 0.27 | 0.17 | 0.22 | 0.18 |
| ***Village level characteristics*** | | | | | | |
| Distance of the village from nearest town in KM | 24.17 | 21.73 | 23.77 | 17.60 | 18.96 | 17.93 |
| Proportion of village whose main occupation is Cultivation or Agricultural Labourer | 0.44 | 0.41 | 0.44 | 0.47 | 0.40 | 0.45 |
| Average Rainfall in village | 1265.72 | 1311.70 | 1273.26 | 1468.11 | 1439.54 | 1461.12 |
| Fraction of net sown area irrigated | 0.59 | 0.59 | 0.59 | 0.36 | 0.55 | 0.41 |
| No. of Observations | 2309 | 453 | 2762 | 955 | 309 | 1264 |

**Table A.2: Estimated coefficients and p-values from models of MGNREGS days worked in the last 12 months (wdaysnum) and ever worked for MGNREGS (wdaysever) among households in elite villages, estimated using OLS and LPM, respectively**

| | Ever worked for MGNREGS (*wdaysever*) | | Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) | |
|---|---|---|---|---|
| | Coefficient | p-value | Coefficient | p-value |
| Caste (Ref: SC/ST) | | | | |
| Upper | -0.16+ | 0.06 | -1.53 | 0.67 |
| Muslim | -0.27** | 0.01 | -7.59** | 0 |
| OBC | -0.05 | 0.43 | 1.73 | 0.58 |
| Other | -0.03 | 0.73 | -0.95 | 0.78 |
| Land owned in acres | 0 | 0.9 | -0.71* | 0.02 |
| Number of non-land assets owned | -0.01 | 0.14 | -0.47 | 0.36 |
| Highest education in the household (Omitted: Completed class 12 or less) | | | | |
| Bachelors | -0.07+ | 0.08 | 1.53 | 0.39 |
| Higher than Bachelors | -0.14+ | 0.08 | -5.96 | 0.12 |
| No. of 16-59yr olds in the household with low education (completed less than class 11) | 0.03** | 0.01 | 1.73* | 0.03 |
| In a stable occupation (Artisans or have a factory, Shop-keeper or running business of some type, Working at an office for a salary) | -0.12** | 0 | -5.79+ | 0.09 |
| If at least one household member lives away and sends money home | -0.01 | 0.58 | 3.50* | 0.03 |
| If at least one household member is or was a Panchayat or a political party member | 0 | 0.99 | -0.54 | 0.92 |
| If head of household had given advice to villagers or workers on own farm or business | 0.08* | 0.02 | 4.77 | 0.24 |
| If the household has ever availed of the services of the police station or block office | 0.06* | 0.04 | 3.14 | 0.35 |
| ***Village level characteristics*** | | | | |
| Distance of the village from nearest town in KM | 0 | 0.5 | -0.62** | 0.01 |
| Proportion of village whose main occupation is Cultivation or Agricultural Labourer | -0.17 | 0.27 | -1.84 | 0.86 |
| Average Rainfall in village | -0.00** | 0 | -0.02+ | 0.05 |
| Fraction of net sown area irrigated | -0.16 | 0.14 | -8.37 | 0.16 |
| State (Omitted: Maharashtra) | | | | |
| Odisha | -0.14* | 0.02 | 1.23 | 0.67 |
| Uttar Pradesh | -0.32** | 0 | | |
| Elitism Score (*Nclscore*) | 0.12 | 0.1 | 4.08 | 0.39 |
| Client (Ref: Non-client) | | | | |
| Client | 0.09* | 0.02 | 5.67+ | 0.05 |
| Constant | 1.03** | 0 | 55.82** | 0 |
| No. of Observations | 1973 | | 1004 | |
| R-squared | 0.205 | | 0.125 | |

Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.3: Estimated coefficients and p-values from models of MGNREGS days worked in the last 12 months (*wdaysnum*) and ever worked for MGNREGS (*wdaysever*) among households in elite and non-elite villages, estimated using OLS and LPM, respectively**

| | Ever worked for MGNREGS (*wdaysever*) | | Number of days worked for MGNREGS in the last 12 months (*wdaysnum*) | |
|---|---|---|---|---|
| | Coefficient | p-value | Coefficient | p-value |
| Caste (Ref: SC/ST) | | | | |
| Upper | -0.19* | 0.03 | -6.04+ | 0.09 |
| Muslim | -0.31** | 0 | -9.57* | 0.03 |
| OBC | -0.08 | 0.15 | -0.1 | 0.97 |
| Other | -0.03 | 0.78 | -4.19 | 0.25 |
| Land owned in acres | -0.01 | 0.18 | -0.52 | 0.11 |
| Number of non-land assets owned | -0.01 | 0.54 | -0.17 | 0.81 |
| Highest education in the household (Omitted: Completed class 12 or less) | | | | |
| Bachelors | -0.10** | 0 | -0.34 | 0.88 |
| Higher than Bachelors | -0.15** | 0.01 | -3.7 | 0.18 |
| No. of 16-59yr olds in the household with low education (completed less than class 11) | 0.03** | 0 | 1.20* | 0.03 |
| In a stable occupation (Artisans or have a factory, Shop-keeper or running business of some type, Working at an office for a salary) | -0.14** | 0 | -5.80+ | 0.09 |
| If at least one household member lives away and sends money home | 0 | 0.96 | 3.69** | 0 |
| If at least one household member is or was a Panchayat or a political party member | -0.01 | 0.81 | -2.28 | 0.56 |
| If head of household had given advice to villagers or workers on own farm or business | 0.04 | 0.14 | 4.54 | 0.2 |
| If the household has ever availed of the services of the police station or block office | 0.07* | 0.02 | 4.4 | 0.15 |
| ***Village level characteristics*** | | | | |
| Distance of the village from nearest town in KM | 0 | 0.79 | 0.51+ | 0.05 |
| Proportion of village whose main occupation is Cultivation or Agricultural Labourer | -0.06 | 0.69 | -54.33** | 0 |
| Average Rainfall in village | -0.00* | 0.04 | 0.02 | 0.19 |
| Fraction of net sown area irrigated | -0.17+ | 0.07 | 18.87* | 0.03 |
| State (Omitted: Maharashtra) | | | | |
| Odisha | -0.06 | 0.51 | -5.3 | 0.13 |
| Uttar Pradesh | -0.08 | 0.55 | | |
| Elitism Score (*NclsScore*) | 0.25** | 0 | -12.97* | 0.02 |
| Constant | 0.74** | 0 | 7.33 | 0.61 |
| No. of Observations | 2762 | | 1264 | |
| R-squared | 0.185 | | 0.123 | |

Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.4: Estimated coefficients and p-values from models of ever worked for MGNREGS (*wdaysever*) among household in elite and non-elite villages, estimated using LPM**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | |
| Odisha | -0.06 | -0.13 | -0.08 | -0.14* | -0.13 | -0.17 | -0.09 | -0.13 | -0.09 |
| Uttar Pradesh | -0.08 | -0.22+ | -0.1 | -0.32** | -0.17 | -0.22 | -0.18 | -0.2 | -0.14 |
| Elitism Score (*Nclscore*) | 0.25** | | | 0.16* | 0.53** | | | | |
| Elitism score (*Nclscore*) Squared | | | | | -0.20+ | | | | |
| Elite Village Status (Ref: Non-elite village, *Nclscore*=0) | | | | | | | | | |
| Elite Village (*Nclscore*>0) | | 0.19* | | | | | | | |
| BFscore1 | | | | | | -1.03 | | | |
| BFscore2 | | | | | | | -2.15+ | | |
| BFscore3 | | | | | | | | -0.84 | |
| Average number of Dependence Connections in Village | | | | | | | | | 0.43** |
| No. of Observations | 2762 | 2762 | 2762 | 1973 | 2762 | 2762 | 2762 | 2762 | 2762 |
| R-squared | 0.185 | 0.166 | 0.2 | 0.201 | 0.195 | 0.145 | 0.153 | 0.147 | 0.177 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.5: Estimated coefficients and p-values from models of MGNREGS days worked in the last 12 months (*wdaysnum*) among households in elite and non-elite villages, estimated using OLS**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | |
| Odisha | -5.3 | 1.29 | -4.68 | 0.44 | -7.66* | -0.04 | 1.76 | 1.6 | -6.27+ |
| Elitism Score (*Nclscore*) | -12.97* | | | 6.33 | 1.64 | | | | |
| Elitism score (*Nclscore*) Squared | | | | | -9.50* | | | | |
| Elite Village Status (Ref: Non-elite village, *Nclscore*=0) | | | | | | | | | |
| Elite Village (*Nclscore*>0) | | -0.92 | | | | | | | |
| BFscore1 | | | | | | -38.58 | | | |
| BFscore2 | | | | | | | -119.31+ | | |
| BFscore3 | | | | | | | | -37.34 | |
| Average number of Dependence Connections in Village | | | | | | | | | -20.77* |
| No. of Observations | 1264 | 1264 | 1264 | 1004 | 1264 | 1264 | 1264 | 1264 | 1264 |
| R-squared | 0.123 | 0.094 | 0.106 | 0.115 | 0.134 | 0.098 | 0.103 | 0.1 | 0.122 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.6: Estimated coefficients from a model of Other Welfare Program Receipt among households in elite villages, estimated using LPM; Sample restricted to MGNREGS ever worked (*wdaysever*) analysis sample**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.10+ | -0.10+ | -0.10+ | -0.10+ | -0.10+ | -0.1 | -0.10+ | -0.10+ | -0.10+ | -0.1 | -0.1 |
| Uttar Pradesh | -0.09 | -0.09 | -0.09 | -0.08 | -0.08 | -0.08 | -0.09 | -0.09 | -0.09 | -0.08 | -0.09 |
| Elitism score (*Nclscore*) | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.03 | 0.04 |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client | -0.03 | -0.03 | | -0.04 | | | -0.03 | | -0.01 | | |
| Client X Elitism score (*Nclscore*) | | | | | | | | | -0.03 | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client of non-political elite | | | -0.02 | | | | | | | | |
| Client of political elite | | | -0.04 | | | | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Pradhan of different caste | | | | | -0.03 | | | | | | |
| Client, Pradhan of same caste | | | | | -0.04 | | | | | | |
| Client (Ref: Non-client, Pradhan different caste) | | | | | | | | | | | |
| Not client, Pradhan of same caste | | | | | | 0.01 | | | | | |
| Client, Pradhan of different caste | | | | | | -0.03 | | | | | |
| Client, Pradhan of same caste | | | | | | -0.04 | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Elite's main occupation is not business | | | | | | | | -0.04 | | | |
| Client, Elite's main occupation is business | | | | | | | | -0.03 | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Dependence of Type A only | | | | | | | | | | -0.03 | |
| Client, Dependence of Type B only | | | | | | | | | | -0.11+ | |
| Client, Dependence of Type C only | | | | | | | | | | 0.08+ | |
| Client, Dependence of multiple types | | | | | | | | | | -0.05+ | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Dependent but not Client | | | | | | | | | | | 0.02 |
| Client | | | | | | | | | | | -0.03 |
| Number of observations | 1973 | 1973 | 1973 | 1922 | 1922 | 1922 | 1973 | 1973 | 1973 | 1973 | 1973 |
| R-squared | 0.08 | 0.08 | 0.08 | 0.079 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.084 | 0.08 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.7: Estimated coefficients from a model of other Welfare Programme Receipt among households in elite villages estimated using LPM; Sample restricted to MGNREGS ever worked (*wdaysever*) analysis sample**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.1 | -0.1 | -0.10+ | -0.10+ | -0.1 | -0.1 | -0.10+ | -0.10+ | -0.11+ | -0.1 | -0.1 |
| Uttar Pradesh | -0.09 | -0.08 | -0.09 | -0.08 | -0.09 | -0.07 | -0.08 | -0.09 | -0.09 | -0.08 | -0.09 |
| Elitism score (*Nclscore*) | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.06 | 0.03 | 0.03 |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | |
| Dependant | | | | | | | | | 0.04 | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | -0.06 | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant of non-political patron | | | 0.01 | | | | | | | | |
| Dependant of political patron | | | -0.02 | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 0.01 | | | | | | |
| Dependant, Pradhan of same caste | | | | | -0.01 | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 0.03 | | | | | |
| Dependant, Pradhan of different caste | | | | | | 0.02 | | | | | |
| Dependant, Pradhan of same caste | | | | | | 0 | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | -0.02 | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 0.01 | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | 0.01 | |
| Dependant, Dependence of Type B only | | | | | | | | | | -0.04 | |
| Dependant, Dependence of Type C only | | | | | | | | | | 0.07 | |
| Dependant, Dependence of multiple types | | | | | | | | | | -0.01 | |
| Number of dependence connections | | | | | | | | | | | -0.01 |
| Number of observations | 1973 | 1961 | 1961 | 1922 | 1922 | 1922 | 1959 | 1959 | 1973 | 1973 | 1973 |
| R-squared | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.08 | 0.081 | 0.079 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.8: Estimated coefficients from a model of MGNREGS awareness among households in elite villages, estimated using LPM; Sample restricted to MGNREGS ever worked (*wdaysever*) analysis sample**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model6 | Model 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.02 | -0.02 | -0.02 | -0.03 | -0.01 | 0.02 | -0.02 | -0.01 | -0.11 | -0.01 | -0.02 |
| Uttar Pradesh | -0.43 | -0.43 | -0.44 | -0.45 | -0.41 | -0.35 | -0.43 | -0.42 | -0.53* | -0.43 | -0.43 |
| Elitism score (*Nclscore*) | 0.22 | 0.22 | 0.23 | 0.22 | 0.24 | 0.27+ | 0.22 | 0.22 | 0.39* | 0.22 | 0.22 |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client | 0.01 | 0.01 | | 0.02 | | | 0.01 | | 0.42** | | |
| Client X Elitism score | | | | | | | | | -0.53** | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client of non-political elite | | | 0.08 | | | | | | | | |
| Client of political elite | | | 0 | | | | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Pradhan of different caste | | | | | -0.12+ | | | | | | |
| Client, Pradhan of same caste | | | | | 0.16 | | | | | | |
| Client (Ref: Non-client, Pradhan different caste) | | | | | | | | | | | |
| Not client, Pradhan of same caste | | | | | | 0.16 | | | | | |
| Client, Pradhan of different caste | | | | | | -0.07 | | | | | |
| Client, Pradhan of same caste | | | | | | 0.24* | | | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Elite's main occupation is not business | | | | | | | | 0.1 | | | |
| Client, Elite's main occupation is business | | | | | | | | -0.01 | | | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Client, Dependence of Type A only | | | | | | | | | | 0.20+ | |
| Client, Dependence of Type B only | | | | | | | | | | 0.04 | |
| Client, Dependence of Type C only | | | | | | | | | | 0 | |
| Client, Dependence of multiple types | | | | | | | | | | -0.05 | |
| Client (Ref: Non-client) | | | | | | | | | | | |
| Dependent but not Client | | | | | | | | | | | 0.06 |
| Client | | | | | | | | | | | 0.03 |
| Number of observations | 1448 | 1448 | 1448 | 1404 | 1404 | 1404 | 1448 | 1448 | 1448 | 1448 | 1448 |
| R-squared | 0.341 | 0.341 | 0.341 | 0.331 | 0.336 | 0.34 | 0.341 | 0.341 | 0.353 | 0.342 | 0.341 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.9: Estimated coefficients from a model of MGNREGS awareness among households in elite villages estimated using LPM, Sample restricted to MGNREGS ever worked analysis (*wdaysever*) analysis sample**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model 6 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | |
| Odisha | -0.02 | -0.02 | -0.02 | -0.03 | 0 | 0.02 | -0.03 | -0.03 | -0.06 | -0.02 | -0.02 |
| Uttar Pradesh | -0.43 | -0.44 | -0.44 | -0.44 | -0.4 | -0.36 | -0.44 | -0.44 | -0.47+ | -0.43 | -0.43 |
| Elitism score (*Nclscore*) | 0.21 | 0.21 | 0.21 | 0.22 | 0.23 | 0.25 | 0.21 | 0.21 | 0.44* | 0.22 | 0.21 |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | |
| Dependant | 0.05 | 0.05 | | 0.04 | | | 0.05 | | 0.26** | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | -0.37** | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant of non-political patron | | | 0.05 | | | | | | | | |
| Dependant of political patron | | | 0.05 | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | -0.06 | | | | | | |
| Dependant, Pradhan of same caste | | | | | 0.15* | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 0.15 | | | | | |
| Dependant, Pradhan of different caste | | | | | | 0 | | | | | |
| Dependant, Pradhan of same caste | | | | | | 0.23* | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 0.07 | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 0.03 | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | 0.08 | |
| Dependant, Dependence of Type B only | | | | | | | | | | 0.03 | |
| Dependant, Dependence of Type C only | | | | | | | | | | 0.02 | |
| Dependant, Dependence of multiple types | | | | | | | | | | 0.04 | |
| Number of dependence connections | | | | | | | | | | | 0.03 |
| Number of observations | 1448 | 1443 | 1443 | 1404 | 1404 | 1404 | 1441 | 1441 | 1448 | 1448 | 1448 |
| R-squared | 0.341 | 0.342 | 0.342 | 0.332 | 0.337 | 0.339 | 0.342 | 0.342 | 0.348 | 0.341 | 0.341 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.10: Estimated coefficients from a model of ever worked for MGNREGS (*wdaysever*) among households in elite and non-elite villages; estimated using LPM**

