

## Clientelism in Indian Villages<sup>†</sup>

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*We study the operation of local governments (Panchayats) in rural Maharashtra, India, using a survey that we designed for this end. Elections are freely contested, fairly tallied, highly participatory, non-coerced, and lead to appointment of representative politicians. However, beneath this veneer of ideal democracy we find evidence of deeply ingrained clientelist vote-trading structures maintained through extra-political means. Elite minorities undermine policies that would redistribute income toward the majority poor. We explore the means by which elites use their dominance of land ownership and traditional social superiority to achieve political control in light of successful majoritarian institutional reforms. (JEL D72, H23, I38, J15, O15, O17, O18)*

There is a fair amount of consensus that successful development depends on the development of the right institutions.<sup>1</sup> By “institutions,” we mean the rules of the game. Has a particular society been a democracy or a dictatorship? If it has been a democracy, what have been the voting rules? Is there universal franchise or only eligibility for property owners or educated elites?

India has long been characterized by functional and representative democratic political institutions—at federal, state, and local levels. But at the same time, these democratically elected governments have been extremely rare champions of the interests of the poor, who are the vast majority of their constituents. Local governance in the Indian state of Maharashtra is a prime example. Though it is a state purported to have active political competition, and thought to feature free and fair elections, it is also a state where local governing bodies—Gram Panchayats—who

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<sup>1</sup>Consider, among many others, the seminal study of Acemoglu, Johnson, and Robinson (2001).

are mandated and funded to deliver a raft of pro-poor policies, are known to perform this task poorly. The common view of Maharashtrian local politics is that beneath the veneer of representative democracy, minority local elites are somehow able to capture majoritarian local institutions and run them in their own interests.

In a representative democracy with high rates of voter participation and a vast majority of the electorate exceedingly poor, it is somewhat puzzling that democratically elected governments should so rarely act in the interests of the poor. A possible explanation has been posited by the *clientelist* hypothesis. Clientelism amounts to the buying of votes and hence power, by a cadre of political elite (patrons) in return for the delivery of direct benefits to the non-elite (clients) whose support is essential for maintenance of power. Elite patrons control government but promote benefits to their clients in a quid pro quo arrangement that may see direct transfers to clients, but that will feature governance largely in the interests of the elite.

Case studies describing this in numerous settings abound.<sup>2</sup> But case studies can only be suggestive of the pervasiveness of clientelist phenomena. Ultimately they leave us with little idea of how widespread it is, nor whether the factors that make it occur in the documented cases also contribute elsewhere.

We undertook an extensive data collection program in rural Maharashtra, India, in an attempt to understand the root causes of local (Gram Panchayat) level misgovernance.<sup>3</sup> Though a long-standing institution in village India, only since 1993 have Gram Panchayats in Maharashtra been responsible for program implementation, local public good provision, implementation of pro-poor policies, and been subject to a regular electoral process. Since 1993 these rules have been uniformly applied and well respected throughout the state.

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. Ideally the researcher would like to identify some source of variation that would allow one to predict when a government is likely to be subject to elite capture, and for this variation to not directly affect governance outcomes except through the channel of capture.

For the case of clientelism, an opportunity presents itself in the Maharashtrian village context. Clientelism is a complicated social undertaking, it depends on an often dense network of interactions between patrons and clients. Patrons must be sure that the clients they deliver benefits to will vote as promised when the election presents itself. Clients must be sure that when they return a patron to power, the patron will deliver the promised benefits. Clientelist structures are generally necessary to make this vote-buying arrangement feasible. They are facilitated by the presence of a traditionally dominant group who naturally play the role of patrons, and who can exploit long-standing social networks to help maintain clientelist undertakings. In Maharashtrian villages such “natural” patrons are members of the Maratha caste. They are the politically dominant caste within the region, and

<sup>2</sup>Refer to Kitschelt and Wilkinson (2007) for an overview.

<sup>3</sup>Other work has focused on leader characteristics of Gram Panchayats (Besley, Pande, and Rao 2012, and Chattopadhyay and Duflo 2004).

have been for centuries.<sup>4</sup> The economic elite within a village are the large landowners and the electoral majority in it are the small holders and landless. We measure Maratha presence in a village on both dimensions: as economic elite through their land-holdings, and as electoral majorities through their population numbers. The literature on Maharashtrian villages identifies two prominent reasons for this caste's continued dominance of local politics: superior within-group social cohesion, and superior within-caste trading networks. We embed these two reasons into a simple model of village governance that we use to predict when clientelism is likely to arise as a function of the variation in land-holding and population numbers of this caste.

Our model considers the incentives of landlords (the elite) to obtain power, the incentives of workers (the majority) to cede power in return for benefits, and the instruments available to enact clientelist vote-trading transactions. The model suggests a large set of observables that should co-vary with the presence of the Maratha caste if clientelist vote trading is at work. We map from this model to an estimating equation, the coefficients of which are interpretable directly in terms of the model's parameters. The model thus places a set of sign restrictions on these estimated parameters, and moreover allows us to explore the relative importance of long-standing postulates for the continued hegemony of the region's dominant (Maratha) caste.

In a broad sense, our paper is close to the work of Acemoglu and Robinson (2008). They have, as their central motivation, analyzing how political institutions influence economic outcomes and distribution. At a simple level, democracies should favor *citizens*, and dictatorships the *elite*. But there needs to be a clear distinction between *de jure* and *de facto* political power. In the course of history, a society may move from being a dictatorship to a democracy (a change in *de jure* political power) but the elite may take actions to neutralize this change by building their *de facto* power, using it to their advantage, and in turn perhaps retarding development in the process. Similar forces highlighted in their general treatment of this phenomenon are at play in our context. A subtle perversion of democracy, leveraging existing social and economic hierarchies, can explain persistence of elite (minority) control despite the implementation of democratic (majoritarian) structures.

Bardhan and Mookherjee (2012) present a model of "political clientelism" that characterizes democracies in developing societies and how it differs from the phenomenon of "elite capture."<sup>5</sup> The clientelism they analyze has a few things in common with what we observe in Maharashtra, but also some marked differences which we will argue are explicable with our model given the institutional context.<sup>6</sup> Other papers that have explored evidence of clientelistic politics are Wantchekon (2003);

<sup>4</sup>Maharashtra is almost unique in the Indian context by the degree to which its politics has been dominated by a single caste (Palshikar and Deshpande 1999; Vora 1996; Palshikar 2007): the Marathas. They are an intermediate ranking group (subcaste (or *jati*), traditionally from a warrior caste), that are both the most populous and the largest land-owning caste in the state. It is impossible to understand Indian village politics without taking some account of caste (Munshi and Rosenzweig 2008, Banerjee and Pande 2007).

<sup>5</sup>Robinson and Verdier (2013) also provide a theory of clientelism, wherein the two-sided problems of enforcement explain why the redistribution often takes the form of public sector employment rather than income transfers.

<sup>6</sup>Their model is based on the political process in the state of West Bengal where the ruling party used this sort of clientelism to win elections; the caste of the patrons plays no role there and the vote buying is also accomplished by using government resources. Other work of theirs (Bardhan and Mookherjee 2000, 2005, 2006) analyzes whether a move toward decentralized governance in India has been effective in delivering government services and poverty alleviation schemes to the poor.

Fujiwara and Wantchekon (2013); and Vicente and Wantchekon (2009) in West Africa. Finan and Shechter (2012) demonstrate how vote-buying can be sustained by an internalized norm of reciprocity using data from Paraguay.<sup>7</sup> In Maharashtra villages, cases of clientelism have also been documented by Vora (1996).

Our identification strategy here relies on land-holding leading to political leverage and so resembles Baland and Robinson (2008). In their analysis of Chile, landowners “bought” the support of their workers, and owning lands meant owning votes. The quid pro quo arrangement was higher wages in return for votes. Our model predicts the opposite for Maharashtra where income security seems paramount for workers. In our context, the clientelist undertaking takes the form of insurance for workers in return for their support of landlord candidates. In fact, a primary reason we identify for landlords to control governance is to thwart implementation of centrally mandated initiatives that would raise wages at the village level. We predict clientelism leading to fewer programs, more insurance, but lower wages when vote trading occurs—this is precisely what we find.

An interesting finding is that the gratitude the clients feel toward their patrons is so internalized that answers to social capital questions in our survey give a very positive picture of the social relations in villages where the historical elite dominate. A recent paper by Acemoglu et al. (2013) examines the role of chieftaincy in Sierra Leone. They find that villages with fewer ruling families and more powerful chiefs have lower economic development but higher social capital. They conjecture this reflects the capture of civil society organizations by chiefs whose authority is highly respected because people rely on them for patronage. Our evidence is consistent with a similar story occurring within rural Maharashtra villages.