| | Model1 | Model2' | Model2 | Model3' | Model 3 | Model3" | Model4' | Model4 | Model5 | Model 6 | Model8 | Model 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | | |
| Odisha | -0.05 | -0.05 | -0.05 | -0.14* | -0.14* | -0.13* | -0.05 | -0.05 | -0.05 | -0.11 | -0.05 | -0.05 |
| Uttar Pradesh | -0.08 | -0.08 | -0.08 | -0.22* | -0.22* | -0.20* | -0.08 | -0.09 | -0.08 | -0.19 | -0.08 | -0.09 |
| Elitism score (*Nclscore*) | 0.22** | 0.22** | 0.21** | 0.18** | 0.18** | 0.18** | 0.22** | 0.22** | 0.24** | | 0.21** | 0.22** |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | | |
| Dependant | 0.14** | 0.15** | | 0.16** | | | 0.15** | | 0.16** | 0.12* | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | -0.04 | | | |
| Village elite status (Ref: non-elite village, *Nclscore*=0) | | | | | | | | | | | | |
| Elite village (*Nclscore*>0) | | | | | | | | | | 0.14+ | | |
| Dependant X Elite village (*Nclscore*>0) | | | | | | | | | | 0.06 | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant of non-political patron | | | 0.14** | | | | | | | | | |
| Dependant of political patron | | | 0.16** | | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 0.15** | | | | | | | |
| Dependant, Pradhan of same caste | | | | | 0.17** | | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 0.07 | | | | | | |
| Dependant, Pradhan of different caste | | | | | | 0.18** | | | | | | |
| Dependant, Pradhan of same caste | | | | | | 0.21** | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 0.14** | | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 0.15** | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | | 0.12** | |
| Dependant, Dependence of Type B only | | | | | | | | | | | 0.10** | |
| Dependant, Dependence of Type C only | | | | | | | | | | | 0.18** | |
| Dependant, Dependence of multiple types | | | | | | | | | | | 0.17** | |
| Number of dependence connections | | | | | | | | | | | | 0.09** |
| Number of observations | 2762 | 2740 | 2740 | 2313 | 2313 | 2313 | 2739 | 2739 | 2762 | 2762 | 2762 | 2762 |
| R-squared | 0.203 | 0.204 | 0.204 | 0.207 | 0.207 | 0.21 | 0.204 | 0.204 | 0.203 | 0.19 | 0.205 | 0.205 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.11: Estimated coefficients from a model of number of days worked for MGNREGS in the last 12 months (*wdaysnum*) among households in elite and non-elite villages; estimated using LPM**

| | Model 1 | Model2' | Model 2 | Model3' | Model 3 | Model3" | Model4' | Model4 | Model 5 | Model 6 | Model8 | Model9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | | | |
| Odisha | -4.96 | -4.75 | -4.71 | -2.47 | -2.12 | -1.5 | -4.85 | -4.89 | -5.16 | 1.46 | -5.12 | -5.12 |
| Elitism score (*Nclscore*) | -13.69* | -13.61* | -13.72* | 3.31 | 3.38 | 3.86 | -13.70* | -13.75* | -12.69* | | -14.22** | -13.60* |
| Dependant (Ref: Non-Dependant) | | | | | | | | | | | | |
| Dependant | 2.43 | 2.48 | | 2.53 | | | 2.55 | | 3.80+ | -6.11 | | |
| Dependant X Elitism score (*Nclscore*) | | | | | | | | | | | | |
| Village elite status (Ref: non-elite village, *Nclscore*=0) | | | | | | | | | | | | |
| Elite village (*Nclscore*>0) | | | | | | | | | | -3.51 | | |
| Dependant X Elite village (*Nclscore*>0) | | | | | | | | | | 8.15+ | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant of non-political patron | | | 2.13 | | | | | | | | | |
| Dependant of political patron | | | 2.82 | | | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 1.74 | | | | | | | |
| Dependant, Pradhan of same caste | | | | | 3.12 | | | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | 1.99 | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | | 2.78 | | | | | | |
| Dependant, Pradhan of same caste | | | | | | 4.32 | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 2.37+ | | | | |
| Dependant, Patron's main occupation is business | | | | | | | | 2.71 | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | | | -0.64 | |
| Dependant, Dependence of Type B only | | | | | | | | | | | 4.05 | |
| Dependant, Dependence of Type C only | | | | | | | | | | | 4.5 | |
| Dependant, Dependence of multiple types | | | | | | | | | | | 3.32 | |
| Number of dependence connections | | | | | | | | | | | | 1.15 |
| Number of observations | 1264 | 1255 | 1255 | 1165 | 1165 | 1165 | 1254 | 1254 | 1264 | 1264 | 1264 | 1264 |
| R-squared | 0.125 | 0.125 | 0.125 | 0.113 | 0.114 | 0.115 | 0.125 | 0.125 | 0.125 | 0.098 | 0.128 | 0.124 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.12: IV-2SLS estimates of Client and Dependent Status**