Our paper proceeds as follows. We start with a description of our context and the main hypotheses guiding both our modeling and data analysis. In Section II we develop the theoretical model that we use to determine our main estimating equations. Section III provides the empirical results and their interpretation. Section IV considers alternative explanations and Section V concludes.

## I. The Context

From November 2006 to May 2007, we surveyed 9,132 households from a sample of 320 villages in the state of Maharashtra, which is located on the west coast of central India. Our data are from three main regions: Western Maharashtra, Marathwada, and Vidarbha (we excluded only the Konkan coastal region whose economic hub is Mumbai). To focus on villages which are primarily agricultural (as opposed to factory-based or small market towns), which are large enough to generally have their own Gram Panchayat, and where society is caste-based, rather than tribal, our criteria for village selection was a total population of 1,500–2,500 with a tribal population representing less than 10 percent.<sup>8</sup> From the universe of such villages within our geographic area (a total of 22,565), 320 were randomly chosen and

<sup>7</sup> Acemoglu et al. (2013) find some muted effects of democratic structures on economic outcomes that are consistent with a type of elite capture.

<sup>8</sup> Indigenous tribal society exists in a somewhat parallel relationship to the caste system in India. It differs markedly in social organization, and will not be amenable to the identification procedures we use here.

visited by our enumeration teams. Within the villages, neighborhoods were identified and their approximate population shares computed. Surveying intensity within a neighborhood was proportional to its population share and households within neighborhoods were randomly selected. Our sample ends up extremely poor; 42 percent are below the state poverty line (less than \$1.25 ppp/day/capita).

We administered questionnaires at the household level, village level, and to the Gram Panchayats (GPs) directly. Some information, particularly the balance sheets of the GPs, were accessed from higher level state government offices using the Right to Information Act. In Maharashtra, a given GP typically covers a population of approximately 2,000. As a result, in our data the GPs are generally village-specific.

GPs implement centrally funded poverty alleviation programs, provide some public goods, represent village interests to higher level administrative units, and obtain resources from centralized funds for village projects. There is substantial variation in all of these performance indicators across our sample of villages.<sup>9</sup>

An important GP activity is pro-poor policy delivery: supposed to be available in the full universe of our sample. There are programs directly targeted to individuals below the poverty line (BPL). There are also nontargeted programs that are still primarily intensively utilized by the poor but nominally available to all residents. The mean number of programs available in a village is 5.33 out of a possible 19 major programs that we asked about, and when restricted to those directly targeted to BPL individuals it is 1.71 out of a total of 8 (refer to Table A1 in online Appendix A). Another important pro-poor policy is the state's Employment Guarantee Scheme (EGS), the precursor to the federal government's National Rural Employment Guarantee Act (NREGA).<sup>10</sup> The EGS is a legal guarantee for 365 days of employment to adult members of rural households willing to do public-work-related unskilled manual labor at the statutory minimum wage. To operate in a village, EGS projects must be activated by the GP from a set of possible projects, after petitioning for particular project approval from a higher level authority. The scheme is evident in only 20 percent of villages. This scheme, like all listed programs, is funded externally and administered by the GP upon request for implementation. The GP draws up lists of eligible recipients, and disburses entitlements to them.

The dominance of the Maratha caste in Maharashtra in terms of land control, political alliances, and rural networks of power has been well documented by political scientists (Deshpande 2004). From the village questionnaires we obtained: (i) Maratha population numbers, and (ii) Maratha land-holdings, both at the village level. As will be clear subsequently, these variables will play a key role in our identification strategy.

As seen in Table A4 in online Appendix A, Marathas are the main landowners and the economically dominant class. This pattern of relative economic advancement occurs within villages where land ownership is dominated by Marathas (what we henceforth call *Maratha Land Dominated*) and also over the sample as a whole. Maratha dominance is seen in village politics too. Taking into account reserved

<sup>9</sup>Refer to Table A1 in online Appendix A for a summary of these outcomes.

<sup>10</sup>"The EGS in the state of Maharashtra in India is probably the most famous and, by many accounts, the most successful direct governmental effort at reducing absolute poverty in rural areas." Ravallion, Datt, and Chaudhuri (1991, p. 1).

positions for the Pradhan, the leader of the GP, (that if applied, always exclude a Maratha male from standing), Table A5 in online Appendix A demonstrates that though Marathas comprise about 40 percent of the population, they are the Pradhan in over 60 percent of villages where a Maratha can stand. In *Maratha Land Dominated* villages, an unreserved Pradhan is more than 80 percent likely to be a Maratha. Even when non-Marathas are the village majority, a Maratha is village Pradhan in almost two-thirds of cases. This over-representation of Marathas is even more pronounced where positions are reserved for women—reaching 78 percent even when the village is majority non-Maratha.

All of our villages contain a well recognized economic elite—large landholders.<sup>11</sup> Large landholders are relatively wealthy, they own the most important agricultural asset (land), control key employment opportunities, and trade in the most important village goods (agricultural output).

But the elite are a tiny electoral minority, as there are extraordinarily high rates of political participation. Over 89 percent of eligible individuals voted in the last GP elections in all the major caste groups (Refer to Table A3 in online Appendix A). The main reason for the approximately 10 percent who did not vote is that they were in villages where candidates stood unopposed. Almost no one reported being forced to vote (less than 0.2 of 1 percent for any caste), over 95 percent had met their Pradhan (GP head), and nearly everyone felt comfortable raising concerns directly with their Pradhan.<sup>12</sup> Approximately 83 percent of our sample rank the Pradhan medium to high (4–5 on a scale of 1–5) in terms of honesty and fairness, and roughly 85 percent of individuals feel that the representatives of the GP have the most support in the village.

There is little direct value of political control to the elite since most of the resources that come to a village through the GP are tied to recipients. But land-owning elites may still be concerned about schemes that target the poor. The single greatest expenditure category for large landowners is labor. Keeping labor's costs low and maintaining a compliant work force is of great importance. Laborers without access to government programs, or employment opportunities outside the village, are more likely to comprise such a work force.

In summary, we observe: (i) high electoral turnout, accountable political leaders, and a strong majority of poor voters; (ii) weak local provision of centrally funded pro-poor programs; and (iii) land-owning elites who would prefer to not have pro-poor policies in place. This brings us to our clientelism hypothesis.

### A. Clientelism Hypothesis

Workers always comprise a majority and GPs are accountable and participatory local democracies.<sup>13</sup> Why would this majority be willing to give up access to

<sup>11</sup> There simply do not exist villages with equally distributed medium-sized land-holdings in our sample, and this is typical of India as a whole. Exceptions are the tribal villages which are numerically small, and which we have purposefully not sampled.

<sup>12</sup> These are documented more explicitly in Table A2 in online Appendix A. Voters elect the council members of the GP, which then elects among its members a Pradhan (leader). The Pradhan is the only member of the GP with a full-time appointment.

<sup>13</sup> By “workers” we mean agricultural laborers as well as small cultivators whose main source of income is derived from wage labor.

centrally provided benefits, and the employment generation scheme that they could secure with GP effort? We conjecture an explanation based on Scott's (1977) classic analysis: large landowners seek political power because they can use it to undermine implementation of programs that directly benefit the poor. This provides no direct benefits to the landlords, but keeps labor compliant and cheap. Landlords are never a majority, and democracy is functional in these villages, so landlords attain power only with support of the poor. The poor, on the other hand, would like to have the programs. The cheapest way for landlords to buy their support and thus gain control of village politics is by providing the poor majority with insurance guarantees. The poor understand that a consequence of ceding political control is losing programs and the EGS. Moreover, wages may be lower than they otherwise would have been, but the insurance they get from the landlords is the price they extract for this.

### B. *Empirical Strategy*

We have information about programs implemented in the village, resources available to the GP, wages, yields, and profits. We also know the villagers' views of how the GP operates, program availability, and the presence of the EGS. We further asked whom villagers receive help from in times of need. We will thus be able to observe the correlations between these variables. But showing correlations amongst these variables consistent with our hypothesized clientelism will not be enough to prove it. These correlations may be a consequence of omitted factors. Moreover, the variables that form the clientelism conjecture are all endogenous to each other.