| | ever worked for MGNREGS (*wdaysever*) | | # of days worked for MGNREGS in the last 12 months (*wdaysnum*) | |
|---|---|---|---|---|
| | Coefficient | p-value | Coefficient | p-value |
| *Elite villages only* | | | | |
| Client (Ref: Non-client) | | | | |
| Client | 2.10 | 0.34 | 86.90 | 0.21 |
| IV (first stage) | 0.03 | 0.42 | 0.05 | 0.47 |
| *Elite villages only* | | | | |
| Dependant (Ref: Non-Dependant) | | | | |
| Dependant | 0.66 | 0.35 | 173.17 | 0.77 |
| IV (first stage) | 0.10 | 0.11 | 0.03 | 0.83 |
| *All villages* | | | | |
| Dependant (Ref: Non-Dependant) | | | | |
| Dependant | 0.38 | 0.56 | -19.42 | 0.88 |
| IV (first stage) | 0.10** | 0.002 | 0.04 | 0.60 |
| Number of observations | 1969, 2692 | | 1002, 1196 | |

Notes: These models also control for household and village level characteristics listed in Table A.1; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.13: Estimated coefficients from a model of number of days worked for MGNREGS in the last 12 months (*wdaysnum*); estimated using Tobit**

| | Only elite villages | | Elite and non-elite villages |
|---|---|---|---|
| State (Omitted: Maharashtra) | | | |
| Odisha | -19.97* | -19.19* | -23.57** |
| Elitism score (*Nclscore*) | -2.77 | 1.77 | -21.16* |
| Client (Ref: Non-client) | | | |
| Client | 12.25* | | |
| Dependant (Ref: Non-Dependant) | | | |
| Dependant | | 8.75* | 7.82* |
| Number of observations | 1004 | 1004 | 1264 |

Notes: These models also control for household and village level characteristics listed in Table A.1; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.14: Estimated coefficients from a model of ever worked for MGNREGS (*wdaysever*) among households in elite villages; No *Nclscore*; estimated using LPM**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model6 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | |
| Odisha | -0.16* | -0.17* | -0.16* | -0.16* | -0.15* | -0.15* | -0.17* | -0.17* | -0.16* | -0.17* |
| Uttar Pradesh | -0.39** | -0.39** | -0.38** | -0.38** | -0.37** | -0.36** | -0.39** | -0.39** | -0.38** | -0.39** |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant | 0.17** | 0.17** | | 0.17** | | | 0.17** | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant of non-political patron | | | 0.16** | | | | | | | |
| Dependant of political patron | | | 0.19** | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 0.15** | | | | | |
| Dependant, Pradhan of same caste | | | | | 0.20** | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | 0.05 | | | | |
| Dependant, Pradhan of different caste | | | | | | 0.17** | | | | |
| Dependant, Pradhan of same caste | | | | | | 0.22** | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 0.17** | | |
| Dependant, Patron's main occupation is business | | | | | | | | 0.17** | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | 0.15** | |
| Dependant, Dependence of Type B only | | | | | | | | | 0.14** | |
| Dependant, Dependence of Type C only | | | | | | | | | 0.21** | |
| Dependant, Dependence of multiple types | | | | | | | | | 0.19** | |
| Number of dependence connections | | | | | | | | | | 0.10** |
| Number of observations | 1973 | 1961 | 1961 | 1922 | 1922 | 1922 | 1959 | 1959 | 1973 | 1973 |
| R-squared | 0.213 | 0.215 | 0.215 | 0.21 | 0.211 | 0.212 | 0.216 | 0.216 | 0.214 | 0.214 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

**Table A.15: Estimated coefficients from a model of number of days worked for MGNREGS in the last 12 months (*wdaysnum*) among households in elite villages; No *Nclscore*; estimated using OLS**

| | Model1 | Model2' | Model2 | Model3' | Model3 | Model3" | Model4' | Model4 | Model5 | Model8 |
|---|---|---|---|---|---|---|---|---|---|---|
| State (Omitted: Maharashtra) | | | | | | | | | | |
| Odisha | -2.41 | -2.2 | -2.36 | -2.52 | -2.21 | -2.32 | -2.22 | -2.22 | -2.2 | -2.8 |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant | 3.38 | 3.43 | | 3.12 | | | 3.55+ | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant of non-political patron | | | 3.86+ | | | | | | | |
| Dependant of political patron | | | 3.08 | | | | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Pradhan of different caste | | | | | 2.48 | | | | | |
| Dependant, Pradhan of same caste | | | | | 3.58 | | | | | |
| Dependant (Ref: Not dependant, different caste) | | | | | | | | | | |
| Not dependant, Pradhan of same caste | | | | | | -0.56 | | | | |
| Dependant, Pradhan of different caste | | | | | | 2.19 | | | | |
| Dependant, Pradhan of same caste | | | | | | 3.23 | | | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Patron's main occupation is not business | | | | | | | | 3.42+ | | |
| Dependant, Patron's main occupation is business | | | | | | | | 3.67 | | |
| Dependant (Ref: Not dependant) | | | | | | | | | | |
| Dependant, Dependence of Type A only | | | | | | | | | 0.24 | |
| Dependant, Dependence of Type B only | | | | | | | | | 5.43 | |
| Dependant, Dependence of Type C only | | | | | | | | | 5.53 | |
| Dependant, Dependence of multiple types | | | | | | | | | 3.86 | |
| Number of dependence connections | | | | | | | | | | 1.26 |
| Number of observations | 1004 | 999 | 999 | 973 | 973 | 973 | 997 | 997 | 1004 | 1004 |
| R-squared | 0.119 | 0.119 | 0.119 | 0.121 | 0.122 | 0.122 | 0.119 | 0.119 | 0.123 | 0.116 |

Notes: These models also control for household and village level characteristics listed in Table A.1; p-values not reported for improving the readability of the tables, but these are available from the authors upon request; Robust standard errors; + p<0.10 * p<0.05 ** p<.01

Diagram 2.1: All dependence connections in an elite village (defined as having an elitism score, *Nclscore*, greater than 0)

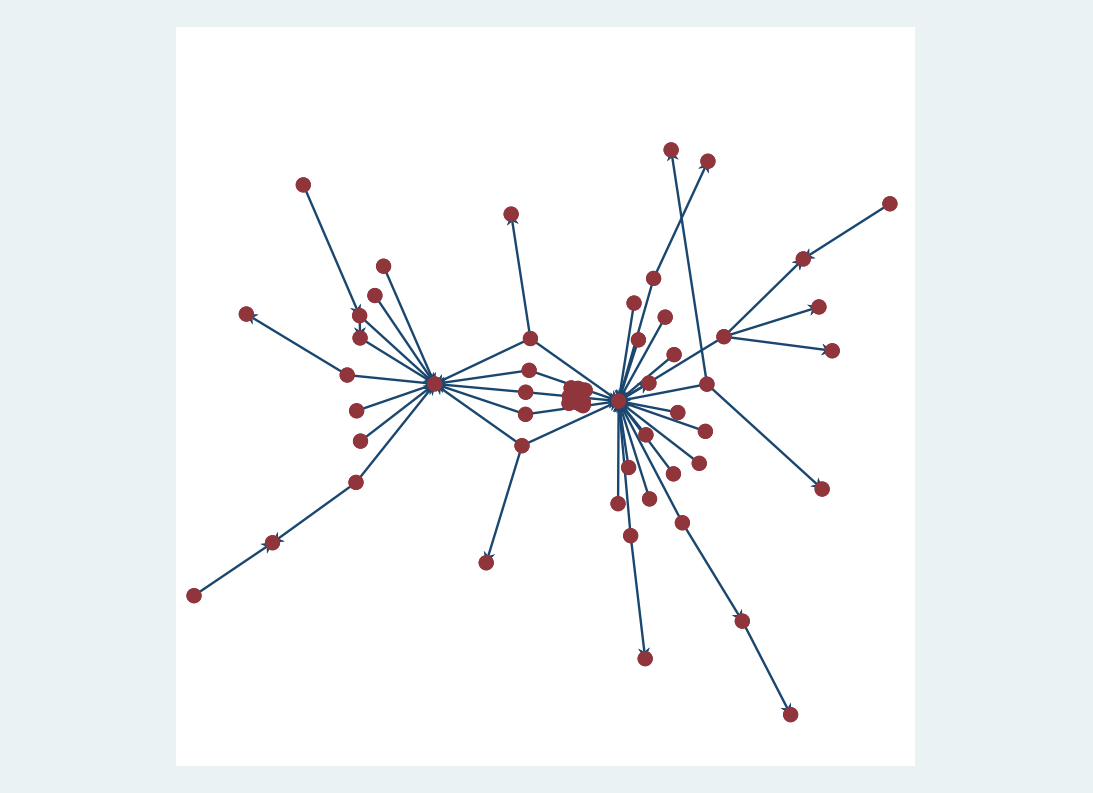


Diagram 2.2: All dependence connections in a non-elite village (defined as having an elitism score, *Nclscore*, of 0)

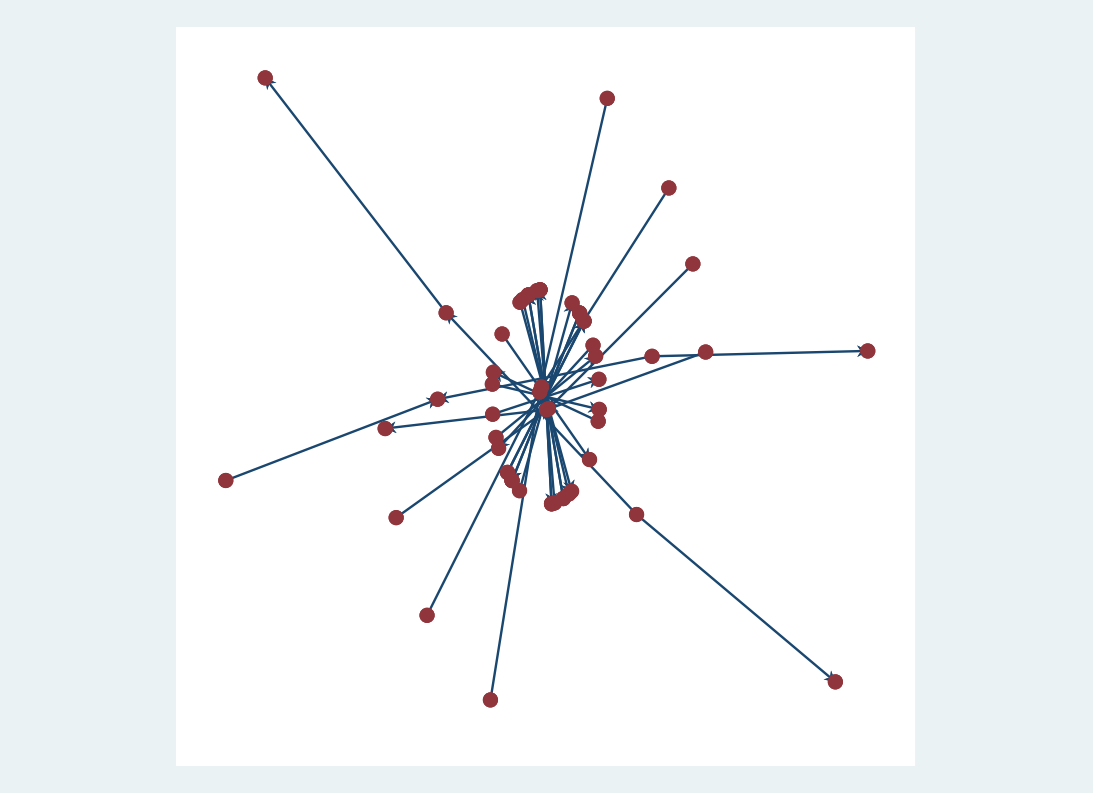
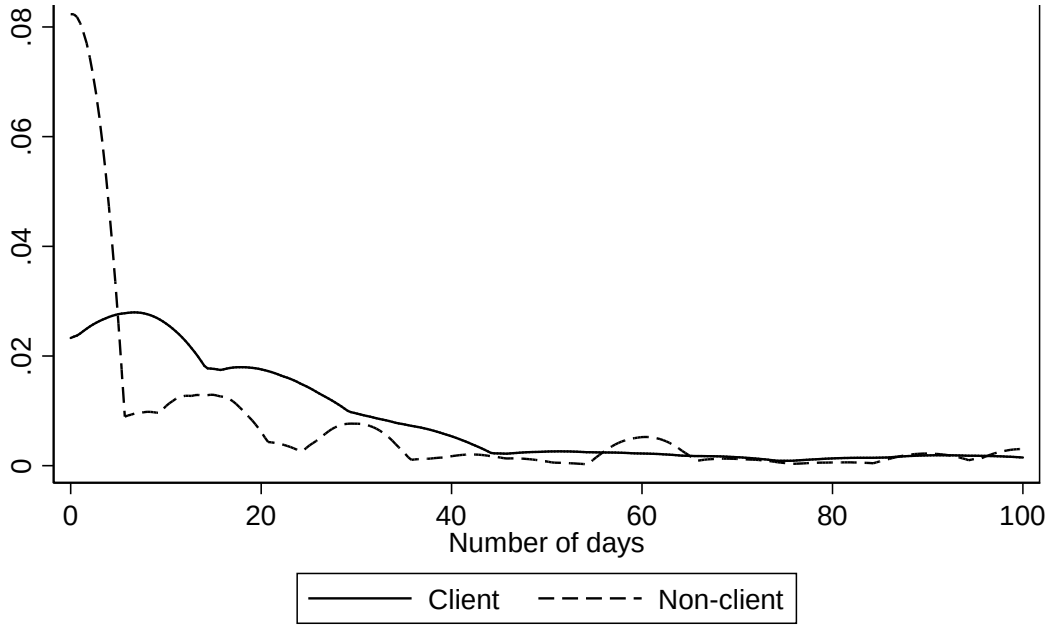