To get around these problems we exploit village-level information we have about the politically dominant upper caste, Marathas. We know whether the largest land-holding group in the village is Maratha, we also know Maratha population numbers. The relevance of population and land ownership variables is in how they affect feasible clientelist structures. Clientelist vote trading is organizationally complex. Politicians, or their functionaries, who receive votes for promised benefits, are not obliged to deliver the benefits once in office. Voters may not want to vote as they have promised if they have already received benefits.<sup>14</sup> Central to our identification strategy is the advantage that Maratha landlords have in managing these clientelist vote-trading opportunities over landlords from lower castes. After a brief discussion of the reasons for this Maratha political advantage in the subsequent section, we construct a model of clientelist vote trading.<sup>15</sup> This model builds in

<sup>14</sup>Kitschelt and Wilkinson (2007) discuss at length the central impediment to clientelist vote trading which is the incentive compatibility of such agreements. Voter moral hazard is compounded with a secret ballot, mandatory in all our villages, so that monitoring individual votes is difficult. But we make little of this side of the problem in the present paper. As Bardhan and Mookherjee (2012) note, successful clientelist politicians build surveillance and enforcement structures. In Maharashtra villages, a great advantage is provided by the ward-based system of voting, with directly elected community representatives drawn from small clusters of households. With the right sort of collective organization, clientelist political transactions are feasible even under anonymous balloting. In our villages, there are about 5–6 wards in a GP and each comprises on average 300–400 individuals, which is about 70–80 households. Each ward elects two representatives. This implies that, at most, 50 households should be enough to deliver a seat on the GP, implying a not implausible level of monitoring by patrons of clients votes under vote trading. Organized voting is common in the Indian context, and numerous schemes have been devised to circumvent the anonymity of secret balloting: see Chandra (2004) and Subramanian (1999) for in-depth analysis and examples.

<sup>15</sup>We are not the first to attempt a measure of elite capture through an indirect strategy. Another way is to use underlying socioeconomic inequality as an indicator for locales likely to be subject to elite capture, which is then

two potential contributing factors to Maratha landlord advantage, and shows how with them at play we can use the observed village-level population distribution of the Maratha caste, and the variation in village land-holdings by Marathas, to map to policy, insurance transfers, and economic outcomes implied by the conjectured clientelism. If the model is correct, information on Maratha land-holding and population frequencies allows us to predict village-level outcomes. For this variation to identify clientelism we need a number of independence restrictions to be satisfied which are made clear in the model development. But prior to even considering these, we briefly discuss the history of Maharashtra's settlement patterns to understand where this variation comes from.

At least since the fourteenth century Marathas have been the dominant landowners in Maharashtra, owing to their hegemony as a military caste. Overall prevalence as landowners persists today but we also see village-level variation in its distribution. This is because of legislated large-scale land reforms which were enacted after national independence in the 1950s. These acts, diligently implemented in the state of Maharashtra, effectively redistributed land from the large holders to their former permanent tenants (other backward castes, or OBCs under today's classification), leading to a dramatic change in ownership (but not cultivation) patterns. In villages where large land-owning Marathas were mostly absentee landlords, the dominant land-owning caste today *can* be a low caste (OBCs, former tenants). In villages where Maratha landlords resided, although the lower castes typically also own some land, Marathas are highly likely to still constitute the dominant land-owning caste.<sup>16</sup>

One implication of this history is a potentially direct correlation between agricultural productivity and Maratha prevalence. Marathas—as the militarily dominant group—may have resided where the highest quality lands were found, choosing to maintain indirect control as absentee landlords over the rest. To control for this possibility, we measured an extensive set of village geographic variables using the FAO-UNESCO soil maps, using GPS data matched to the 2001 Census of India, and using information obtained from our own village surveys. Table 1 reports the averages of these variables across Maratha land dominated (*MLD*) and non-*MLD* villages, demonstrating no significant differences on any dimensions across the two. Population sizes and proportions of scheduled castes also do not differ.

With land quality correctly measured, the Maratha variables (land-holdings and population numbers) should be exerting no additional effect on productivity through this direct channel. We recognize, however, that despite these controls, omitted factors might still be at play, and we return to an extensive discussion of the main potential ones in Section IV after our main results. What will be clear is it is extremely unlikely that alternative channels of omitted influence can explain the patterns we find in the data.

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related to the allocation of public services across socioeconomic classes or corruption among elected officials (Bardhan and Mookherjee 2012).

<sup>16</sup>Refer to online Appendix D for historical evidence that our key measures of Maratha dominance are historically predetermined.

TABLE 1—VILLAGE GEOGRAPHIC, CLIMATIC, DEMOGRAPHIC MEASURES BY CASTE DOMINANCE

Variable	Maratha land dominated	Non-Maratha land dominated	Equivalence of means
Population	2,071.8 (639.7)	2,032.3 (1,012.0)	39.5 (95.1)
Households	369.9 (60.4)	374.8 (64.5)	-4.9 (7.8)
Proportion SC	0.14 (0.08)	0.15 (0.11)	-0.016 (0.012)
Distance to town	21.9 (12.6)	20.3 (12.9)	1.6 (1.5)
Distance to road	2.6 (2.7)	2.8 (2.9)	0.2 (0.3)
Distance to water	2.9 (2.2)	3.0 (2.5)	-0.05 (0.3)
Uncultivable land	97.3 (116.6)	94.0 (122.7)	3.3 (14.1)
Area: cultivated	2,225.8 (964.1)	2,170.4 (1,655.5)	55.3 (182.8)
Area: irrigated	504.7 (718.7)	489.9 (929.4)	14.8 (116.1)
Area: rainfed	1,586.2 (1,074.1)	1,501.0 (1,107.6)	85.2 (156.7)
Area: tree/groves/orchards	29.1 (64.5)	26.6 (59.6)	2.5 (9.2)
Area: forest	99.1 (335.9)	54.8 (135.4)	44.3 (41.2)
Area: pasture/grazing	58.6 (147.0)	42.7 (104.8)	15.9 (19.5)
Area: fallow	168.5 (283.6)	167.9 (521.3)	0.6 (56.6)
Area: inhabited	30.4 (84.6)	35.3 (94.5)	4.9 (13.1)
Area: community/Panchayat	8.9 (17.8)	12.8 (32.7)	3.9 (3.6)
No alkalinity	0.89 (0.31)	0.87 (0.34)	0.02 (0.04)
No waterlogging	0.88 (0.33)	0.82 (0.39)	0.06 (0.05)
No soil erosion	0.92 (0.26)	0.87 (0.34)	0.06 (0.04)
Topsoil dominant nitrogen	2.82 (0.60)	2.82 (0.38)	0.003 (0.06)
Topsoil dominant organic carbon	3.03 (0.43)	3.00 (0)	0.03 (0.04)
Topsoil dominant pH	3.98 (0.41)	3.93 (0.26)	0.05 (0.04)
Soil depth	0.25 (0.15)	0.24 (0.16)	0.01 (0.02)
Soil color	0.54 (0.21)	0.54 (0.21)	0.005 (0.03)
Salinity	1.89 (0.17)	1.89 (0.18)	0.0002 (0.02)
Percolation	1.81 (0.20)	1.83 (0.21)	0.01 (0.03)
Drainage	1.82 (0.22)	1.83 (0.19)	0.02 (0.03)
Rainfall	62.3 (14.7)	64.9 (19.7)	2.6 (2.0)
Observations	194	112	

*Notes:* The sample excludes areas where no Marathas reside (Eastern Vidarbha). Standard deviations are in parentheses in first two columns. Standard errors are in parentheses in the third column. The first seven variables come from the village amenities and GPS data from the 2001 Census of India. SC refers to scheduled castes, the lowest ranking group in the caste hierarchy. Our own data on village population numbers do not vary by caste dominance either. The next nine variables, pertaining to land-use patterns, also come from the village census of India 2001. The first three measures of soil quality come from our village survey. The next three variables pertaining to topsoil (30 cm) content come from FAO-UNESCO soil maps. Our soil quality measures we chose after consulting with an agricultural specialist in the Faculty of Land and Food Systems at the University of British Columbia. The last five variables on soil quality come from our household survey, aggregated up to the village level. Rainfall information, which is only available at the district level, comes from the India Meteorological Department.