Diagram 3.1: Distribution of MGNREGS workdays in the last 12 months prior to the survey by client status




Notes: 14 villages in Maharashtra and Odisha. Sample restricted to villages with at least 5 households receiving MGNREGS work days in the last 12 months

# A Proof of Theoretical Results

**Proof of Proposition 1**

We complete the equilibrium computation here. Let us recall the following partition of parametric space

$(i)$ $r \leq \underline{w} \leq \frac{ep_0}{p_e - p_0} + r$: (ICW) and (ICO) are binding

$(ii)$ $\frac{ep_0}{p_e - p_0} + \bar{b} > \underline{w} > \frac{ep_0}{p_e - p_0} + r$: (ICW) and (IRO) are binding

$(iii)$ $\underline{w} \geq \frac{ep_0}{p_e - p_0} + \bar{b}$: (IRW) and (IRO) are binding

We formally add a lower bound on $R$; let us assume that $R > \max\left\{\frac{\bar{\rho}}{\bar{b}-r}, \frac{r}{r-\underline{b}}\right\}$, where $B'(\bar{s}) = \underline{b}$. Recall that $\bar{\rho}$ is the upper bound of $\rho$ and $B'(0) = \bar{b}$. We have already mentioned that $\bar{b} > r$. Note that $z(\bar{s}) = 0$ implies $\frac{B(\bar{s})}{\bar{s}} = r$. Since $B$ is strictly concave and $B(0) = 0$, $\underline{b} < \frac{B(\bar{s})}{\bar{s}} = r$.

Equilibrium in zone $(i)$:

Continuing with backward induction, we compute voting decision by agricultural workers. Workers in $S_i$ an $S_j$, those who have borrowed from the politician-lenders face different incentives than those who have borrowed from moneylenders. Take a worker $k \in S_i$. His payoff from voting $i$ is $[\psi + \beta_k + \alpha(m_i - m_j) + E(\pi_k | i \text{ wins})]$. Here $E(\pi_k | i \text{ wins})$ is expected payoff of a worker in $S_i$ if $i$ wins. $\beta_k$ is the randomly drawn loyalty shock in favour of politician-lender $i$ over politician-lender $j$ and $\psi$ is an aggregate uncertainty parameter. We assume that aggregate uncertainty is also a random draw from uniform distribution $[-\frac{1}{2}, \frac{1}{2}]$ [19].

$$E(\pi_k | i \text{ wins}) = p_e \left( \frac{e}{p_e - p_0} + z(s_i(1 - p_e)) \right) + (1 - p_e)\, z(s_i(1 - p_e)) - e$$

Since incentive constraint is binding for borrowers of the incumbent, $k$ gets $\left[\frac{e}{p_e - p_0} + z(s_i(1 - p_e)) + r\right]$ when a harvest is successful. He fully repays the debt in that case. Otherwise $k$ only receives MGNREGS relief net of debt repayment.

Worker $k$'s payoff from voting $j$ is $E(\pi_k | j \text{ wins}) = \left[p_e \frac{e}{p_e - p_0} - e\right]$. Here also incentive constraint is binding for agents like $k$, who do not belong to $S_j$.

[19] Generalization is straightforward. We assume a simple form to avoid unnecessary notations.

Therefore $k$ votes for $i$ if and only if

$$\psi + \beta_k + \alpha(m_i - m_j) + p_e\left(\frac{e}{p_e - p_0} + z(s_i(1-p_e))\right) + (1-p_e)\, z(s_i(1-p_e)) - e \geq p_e \frac{e}{p_e - p_0} - e$$

which is equivalent to $\psi + \beta_k + \alpha(m_i - m_j) + z(s_i(1-p_e)) \geq 0$. Since $\beta_k$ is randomly drawn from a uniform $[-\frac{1}{2}, \frac{1}{2}]$ distribution, proportion of workers in $S_i$ who vote in favour of $i$ is given by $\left[\frac{1}{2} + \psi + \alpha(m_i - m_j) + z(s_i(1-p_e))\right]$. Similarly, proportion of workers in $S_j$ who vote in favour of $i$ is $\left[\frac{1}{2} + \psi + \alpha(m_i - m_j) - z(s_j(1-p_e))\right]$ and proportion of workers in $S_M$ who vote in favour of $i$ is $\left[\frac{1}{2} + \psi + \alpha(m_i - m_j)\right]$. Thus total vote share of $i$ is

$$s_i\left(\frac{1}{2} + \psi + \alpha(m_i - m_j) + z(s_i(1-p_e))\right) + s_j\left(\frac{1}{2} + \psi + \alpha(m_i - m_j) - z(s_j(1-p_e))\right) + (1 - s_i - s_j)\left(\frac{1}{2} + \psi + \alpha(m_i - m_j)\right)$$

$\psi$ is a random draw from uniform $[-\frac{1}{2}, \frac{1}{2}]$. Probability that $i$ wins majority vote share is $\gamma_i = \left[\frac{1}{2} + \alpha(m_i - m_j) + s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\right]$.

Landowners' choice of $m_i$ and $m_j$ can be obtained by maximizing their profit function. If politician-lender $i$ wins the election then $s_i$ workers are to be paid at a higher rate of $\left[\frac{e}{p_e - p_0} + z(s_i(1-p_e)) + r\right]$, while the rest are paid at the rate of $\left[\frac{e}{p_e - p_0} + r\right]$. Similarly if $j$ is elected then $s_j$ workers are paid at a higher rate of $\left[\frac{e}{p_e - p_0} + z(s_j(1-p_e)) + r\right]$. Landowners revenue from a successful harvest is denoted by $q$. Profit of landowners is

$$\gamma_i p_e\left[\left(q - \left[\frac{e}{p_e - p_0} + r\right]\right) - s_i z(s_i(1-p_e))\right] + (1-\gamma_i) p_e\left[\left(q - \left[\frac{e}{p_e - p_0} + r\right]\right) - s_j z(s_j(1-p_e))\right] - \frac{1}{2}(m_i + m_j)^2$$

First line of this equation is land owners' payoff when $i$ wins the election multiplied by probability of $i$'s win. Next line is land owners' payoff when $j$ wins the election multiplied by probability of $j$'s win. Note that $\gamma_i$ is a function of

$m_i$ and $m_j$. Cost of campaign effort is $\frac{1}{2}(m_i + m_j)^2$. This can be rewritten as,

$$p_e\left(q - \frac{e}{p_e - p_0} - r\right) - p_e s_j z(s_j(1-p_e))$$
$$- p_e\gamma_i\Big[s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\Big] - \frac{1}{2}(m_i + m_j)^2$$

First two terms are independent of $m_i, m_j$. At the maximum,
if $\Big[s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\Big] > 0$ then $m_j = \alpha p_e\left[s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\right]$ and $m_i = 0$
if $\Big[s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\Big] < 0$ then $m_i = -\alpha p_e\left[s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\right]$ and $m_j = 0$

Using these optimal values of $m_i, m_j$, we obtain,

$$\bar{\gamma}_i = \frac{1}{2} + \left(1 - \alpha^2 p_e\right)\Big(s_i z(s_i(1-p_e)) - s_j z(s_j(1-p_e))\Big)$$

Finally, we are ready to compute the equilibrium choice of $s_i$ and $s_j$. Given $s_j$, politician-lender $i$ chooses $s_i$ to maximize

$$\bar{\gamma}_i\left[R + s_i\left(p_e r + (1-p_e)\min\left\{\frac{B(s_i(1-p_e))}{s_i(1-p_e)}, r\right\} - \rho\right)\right]$$
$$+ (1-\bar{\gamma}_i)\Big[s_i\left(p_e r - \rho\right)\Big]$$

Political rent from holding the office is $R$, while opportunity cost of 1 unit of fund is $\rho$.