### C. Sources of Maratha Advantage

The sociological and political science literature on rural Maharashtra suggests two prominent reasons why Maratha landlords may be more effective than other caste groups at establishing clientelist politics in the villages they dominate.<sup>17</sup>

*Superior Social Cohesion.*—The fact of social cohesion being present between same caste members is not disputable. But it has additionally been argued that Marathas may be better at achieving such social cohesion today due to their greater experience of collective social organization. Carter (1974) describes a history

<sup>17</sup>Refer to Carter (1974); Lele (1981); and Sirsikar (1970).

of collective political deals between Marathas in Maharashtra rural politics. Conceptually, superior social cohesion could sustain enhanced cooperation if a Maratha cheating another (in a political or other form of transaction) suffers a higher cost than a non-Maratha suffers cheating his own caste mate. Such costs are easier to impose in a socially cohesive group. For example, they could involve withdrawing/reducing or excluding violators from social exchanges (marriages, festivals, celebrations). The greater the costs, the easier for Marathas to sustain cooperative outcomes. This hypothesis is in the spirit of Munshi and Rosenzweig (2008), who postulate that the internal disciplining mechanisms within caste groups can act as an effective check on politician misbehavior. It adds to that basic insight, which is generally true for all caste groups, an added weight for Marathas, for whom these links and internal disciplining mechanisms are posited to be stronger than in other castes. This is consistent with recent experimental evidence on within-caste-group punishment obtained by Hoff, Kshetramade, and Fehr (2011). In their experiment, conducted between members of high and low castes in Uttar Pradesh (North India), high caste members were found to be systematically more willing to impose costly sanctions on norm violators than were the low castes. Marathas are almost always the highest ranked caste present in our villages, suggesting a possible advantage vis-à-vis the others. From hereon, we refer to this as the “superior social cohesion” explanation for Maratha political dominance.

*Maratha Trading Networks.*—Another potential underpinning of Maratha power advantages is from their unique system of caste-based trading networks in the state. Rosenthal (1977) describes how a small producer is typically at the mercy of Maratha agents with substantial commercial ties across rural areas. Maratha trading networks deal in seeds, fertilizers, credit, and agricultural output marketing. Most agricultural and credit cooperative institutions are either owned or controlled by Marathas (Palshikar 2007). Almost all agricultural transactions in the rural parts of Maharashtra, and in our data, are conducted through either a Maratha trading network or using members of the traditional itinerant trading caste (the Marwaris). Since Marwaris are not resident in villages (there are almost none living in our sample) there are no caste-based connections between farmers and Marwaris in our sample. A potential explanation for Maratha landlords’ political power is that access to, and use of, these networks is a benefit that Maratha patrons grant to political clients in return for political support. This would make support relatively cheap for Marathas to “buy.”

## II. The Model

### A. Formalities

Workers, denoted  $W$ , own negligible land and sell labor. Landlords, denoted  $L$ , hire labor and derive income from land-holding. There are  $2n$  workers in each village and  $1 < n$  landlords. Workers are a majority, so landlord political control can only occur if they “buy” at least  $n$  worker votes. Each individual has a caste (denoted  $c_i$  for person  $i$ ). Either  $c_i = M$ , or  $c_i = N$ , denoting Maratha and non-Maratha, respectively. Each agent is identified by both class ( $W, L$ ) and caste ( $M, N$ ).

*Programs.*—The GP is tasked with implementing pro-poor policies. If implemented correctly, they generate worker value  $P$ . If implemented badly, they generate  $\tilde{P} < P$ . Landlords do not value programs. Reducing program availability lowers wages and raises labor compliance.<sup>18</sup> Denote wages when programs are implemented by  $w_P$ , and those when not by  $w_{\tilde{P}} < w_P$ . The full benefit to a worker from programs in a village is denoted  $\Delta_{wP} \equiv P - \tilde{P} + w_P - w_{\tilde{P}}$ . Finally, denote land rents when programs are implemented by  $\pi_P$  and those when not by  $\pi_{\tilde{P}} > \pi_P$ .

*Maratha Advantages.*—Maratha trading network access generates benefit of amount  $T$  for both workers and landlords. Only Marathas have access directly, but any Maratha can grant it to a non-Maratha costlessly. We asked extensive questions about the use of such networks and as will be seen, the prevalence of their use by non-Marathas does seem to depend critically on Maratha landlord presence. Workers utilize these networks to procure inputs for their own small plots, loans for business activities, and for sale of output. The majority of workers (roughly 70 percent) in our sample live in households with a small amount of land or running a small business.

Landlords divide vote buying responsibilities symmetrically. Since landlords are of measure 1 each is responsible for the votes of  $n$  workers. Landlords have incentive to free-ride on the vote-buying of their colleagues. To overcome this, landlords impose social punishments on individuals who cheat. Marathas potentially have advantages in the strength of these punishments. Let  $X_M$  denote the social punishments imposed on a cheating Maratha landlord, by other Marathas. Let  $X_N$  denote a non-Maratha landlord group's analogous punishments with  $X_M \geq X_N \geq 0$ . Additionally, Maratha workers are unique in being able to impose social punishments on Maratha landlords who cheat them, denoted by  $X \geq 0$ .<sup>19</sup>

*Insurance.*—Votes are bought by promising insurance transfers in a state of “need.” Such transfers would be needed to cover medical expenses, loss or damage to a household asset such as livestock, employment/sickness shocks to an earner, etc. An insurance promise is a commitment by the landlord to a transfer when needed by the worker. We assume that the need state is observable to both landlords and workers but not enforceable by formal/legal mechanisms. Denote the net present value to worker  $j$  of the transfer commitment from landlord,  $i$ , to be  $S_i^j$ , where the magnitude of  $S$  depends on the extent of the insurance commitment.<sup>20</sup>

*Incentive Compatibility of Insurance Promises.*—The timing is as follows. (i) Worker and landlord can strike a vote-trading deal specifying a transfer  $S_i^j$  from landlord to worker in state of need in return for the worker's vote. (ii) The state is revealed to both parties. (iii) The landlord chooses the transfer level if the need state arises. (iv) Elections occur. If the need state arose and the transfer received is (at

<sup>18</sup>This can be micro-founded (see online Appendix C) but is an assumption here.

<sup>19</sup>Only Marathas are able to impose these as they are the only *Jati* (subcaste) on both sides of a clientelist agreement—i.e., Marathas can be both landlords and workers in the same village. Occasional exceptions will arise in non-Maratha landlord dominated villages, but these are rare and are ignored here.

<sup>20</sup>As shown in a previous version of this paper (Anderson, Francois, and Kotwal 2014), modeling the state contingency of the transfers rather than collapsing the valuation to its expected value has no impact on the analysis.

least)  $S_i^j$ , the worker votes for the landlord's candidate. If the need state arose and the transfer received is less than  $S_i^j$ , the worker votes for someone else, and social sanctions are imposed on the landlord. If the need state does not arise, the worker votes as promised.<sup>21</sup>

In addition to social costs common to all individuals, we allow for each pair to share a common idiosyncratic history (not observed by the researcher) which may allow some level of social cost to be imposed on the landlord if he cheats the worker. This pair's history is summarized by a nonnegative number,  $x_i^j$ , which is randomly and independently drawn from the distribution  $F(x_i^j)$  defined on a finite support. The following assumption plays a key role in identifying the model:

**ASSUMPTION 1:** *The pairwise idiosyncratic terms,  $x_i^j$ , are independent of village-level land-holdings by caste, and caste population numbers.*

Purely at the individual level, this is a reasonable assumption. The working relationship between a landlord and his employees is likely to reflect their personal history which is unlikely to be systematically affected by village-level variables such as the caste frequencies or aggregate land-holding patterns. But it is possible that more than the pair's personal history could be involved. Coordination amongst workers to punish landlords who transgress could possibly be affected by village caste frequencies. For instance, worker-level social capital or social cohesion may vary with the share of land held by Marathas. This would make it more difficult for workers to punish landlords in *MLD* villages. Since our surveys asked respondents about social cohesion, we are able to verify in Table B7 of online Appendix B that such an effect is not evident; our measures of worker social cohesion do not vary across *MLD* and non-*MLD* villages.<sup>22</sup> We also demonstrate, in online Appendix C, that all of our model results will continue to hold under this violation of Assumption 1.

Additionally, the cheating landlord incurs social costs imposed by other landlords for not delivering his  $n$  votes: the  $X_i$  defined above. Both of these punishments bound the transfers that a landlord can credibly promise in return for the worker's support in a clientelist arrangement. Specifically, incentive compatible insurance transfers between landlord  $i$  and worker  $j$  must satisfy

$$(1) \quad S_i^j \leq X_i + I_i^j X + x_i^j,$$

where  $I_i^j = 1$  if  $c_i = M$  and  $c_j = M$ , and  $I_i^j = 0$  otherwise.

<sup>21</sup> We only focus on the incentive compatibility of promises made by landlords to workers in return for their votes. A more complicated version of the model would also analyze the incentive compatibility of worker promises to vote in favor of the landlord's candidate after having received insurance. Since any patron group must assure clients vote as promised, this is a problem that is common and for which no caste has a particular advantage. In the model, we thus focus on the landlord's (patron's) side of the problem, where Maratha landlord advantages are more likely to arise.