In equilibrium, $s_i(1-p_e)$ must be less than $\bar{s}$. Otherwise workers are indifferent between moneylenders and politician-lenders and by assumption will borrow from moneylenders. When $s_i(1-p_e) \leq \bar{s}$, politician-lenders' payoff is

$$\bar{\gamma}_i\Big[R + s_i\left(r - \rho\right)\Big] + (1-\bar{\gamma}_i)\Big[s_i\left(p_e r - \rho\right)\Big]$$

First order condition is

$$\frac{d\bar{\gamma}_i}{ds_i}\left[R + s_i r(1-p_e)\right] + \bar{\gamma}_i\big(r - \rho\big) + (1-\bar{\gamma}_i)\big(p_e r - \rho\big) = 0$$

In symmetric equilibrium $s_i = s_j = s$ and $\bar{\gamma}_i = \frac{1}{2}$. First order condition can

be rewritten as

$$\frac{(1-\alpha^2 p_e)}{(1-p_e)}\Big(B'(s(1-p_e))-r\Big)\Big[R+sr(1-p_e)\Big] + \frac{1}{2}\Big(r(1+p_e)-2\rho\Big)=0 \tag{3}$$

It can be easily checked that at $s=0$, LHS of Equation (3) is positive and at $s(1-p_e)=\bar{s}$, it is negative. By continuity, there exists $0<s<\bar{s}$ that satisfies the first order condition. Assumption (A2) ensures that equilibrium client size of a politician-lender is strictly below $\frac{1}{2}$.

We have already shown that only the clients of incumbent are offered MGNREGS jobs in equilibrium. At symmetric equilibrium, fraction of $S_i$ who will vote for $i$ is $\big[\frac{1}{2}+z(s_i(1-p_e))\big]$ which is strictly greater than $\frac{1}{2}$. Thus clients are more likely to vote for their respective patrons.

Equilibrium in zone $(ii)$:
Calculations are similar to zone $(i)$ and hence we avoid repetition as much as possible. Probability that $i$ wins majority is

$$\gamma_i=\frac{1}{2}+\alpha(m_i-m_j)+s_i z(s_i(1-p_e))-s_j z(s_j(1-p_e))+\Delta(s_j-s_i)$$

where $\Delta=\big[\underline{w}-\frac{ep_0}{p_e-p_0}-r\big]$. Note that $\Delta>0$. It is straightforward to check that landowners' optimal choice of $m_i, m_j$ remain the same as zone $(i)$. Therefore

$$\bar{\gamma}_i=\frac{1}{2}+\big(1-\alpha^2 p_e\big)\Big(s_i z(s_i(1-p_e))-s_j z(s_j(1-p_e))\Big)+\Delta(s_j-s_i)$$

Solving politician-lender's optimization problem, we obtain, in symmetric equilibrium,

$$\Big[\frac{(1-\alpha^2 p_e)}{(1-p_e)}\Big(B'(s(1-p_e))-r\Big)-\Delta\Big]\Big[R+sr(1-p_e)\Big] + \frac{1}{2}\Big(r(1+p_e)-2\rho\Big)=0 \tag{4}$$

At $s(1-p_e)=\bar{s}$, LHS of Equation (3) is negative as in zone $(i)$ because $\Delta>0$. Now suppose that $\rho\leq\frac{1}{2}r(1+p_e)$. LHS of Equation (4) is positive at $s=0$ because $\alpha<1$ and $\underline{w}<\frac{ep_0}{p_e-p_0}+\bar{b}$. Thus there exist a clientelistic

equilibrium in zone $(ii)$ for all $\rho \leq \frac{1}{2}r(1+p_e)$. For every $\rho > \frac{1}{2}r(1+p_e)$, there exists a cutoff $\underline{w}^\star$ such that LHS of Equation (4) is zero at $s=0$. For all $\underline{w} < \underline{w}^\star$, LHS of Equation (4) is positive at $s=0$ and hence the size of clientele is strictly positive in equilibrium. For all $\underline{w} \geq \underline{w}^\star$ there is no clientelism in equilibrium.

In zone $(iii)$, both individual rationality constraints (IRW) and (IRO) are binding. Given our assumption that indifferent workers will borrow from moneylenders, there is no client in equilibrium. This completes the proof of Proposition 1.

**Proof of Proposition 2**

Proof of part $(a)$ and $(b)$ are straightforward. They follow from Proposition 1, Equations (3) and (4). We only provide a proof of part $(c)$ for zone $(i)$. Using implicit function theorem on Equation (3), we obtain $\frac{ds}{d\alpha} = \frac{2\alpha p_e G_0}{(1-\alpha^2 p_e)(G_1+G_2)}$ where

$$G_0 = \Big(B'(s(1-p_e)) - r\Big)\Big(R + sr(1-p_e)\Big)$$

$$G_1 = \Big(B'(s(1-p_e)) - r\Big)r(1-p_e)$$

$$G_2 = \Big(R + sr(1-p_e)\Big)(1-p_e)B''(s(1-p_e))$$

By second order condition, the denominator is negative. Therefore $\frac{ds}{d\alpha}$ and $(B'(s(1-p_e)) - r)$ have opposite signs. From Equation (3), we also know that $\big(\rho - \frac{1}{2}r(1+p_e)\big)$ and $(B'(s(1-p_e)) - r)$ have the same sign. Therefore $\frac{ds}{d\alpha}$ is positive when $\rho \leq \frac{1}{2}r(1+p_e)$ and negative otherwise. The proof is similar in zone $(ii)$.

# B List of variables

| Household-level variables<br>Source: Household questionnaire of our survey | | |
|---|---|---|
| Variable Name | Description | Definition |
| wdaysever | Participation in MGNREGS work since its introduction | 1: if ever participated<br>0: otherwise |
| wdaysnum | Number of MGNREGS workdays in last 13 months prior to the survey | Number of days |
| caste | Caste and religion of household head | Five categories:<br>• Upper: if Brahmin/ General<br>• Lower: if SC/ST/NT<br>• OBC: if OBC<br>• Muslim: if religion is Muslim<br>• Other: if none of the above |
| land owned | Total rural land owned by household | In Acre |
| non-land asset | Index of asset ownership | Sum of following six dummy variables. Each take value 1 if owned by the household and 0 otherwise.<br>• Non-kacha (mud built and thatched roof) house<br>• Flat/house in town<br>• Palang<br>• TV<br>• Two/four wheelers<br>• Tree/ fruit bearing plant |
| stable occupation | Main household occupation as identified by the household head | 1: if running a business/factory/ production unit or salaried position in some organization<br>0: if any other occupation |
| remittance received | Remittance from outside the village | 1: if someone living outside the village sends money to the household<br>0: otherwise |
| potential workers | Number of household members with education below secondary level and age between 16 and 60 | Headcount |
| maximum education in household | Maximum level of education among all the members of a household | Three categories:<br>• Up to higher secondary education<br>• Under-graduation or equivalent degrees<br>• Above under-graduation |