<sup>22</sup> We show that the landless are not more likely to share information with other workers or trust people like themselves in *MLD* villages.

*The Cost of a Vote.*—Individual rationality of vote trading for landlord  $i$  buying the votes of  $n$  workers  $j$  requires

$$(2) \quad \pi_{\tilde{P}} - nS_i^j \geq \pi_P.$$

For the worker ( $j$ ), similarly, individual rationality of vote trading with landlord ( $i$ ) in village  $k$  requires  $U_{jk}(L_i) \geq U_{jk}(W)$ , where  $U$  denotes the expected utility outcome corresponding to the group in parentheses controlling the GP. Without vote trading, workers ( $W$ ) are the majority. As we will see, this implies control of the GP. Consequently programs are implemented at value  $P$ , there is no insurance, and if the worker is not Maratha, there is no trading network access. In that case worker utility is

$$(3) \quad U_{jk}(W) = w_P + P + d^j T,$$

where  $d^j = 1$  if  $c_j = M$ , and  $d^j = 0$  if  $c_j = N$ . In contrast, with vote trading, landlords ( $L_i$ ) control the GP. Programs are reduced to  $\tilde{P}$  but there is insurance provided and network benefits arise for workers, so that only if both parties are non-Maratha does a worker *not* receive network benefits in this case:  $d_i^j = 0$ . An additional cost of vote trading to workers is that they must support the landlord's candidate instead of their own preferred one. We capture the cost to the workers of village  $k$  doing this via the term  $x_k$ . A higher quality landlord candidate increases  $x_k$ . The variable  $x_k$  is drawn from distribution  $G(x_k)$ ,

$$(4) \quad U_{jk}(L_i) = w_{\tilde{P}} + \tilde{P} + S_i^j + d_i^j T + x_k.$$

Once again, model identification depends on the draw of candidate-specific quality being independent of village-level caste characteristics. Similarly, we assume:

**ASSUMPTION 2:** *The realization of  $x_k$  is independent of village-level land-holdings by caste, and caste population numbers.*

This amounts to assuming that the random variation in the quality of landlord candidates across villages is not related to landlord or population caste numbers. An indirect indication can be obtained by checking for systematic differences in worker perceptions of leader quality in *MLD* and non-*MLD* villages. Table B7 of online Appendix B shows that in terms of the perceptions that workers have of Panchayat leaders in *MLD* villages versus non-*MLD* villages, there do not seem to be systematic differences. Though this is not an aspect directly addressed by the literature on Maharashtrian villages, numerous contributors to this literature have argued that the history of domination by the Marathas has made them resented by lower castes and the poor (Mandavdhare 1989). This would suggest that if Assumption 2 is violated at all it would likely be in the direction of landlord candidates in *MLD* villages

being seen less favorably by workers than such candidates in non-*MLD* villages. If so, the  $x_k$  term in Maratha land dominated (*MLD*) villages would be drawn from a distribution that is stochastically dominated by that in non-Maratha land dominated villages—clearly violating Assumption 2. Since this cannot be ruled out, we explore the implications of this departure from Assumption 2 in online Appendix C. This also has no effect on model results.

We state here the conditions under which, given that Marathas control access to trade, a clientelistic relationship produces a surplus of a given worker/landlord pair:

**PROPOSITION 1:** *Clientelist vote trading is both individually rational and incentive compatible for a worker ( $j$ )/landlord ( $i$ ) pair if and only if:*

$$\begin{aligned}
 (5) \quad & \\
 (6) \quad & x_i^j + x_k \geq \begin{cases} \Delta_{wP} - X_M - X, & \text{for } c_i = M \text{ and } c_j = M. \\ \Delta_{wP} - X_M - T, & \text{for } c_i = M \text{ and } c_j = N. \\ \Delta_{wP} - X_N, & \text{for } c_i = N \text{ and } c_j = M \text{ or } N. \end{cases} \\
 (7) \quad &
 \end{aligned}$$

Proofs of all propositions are in online Appendix C.

A high value of  $x_k$  makes it less costly to workers to vote for the landlord’s preferred candidate, and individual rationality of vote trading easier to satisfy. A high value of  $x_i^j$  makes landlord reneging on promised worker transfers costly, and hence supports a greater range of incentive compatible transfers from them in return for workers’ votes. These terms do not vary by caste but the right-hand side of this expression does. When both worker and landlord are Maratha, equation (5), superior caste cohesion sustains higher punishments,  $X$ , and hence makes higher transfers incentive compatible. This adds to the within landlord punishment effect  $X_M$ . When only landlords are Maratha, (6), the  $X$  term disappears to be replaced by trading network access,  $T$ , which can be granted to non-Maratha workers for their support—hence benefiting vote trading. In the final case—that of non-Maratha landlords in equation (7)—there is neither trading network access nor superior caste cohesion between workers and landlord, but non-Maratha landlords can still punish landlord digressions,  $X_N$ .

### B. Computing the Likelihood of Vote Trading

To move from individual-level vote trading incentives to village-level predictions, we now consider the relationship between these individual conditions and the likelihood of vote trading occurring in the village as a whole. We already know that no single landowner acting as a patron can orchestrate control of the GP by vote trading with his own workers alone. The landowners as a group must be able to contract votes from enough workers to ensure a majority in the village. We make the following assumption about how many:

**ASSUMPTION 3:** *If and only if a majority of workers find it individually rational to accept incentive compatible transfers from landlords for vote trading, then vote trading occurs, and landlords exert political control.*

This assumption allows us to map from the incentive compatibility/individual rationality conditions for worker/landlord pairs, and the frequency of such pairs to vote trading at the village level. It amounts to assuming that landlords have the wherewithal to act in their collective interests; if there are gains to be made from vote trading, we assume vote trading occurs. If, however, the votes that can be feasibly bought by landlord patrons are not sufficient for them to wrest control of the GP, they do not bother.

*Deriving the Estimating Equation.*—The model predicts outcome variables, denoted  $v_k$ —wages, profits, programs, insurance—that will be affected by clientelism occurring in village  $k$ ; these will be discussed further in Section IID. These variables are also potentially affected by the village-level covariates listed in Table 1. So we include such controls, as well as individual-level controls for education, land ownership, and caste identity.<sup>23</sup> We denote these by the vector  $\mathbf{Z}_k$ . Thus for an outcome variable  $v_k$ , in village  $k$  we have

$$(8) \quad v_k = \alpha_v I_{VTk} + \alpha \mathbf{Z}_k + \mu_{vk},$$

where  $I_{VTk} = 1$  if vote trading occurs in village  $k$  and 0 otherwise, and  $\mu_{vk}$  is a mean zero village and variable specific error term. By now assuming an explicit process for the idiosyncratic shock term,  $x_k$ , we are able to map population frequencies by caste into the proportion of likely vote traders, hence the likelihood of clientelism occurring, and in turn to the set of outcome variables in the village. Let  $\sigma_{jik}$  denote the frequency of worker caste  $j$ , landlord caste  $i$  pairs in village  $k$ . Then:

**PROPOSITION 2:** *If  $x_k$  is drawn from a uniform distribution, the expected value of variable  $v_k$  in a village with population frequencies  $\sigma_{ijk}$  and characteristics  $\mathbf{Z}_k$  is given by*

$$(9) \quad E[v_k | \sigma_{ijk}, \mathbf{Z}_k] = \alpha_v [C + \sigma_{MMk}(X_M + X) + \sigma_{NMk}(X_M + T) + \sigma_{NNk}(X_N) + \sigma_{MNk}(X_N)] + \alpha \mathbf{Z}_k,$$

with  $C$  a constant.

The assumption of uniformity on the  $x_k$ s makes for an extremely simple relationship between the probability of clientelism occurring and the caste landlord/worker frequencies. In online Appendix C we show that the interpretation of coefficients and the inferences drawn from the model are identical under any well-behaved alternative distributions satisfying Assumption 2.

Intuitively, the probability that a high enough proportion of the village are willing vote traders—and hence that clientelism occurs—depends on the frequency of worker/landlord pairs by caste type (the  $\sigma_{ji}$ s) because each pairing differs in its propensity to vote trade depending on its caste composition via Proposition 1. We

<sup>23</sup>In online Appendix B we show that all results are robust to omitting these controls.

compute the  $\sigma_{ji}$ s from land ownership and population frequencies by caste under the following assumption.

**ASSUMPTION 4:** *Political clients are randomly matched with political patrons.*

Assumption 4 implies that the probability of a particular clientelist pair occurring in a village will be directly related to the population frequencies of such pairs in the overall village population; caste members are neither more nor less likely to be matched in landlord/worker pairs. Random matching may seem a strong (and unlikely) restriction in India where segregation by caste can occur. We show, in online Appendix C, that the perhaps more natural “positive assortative matching” by caste case does not alter the model interpretation of coefficients.

We can use our data to estimate the  $\sigma_{ji}$ s directly. We know the population distribution of each caste group in the village, and from this we construct the continuous variable,  $MPROP \in [0, 1]$ , which equals the proportion of the village population that is from the Maratha caste. We also have from the Talathi (village administrator) the dominant land-owning caste group in the village. We code this as the binary variable,  $MLD$ , which equals 1 if Marathas are the land dominant group, and 0 otherwise.<sup>24</sup> Using these, we can obtain a relationship between observables as follows:

**PROPOSITION 3:** *Under Assumption 4, expression (9) rearranges to*

$$\begin{aligned}
 (10) \quad E[v_k | MLD_k, MPROP_k, \mathbf{Z}_k] &= \alpha_v C + MLD_k \cdot \alpha_v [T + X_M - X_N] + MPROP_k \cdot \alpha_v [0] \\
 &+ MLD_k \cdot MPROP_k \cdot \alpha_v [X - T] + \alpha \mathbf{Z}_k + \mu_{vk},
 \end{aligned}$$

where  $C$  is a constant.

### C. Predicted Outcome Variables

Equations (3) and (4) generate the set of workers’ dependent variables predicted to be affected by clientelist vote trading. For each one of the dependent variables ( $v$ ) below we elicit its directional change by comparing its model predicted value when vote trading happens (equation (4)) with its value without vote trading (equation (3)). The comparison determines the sign of  $\alpha_v$  in equation (10).

For worker variables:

- (i) **Programs** ( $\alpha_v < 0$ ): Without vote, trading programs are  $P$ ; they fall to  $\tilde{P}$  under vote trading.

<sup>24</sup>We have an alternative source of Maratha land-holdings from our household surveys. From these 30 households per village we obtain an estimate of the overall proportion of village lands held by Marathas  $\overline{MLD} \in [0, 1]$ . We utilize the Talathi variable throughout the body of the paper as it is not subject to sampling error and hence more accurate, but show that all results are robust to instead using  $\overline{MLD}$  in online Appendix B.

- (ii) **Insurance Receipts** ( $\alpha_v > 0$ ): Without vote trading, the value of insurance received by workers from landlords is 0; under vote trading this rises to  $S_i^j$ .
- (iii) **Wages** ( $\alpha_v < 0$ ): Without vote trading wages are  $w_p$ ; they fall to  $w_{\bar{p}}$  with vote trading.
- (iv) **Trading Networks** ( $\alpha_v > 0$ ): Without vote trading,  $d^j T$  are Maratha trading benefits, where  $d^j = 1$  if and only if worker  $j$ 's caste is Maratha. With vote trading, Maratha trading benefits are  $d_i^j T$ , where  $d_i^j = 1$  if either worker  $j$ 's caste is Maratha or landlord  $i$ 's caste is Maratha, and  $d_i^j = 0$  otherwise.

For landlords the relevant variables are computed using equation (2), the landlords' individual rationality conditions. These are:

- (i) **Profits** ( $\alpha_v > 0$ ): Without vote trading, the value of profits is  $\pi_p$ , which rises to  $\pi_{\bar{p}}$  under vote trading.
- (ii) **Insurance Liabilities** ( $\alpha_v > 0$ ): Without vote trading, the value of insurance liabilities from landlords is 0; under vote trading this rises to  $S_i^j$ .

#### D. Interpretation

We estimate equation (10) using a linear regression of the following form:

$$(11) \quad v_k = \beta_0 + \beta_1 MLD_k + \beta_2 MPROP_k + \beta_3 MLD_k \cdot MPROP_k + \gamma \mathbf{Z}_k + \epsilon_k.$$

Given Assumptions 1 and 2, and that  $MLD_k$  and  $MPROP_k$  do not directly affect the outcome variables—the implications of which we discuss later—the linear regressions that we estimate will yield consistent estimates. The regression coefficients directly map to the model's parameters as follows:

$\beta_1 = [T + X_M - X_N]\alpha_v$ .—Since  $T > 0$  and  $X_M \geq X_N$ , the model implies this coefficient should be positive (negative) for  $\alpha_v > 0$  ( $< 0$ ). Maratha land dominance should have a direct positive effect on the probability of vote trading, thus raising (lowering) the value of variables the theory predicts are larger (smaller) under vote trading.

$\beta_2 = [0]\alpha_v$ .—There should be no direct effect of Maratha population numbers, and hence the prevalence of Maratha workers, on a clientelist vote-trading variable. This is because having Maratha versus non-Maratha workers only affects Maratha landlords, and so is picked up via the interaction term. Non-Maratha landlords have the same capacity to enter into vote trading with workers of any caste as the costs imposed on cheating are  $X_N$  in both cases.

$\beta_3 = [X - T]\alpha_v$ .—The sign of this variable tell us the relative importance of the two posited explanations for the political prominence of the Maratha caste: their greater social cohesion or their trading network access respectively. Intuitively, the

interaction term applies where Marathas are both the landlords and the workers. In such cases jati benefits,  $X$ , affect the feasibility of vote trading but trading network benefits that are of use to Maratha landlords with non-Maratha workers cease to be relevant as Maratha workers already have access directly; hence the negative sign on  $T$ . So for  $\alpha_v > 0$ , a positive (negative) interaction term,  $\beta_3 > (<)0$ , suggests superior caste cohesion is more (less) important than trading network advantages.

$\beta_1 + \beta_3 = [X_M - X_N + X]\alpha_v$ .—This is the magnitude of the total clientelism advantage of Marathas that derives exclusively from their superior social cohesion. The term  $X_M - X_N$  reflects the superior punishment capacity on a transgressing landlord by other landlords when Maratha. The term  $X$  is the superior punishment of a transgressing landlord by a worker. The summation of these coefficients suggests the total extra help in sustaining clientelism deriving from Maratha social cohesion. If this summation exceeds zero (for  $\alpha_v > 0$ ) then social cohesion generates benefits for Marathas in maintaining clientelist structures. If not, the total benefits of superior social cohesion do not aid Marathas in sustaining clientelist structures.

### III. Estimation and Results

Based on (11), we run two main estimating equations depending on whether the dependent variable is village or household level. The household-level regression is represented by the following:

$$(12) \quad Y_{ik} = \beta_0 + \beta_1 MLD_k + \beta_2 MPROP_k + \beta_3 MLD_k \cdot MPROP_k \\ + \psi \mathbf{Z}_{ik} + \gamma \mathbf{Z}_k + \epsilon_{ik}.$$

$Y_{ik}$  is an outcome of household  $i$ , residing in village  $k$ .  $\mathbf{Z}_{ik}$  includes household controls (education, land ownership, and caste identity);  $\mathbf{Z}_k$  includes village-level geographic, demographic, and climate controls (latitude, longitude, elevation, presence of river/canal, distance to natural water sources, railways, and national roads, soil quality measures, rainfall levels, proportion of the population that is SC/ST, total village population, and reservation status of Gram Pradhan).  $MLD_k$  is equal to 1 if a village  $k$  is Maratha land dominated and equal to 0 if the village is land dominated by a lower caste.  $MPROP_k$  is the proportion of Marathas in a village  $k$ .<sup>25</sup>  $\epsilon_{ik}$  is a regression disturbance term clustered at the village level.<sup>26</sup> Refer to Tables A1, A2, and A3 in online Appendix A for summary statistics on all of the variables used in the estimations.

We also explore the impact of Maratha dominance on GP performance using village-level outcome measures. Similarly we estimate the following:

$$(13) \quad Y_k = \beta_0 + \beta_1 MLD_k + \beta_2 MPROP_k + \beta_3 MLD_k \cdot MPROP_k + \gamma \mathbf{Z}_k + \epsilon_k.$$

<sup>25</sup> We also include region fixed effects to control for variation in historical land revenue systems, but we do not report these.

<sup>26</sup> In one set of estimations on daily wage, we instead cluster errors at the village and household level (using the approach of Cameron, Gelbach, and Miller 2011). The information on daily wages comes from the sample of all laborers. As a result, we have multiple observations per household.

$Y_k$  is a village-level GP outcome measure in village  $k$  and  $\varepsilon_k$  is a regression disturbance term.