| | | |
|---|---|---|
| socio-political influence | Formal institutional position hold by some household member | 1: if a member of household is/was panchayat pradhan/ member of local government/ position holder of political party, union<br>0: otherwise |
| advice given | Involvement of household members in mediating community disputes | 1: if household members mediate in community disputes<br>0: otherwise |
| experience with local administration | Experience of dealing with formal institutions such as police, court | 1: if any household member has experience of dealing with police, court, bureaucracy<br>0: otherwise |
| Village-level variables<br>Source: Village questionnaire of our survey, if not otherwise mentioned | | |
| Variable Name | Description | Definition |
| distance to town | Distance to the nearest town | In Kilometer |
| average rainfall | Average rainfall in the village | Millimeter<br>Source: India Meteorological Department |
| irrigation | Proportion of sown area of the village which is irrigated | Percentage<br>Source: 2011 Census |
| percentage labour | Proportion of households in the village for which agriculture or working as agricultural labour is the main occupation | Percentage<br>Source: 2011 Census |

# C Sample Design

Our survey ("Local Institutions and Rural Economic Performances" (LIREP)) sample has a multi-stage, clustered and stratified design. The target sample size was 3600 households. As mentioned above, one of the key information that this survey aimed to collect was the local dependence structure and so it was essential to collect information from all or a sizeable percentage of households in each village. So, it was decided to select and interview approximately 100 households from each of the selected villages which meant that 36 villages could be selected in the sample.

India is a vast country with 29 states and union territories and each of these regions are culturally and politically different with many policies being implemented at the regional level. To be able to control for these state level effects it was decided to confine the sample to three states so that we had sufficient sample sizes at the state level. The three states chosen were Odisha, Maharashtra and (the Eastern part) of Uttar Pradesh. These three states or sub-state regions were chosen for the following reasons. First, these states are located in three parts of India: Maharashtra in the west, Odisha in the east and UP in the northern part. Next, each of these is a major state with each having a major language. Further, with these states, we could get presence of several historical patterns of administrative and land-revenue systems of the colonial period–permanent settlement, princely states, taluqdari systems, ryotwari system–which have been shown to have affected the development of post-colonial institutions, and in turn, economic outcomes. Finally, one of our initial research goals was to measure the institutional impacts of left-wing-extremist (LWE) activities and each of these states had presence of such activities in some parts.

Stage 1: Selecting blocks using a stratified design

To increase the variability of the sample along a number of characteristics and to ensure enough sample sizes for one of the variables of interest, left wing extremism, it was decided to stratify the sample along the characteristics as specified below. Most of the information were available at the district or block (a smaller geographical unit than the district) level. So, it was decided to first select blocks from each of the different strata using probability proportion to size (PPS) sampling where size was measured by the number of households in the block (as in 2001 Census of India, the latest that was available to us) and then select a village randomly from the selected blocks again using

PPS sampling method where size was measured by the number of households in the village. The characteristics used for stratification for each state subsample were as follows:

- Whether the block had experienced left wing extremist activities (L) or not (NL) between the period 2005 to 2010. This was identified using a number of different sources.
- Whether the district containing the block was in coastal (C) or non-coastal region (NC) : identified directly from maps. Coastal regions were expected to have occupational diversity while people in more interior regions were expected to be mainly in agricultural occupation. To be able to identify different types of dependence, not only predominantly agriculture-based dependence links, the sample was also stratified by coastal and non-coastal region.
- Whether historically the district was under ryotwari (R) or non-ryotwari (NR) system during the colonial rule: identified using the classification provided by Bannerjee and Iyer ([10]).

These criteria resulted in the population being divided into 12 mutually exclusive and exhaustive 12 strata within the three states with the added constraint that 12 blocks would have to be selected from each region. As some analysis would look at the LWE impact it was also decided that there should be a sufficient number of villages from the LWE stratum. Hence the following stratification strategy was implemented. Ignoring the clustering of households within villages, the deff was computed to be 1.489 and the neff was 2820.

Stage 2: Assigning selected blocks to forest and non-forest sub-samples

The next sampling stage was to select one village from each selected block. In the first sampling stage one of the variables we had stratified by was LWE activity. But as blocks are large areas with on average 170 villages (and 50% of blocks have more than 150 villages but 99% of blocks have less than 550 villages), not all villages are affected by LWE activity. As it was extremely difficult to get precise information on exactly which of the several hundreds of villages in a block has a history of LWE activities, we decided to indirectly screen for LWE affected villages by selecting villages in these LWE affected blocks that were very near to forest. This was because forest cover has been

found to be highly correlated with LWE activity at least at the district level and there is anecdotal evidence that LWE organisations mainly base their activities in dense forests as state forces find it difficult to enter these areas. So, we then decided to draw two sub-samples from LWE affected blocks - one from areas next to forests and the other from areas away from forests. We did this by collecting maps of forest cover from the Geological Survey of India and the Forest Research Institute and then overlay those on maps of villages . We decided to assign the following number of blocks to the village sub-sample.

- Strata: Eastern UP- L,NC,NR: As one of the selected blocks in the L,NC,NR strata of Eastern UP had no forested village, this block was automatically assigned to the non-forested sub-sample and the remaining blocks in those strata since they summed up to the assigned number of blocks for the Forest Sub-Sample, were allocated to the Forest Sub-Sample.

- Strata: Odisha - L,CO,NR: As one of the selected blocks in L, CO, NR strata in Odisha had no forested village, this block was automatically assigned to the non-forested sub-sample and the remaining blocks in those strata since they summed up to the assigned number of blocks for the Forest Sub-Sample, were allocated to the Forest Sub-Sample.

- Strata: Odisha - L,NC,NR: We selected 2 out of the 3 blocks by PPS where size measure was the proportion of households in forested villages in these blocks.

- Strata: Odisha - L,NC,RY: The only selected block from this stratum was automatically assigned to the Forest Sub-Sample.

- Strata: Maharashtra - L,NC,NR: We selected 3 out of the 4 blocks by PPS where size measure was the proportion of households in forested villages in these blocks.

Stage 3: Selecting villages from selected blocks

Finally we selected one village from each of the 36 selected blocks using PPS where size is measured by the total number of households in the village. For two of the initially selected villages in Maharashtra, when the HH survey was to start (in March-April, 2013), there was battle between the Indian Security Forces and the LWE militants. So, we had to replace these two villages

by two other (safer) villages in the same or adjacent districts with similar administrative and land-revenue history and similar geographical features.

Stage 4: Selecting households from selected villages

In villages where the total number of households was less than 100, all households were selected for survey. In each village where the total number of households was more than 100, upto 110 households were selected using simple random sampling. The sampling frame used was the most recent electoral roll for those villages. The target was to interview at least 100 households in each village and at most 110 households. In some cases, due to attrition, non-response etc with the initially chosen sample of HHs, additional households were selected from the remaining households in the village again using simple random sampling to reach the target sample size.

In the final sample, 21 of the sampled villages included less than 50% of the HHs in the villages, 5 included 50-60% of the HHs in the villages, 3 included 60-70% of the HHs in the villages, 2 included 80-95% of the HHs in the villages and 4 were village censuses.