The pairwise correlation between  $MLD_k$  and  $MPROP_k$  is only 0.54, so estimations should not suffer from multi-collinearity. Also, the villages where Marathas dominate (by either of these measures) are geographically dispersed throughout our sample. Our results are robust to including regional fixed effects defined in several ways.<sup>27</sup>

$MLD_k$  is equal to 1 for 59 percent of the villages in our sample. The remaining villages are dominated by a lower ranked caste group (primarily two cultivating castes, the Kunbis and Dhangars, both OBCs under today's classification). In the empirical estimation we leave these two subcastes (or *jatis*) grouped together. All of our main results persist if we instead separate them in the analysis.

### A. Evidence on Model Variables

*Worker Cost of Vote Trading: Programs* ( $\alpha_v < 0$ ).—We obtain direct information about the availability of mandated and centrally funded programs from our household level surveys and from our survey of the village government. There are two broad types of programs that are relevant. Firstly, there are programs directly targeted to individuals below the poverty line (BPL). There are also nontargeted programs that are still primarily intensively utilized by the poor but nominally available to all village residents. For each one of these programs, household members were surveyed on the availability of the program within the resident village. The model predicts a negative effect of  $MLD$  on programs, represented by the coefficient  $\beta_1 = \alpha_v[T + X_M - X_N]$ ; since  $T > 0$  and  $X_M \geq X_N$ . The model also predicts that  $MPROP$ , represented by  $\beta_2$  (of (12)), should have no effect on the level of programs once  $MLD$  and the interaction between  $MLD$  and  $MPROP$  are included in the regression.

As can be seen from Table 2, the results are consistent with these predictions of the model. Programs (1) and BPL programs (1), from the household surveys are, on average, 1.01 and 0.42 lower, respectively, in  $MLD$  villages. Both are significantly different from 0 at the 1 percent level. The means for these variables were 5.36 and 1.73, respectively, so the percentage decline in programs is 19 percent and 24 percent, respectively. Since the interaction term captures the effects of  $MLD$  in villages with a positive  $MPROP$ , these numbers should be interpreted as the percentage decline in the availability of programs due to the effect of  $MLD$  in villages where  $MPROP$  is negligible. Since  $MLD$  villages have approximately 30 percent more Marathas than the others, we can compute the effect of programs when moving from the *average MLD* village to the *average non-MLD* village by adding 0.3 times the coefficient on the interaction term to the direct effect. This equals  $1.01 - 0.3 \times 1.84 = 0.46$  or an 8.5 percent decline in programs (1), and correspondingly  $0.42 - 0.3 \times 0.81 = 0.177$  or a decline in BPL programs (1) of 10 percent. We also aggregated individual-level information and ran village-level

<sup>27</sup>That is, at the level relevant to administrative divisions today, at colonial administrative units, or at the district level. Results are also robust to excluding the few areas where no Marathas are present.

TABLE 2—ESTIMATIONS OF GP MEASURES

Dependent variable:	Coefficient ( $\beta_1$ ) <i>MLD</i>	Coefficient ( $\beta_2$ ) <i>MPROP</i>	Coefficient ( $\beta_3$ ) <i>MLD · MPROP</i>	Coefficient ( $\beta_1 + \beta_3$ )	Observations
Maratha Pradhan	0.43 (0.15)***	1.21 (0.24)***	-0.51 (0.28)*	-0.08 (0.18)	290
Programs (household data)					
All programs (1)	-1.01 (0.36)***	-1.19 (0.57)**	1.84 (0.72)***	0.83 (0.49)*	8,140
BPL programs (1)	-0.42 (0.12)***	-0.37 (0.21)*	0.81 (0.27)***	0.39 (0.18)**	8,140
EGS (1)	-0.10 (0.04)***	0.02 (0.08)	0.19 (0.10)**	0.09 (0.07)	8,140
Income programs (1)	-0.98 (0.33)***	-1.11 (0.54)**	1.84 (0.68)***	0.87 (0.46)*	8,140
Non-income programs (1)	-0.03 (0.04)	-0.08 (0.07)	-0.004 (0.08)	-0.04 (0.05)	8,140
Programs (village data)					
All programs (2)	-0.94 (0.37)***	-1.04 (0.57)*	1.44 (0.75)**	0.49 (0.50)	291
BPL programs (2)	-0.40 (0.13)***	-0.35 (0.21)*	0.69 (0.28)***	0.29 (0.18)	291
EGS (2)	-0.08 (0.04)**	0.02 (0.09)	0.18 (0.11)*	0.10 (0.08)	291
Income programs (2)	-0.92 (0.34)***	-1.00 (0.54)*	1.53 (0.70)**	0.61 (0.47)	291
Non-income programs (2)	-0.02 (0.04)	-0.04 (0.07)	-0.09 (0.09)	-0.11 (0.06)*	291
Revenue (1)	-157.4 (86.2)*	-173.5 (237.1)	122.8 (231.5)	-34.6 (200.5)	220
Revenue (2)	-10.4 (5.4)**	-16.0 (8.0)**	25.4 (10.7)**	14.9 (5.8)**	307
Expenditure	-10.0 (5.2)**	-15.2 (7.9)**	27.2 (10.5)**	14.2 (5.7)**	307
BDO meetings	-2.37 (1.04)**	1.46 (3.92)	0.15 (4.03)	-2.22 (3.45)	290
MP meetings	-3.04 (1.54)**	-2.05 (2.49)	3.28 (1.92)*	0.25 (1.46)	290
DC meetings	-2.04 (0.87)**	-3.96 (1.77)**	3.32 (1.67)**	1.29 (1.02)	290
Meetings (AES)	-2.48 (1.06)**	-1.51 (1.85)	2.25 (2.13)	-0.23 (1.53)	290

Notes: All estimations include village-level controls (latitude, longitude, elevation, presence of river/canal, distance to natural water sources, distance to railways and national roads, soil quality measures, rainfall levels, proportion of the population that is SC/ST, total village population, and whether the GP is reserved) and regional fixed effects. Robust standard errors are in parentheses. Acronyms used are: Maratha land dominated (MLD); Maratha population proportion (MPROP); below poverty line (BPL); employment guarantee scheme (EGS); block development officer (BDO); district collector (DC); member of parliament (MP); and average effect size (AES). Revenue (1) refers to data collected from the balance sheets (covers last 24 months) submitted by the GPs (obtained using RTI Act). Revenue (2) and Expenditure are annual per capita values from the 2001 village census. Information on programs (programs (1); BPL programs (1); EGS (1); income programs (1); non-income programs) are reported from household-level data, and regression disturbance terms are clustered at the village level for these estimations and household level controls are also included (education, land ownership, and caste identity). Programs (2); BPL programs (2); EGS (2); income programs (2); and non-income programs (2) are variables which aggregate this household-level information up to the village level. Estimations are ordinary least squares (OLS) except EGS (1), which is a probit estimation, where the reported coefficients are the partial derivatives of the predicted probability. Meetings (AES) is the estimated average effect size of the three variables: BDO meetings, DC meetings, and MP meetings.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

regressions (represented by (13)), programs (2) and BPL programs (2). These are almost identical.

Our model predicts that we should see the greatest sensitivity to *MLD* for those government programs which are expected to impact wages or income directly, as these are the ones landlords should have greatest interest in limiting. To this end, we separated out the set of programs that directly or indirectly affect household labor decisions and income (such as public good and housing improvement schemes which do rely on villagers' labor in their construction and the targeted public distribution system) from those which would not (such as those targeted toward children (child development and midday meals) and the elderly (social security pensions and foodgrain transfers)). We refer to these as "Income Programs" and "Non-Income Programs," respectively. We also asked information from both household and village records on the availability of the state's employment guarantee scheme (EGS), which is the precursor to the present NREGA, in the village. Under the clientelist

hypothesis the EGS program and the Income Programs should be negatively related to *MLD* and unaffected by *MPROP*. Again this is borne out by the data. As we see in Table 2, the EGS is 0.10 times less likely to be reported as existing by households in *MLD* villages. With a mean of 0.20 for this variable, this implies that the decline in the average *MLD* village, when adjusted for the interaction term and the proportion of Maratha villagers difference, is about 21 percent compared to the average non-*MLD* village. Income Programs are 0.98 lower in *MLD* villages, implying a decline of around 9 percent in the average village when accounting for the interaction term. As also expected, we find no significant effects of *MLD* on Non-Income Programs.

We further use the GP survey and access to the accounts of the GP to check the consistency of individuals' reports with formal records. Programs are funded by the state government but must be activated by the GP. If a lower level of reported program availability is occurring because the GP is petitioning for fewer recipients, and expending less effort in activating them, then this should imply lower revenue inflows into the GP. Revenue (1) and Revenue (2) are per-capita village revenues from two independent sources. The first is from our own access to the village balance sheets—much of which was obtained from our petitioning of this information through the state's Right to Information Act.<sup>28</sup> As our sample size indicates, despite our petitioning through the act, the books were not available in almost one-third of our villages. Revenue (2) is information we obtained from the government's 2001 Village Census. Both coefficients are negative and significantly different from zero, suggesting that, indeed, *MLD* villages have lower revenues. Again *MPROP* has no significant effect on this as predicted.

Turning to the coefficient on the interaction term,  $\beta_3$  (in (13)), the model's interpretation of this coefficient is as:  $\alpha_v[X - T]$ . So its sign indicates the relative importance of the posited underlying sources of Maratha clientelist advantage,  $X$  or  $T$ . The evidence in Table 2 is supportive of trading networks being key, since  $\alpha_v < 0$  for programs and the coefficient on the interaction term is positive in all cases. Specifically Programs (1), BPL Programs (1), and Income Programs (1) are positive and significant at the 1 percent level. EGS (1) is positive and significant at the 5 percent level. There is again no corresponding significant effect for Non-Income Programs. For Revenue (2) and Expenditure this coefficient is also significant and positive at the 5 percent level and hence also consistent with a key role being played by trading network benefits of Marathas.<sup>29</sup>

Column 4 of Table 2 reports the significance of  $\beta_1 + \beta_3$ . Recall from Section IID that the model implies  $\beta_1 + \beta_3 = \alpha_v[X_M - X_N + X]$  representing the total social cohesion benefit of Marathas. As can be seen from the column, in very few cases is the summation of these coefficients statistically significant. In the few cases that it is, this significance is typically lost in the robustness checks conducted in online Appendix B (refer to Section 4.3). Overall it is not possible to reject the hypothesis that, with respect to program availability, superior Maratha social cohesion provides no direct benefit to Marathas in sustaining clientelism. This, together with the sign

<sup>28</sup> An act that mandates delivery of the relevant documentation within 30 days of written request, or the imposition of penalties on the GP.

<sup>29</sup> If trading network advantages are themselves due to superior caste cohesion then the correct interpretation of  $T > X$  is that caste cohesion supports dominance *indirectly* through trading networks and not *directly* via intra-caste contract enforcement.

of the coefficient on  $\beta_3$  points to trading network access being crucially important in explaining Maratha hegemony; a finding we will see repeated for the variables that follow.

Finally, we explore the reasons programs and revenues may be affected by these variables using the GP survey. Specifically, the survey asked about the number of meetings between the village Pradhan and higher levels of government. Since programs are activated by the village government through requests to higher level officials, a more active Pradhan should indicate a village where greater attempts are being made to implement programs; conversely, a village under clientelist vote trading should indicate where programs are diminished. The coefficients  $\beta_1$  and  $\beta_2$  (from (13)) are consistent with this interpretation. *MLD* leads to around 2–3 fewer meetings between the Pradhan and higher level functionaries—the Block Development Officer (BDO), the District Collector (DC), and the Member of Parliament (MP). We also estimated an average effect size (AES) of these three dependent variables following Kling et al. (2004). The AES estimates confirm the findings on the  $\beta_1$  and  $\beta_2$  coefficients when examining the outcomes independently. The interaction term  $\beta_3$  is positive and significant for meetings with the MP and DC. The latter is the most important contact of the three, as the DC makes the final allocation decision and distributes the government transfers to the GPs. The sign on  $\beta_3$  is thus also consistent with the importance of trading benefits:  $T > X$ .

*Landlord Cost and Worker Benefit of Vote Trading: Insurance* ( $S_i^j$ ).—The clientelism hypothesis suggests that the counterpart of reduced programs that provide incentives for workers to partake in vote trading is increased insurance. The term  $S_i^j$  should appear when vote trading occurs. Thus insurance-related dependent variables should exhibit opposite signs to those predicted for programs:  $\beta_1 > 0$ ,  $\beta_2 = 0$ , and  $\beta_3 = \alpha_v[X - T]$  in (11).

Information about insurance was obtained from the household surveys. Seven questions were asked in a hypothetical form, describing transfers, in both cash and kind, by individuals of different social status. Specifically: Insured (1): “Would most people in your village help you with some money in times of crisis?” Insured (2): “Would a higher caste member of your village help you with some money in times of crisis?” Insured (3): “Would most people in your village help a lower caste villager with some money in times of crisis?” Insured (4): “Would most people in your village help you with some grain in times of crisis?” Insured (5): “Would a higher caste member of your village help you with some grain in times of crisis?” Insured (6): “Would most people in your village help a lower caste villager with some grain in times of crisis?” Insurer: “Suppose a lower caste man asks to borrow a good sum of money from you because someone in his family has fallen ill. He is from the village and has the ability to repay the amount. Would you lend it to him?”

The results in Table 3 are once more consistent with the sign restrictions of the model. The point estimate of  $\beta_1$  run for the landless is positive at around 0.15 for each of the first six questions, implying that landless households are 15 percent more likely to report provision of help in a state of need in *MLD* villages.<sup>30</sup> The AES

<sup>30</sup>When adjusting for the interaction term, in the average village this falls to about an 8 percent increase.

TABLE 3—ESTIMATIONS OF INSURANCE RELATIONS

Dependent variable:	Subsample	Coefficient ( $\beta_1$ )	Coefficient ( $\beta_2$ )	Coefficient ( $\beta_3$ )	Coefficient	Observations
		<i>MLD</i>	<i>MPROP</i>	<i>MLD · MPROP</i>	$\beta_1 + \beta_3$	
Insured (1)	Landless	0.13 (0.05)***	0.10 (0.07)	-0.20 (0.09)**	-0.06 (0.07)	2,564
Insured (2)	Landless	0.14 (0.05)***	0.08 (0.07)	-0.22 (0.10)**	-0.08 (0.07)	2,564
Insured (3)	Landless	0.14 (0.05)***	0.10 (0.07)	-0.22 (0.10)**	-0.08 (0.07)	2,564
Insured (4)	Landless	0.17 (0.05)***	0.16 (0.07)**	-0.27 (0.10)***	-0.11 (0.07)	2,564
Insured (5)	Landless	0.16 (0.05)***	0.09 (0.07)	-0.26 (0.10)***	-0.10 (0.08)	2,564
Insured (6)	Landless	0.16 (0.05)***	0.11 (0.07)*	-0.28 (0.10)***	-0.12 (0.07)*	2,564
Insured (AES)	Landless	0.14 (0.03)***	0.05 (0.06)	-0.19 (0.08)***	-0.05 (0.06)	2,564
Insured (AES)	Low castes	0.11 (0.03)***	0.13 (0.05)***	-0.25 (0.07)***	-0.14 (0.05)***	3,246
Insurer	Large land-owners	0.08 (0.03)***	0.02 (0.06)	-0.15 (0.07)**	-0.07 (0.09)	1,932
Insurer	Marathas/large land	0.26 (0.06)***	0.14 (0.11)	-0.31 (0.12)***	-0.05 (0.07)	1,066
Insurer	Low castes/large land	-0.02 (0.04)	-0.02 (0.09)	0.002 (0.11)	-0.02 (0.10)	807
Insurer	Marathas/low land	0.07 (0.06)	-0.13 (0.08)	-0.04 (0.09)	0.03 (0.05)	1,110
Insurer	Low castes/low land	0.05 (0.04)	0.14 (0.08)*	-0.21 (0.10)**	-0.16 (0.08)**	2,311

*Notes:* All estimations include village-level controls (latitude, longitude, elevation, presence of river/canal, distance to natural water sources, distance to railways and national roads, soil quality measures, rainfall levels, proportion of the population that is SC/ST, total village population, and whether the GP is reserved), household-level controls (education, land-ownership, and caste identity), and regional fixed effects. Regression disturbance terms are clustered at the village level. Acronyms used are: Maratha land dominated (MLD); Maratha population proportion (MPROP); and average effect size (AES). Insured (1): “Would most people in your village help you with some money in times of crisis?” Insured (2): “Would a higher caste member of your village help you with some money in times of crisis?” Insured (3): “Would most people in your village help a lower caste villager with some money in times of crisis?” Insured (4)–(6) are the same questions with “money” replaced by “grain.” Insured (AES) is the estimated average effect size of the six variables: Insured (1)–(6). Insurer: “Suppose a lower caste man asks to borrow a good sum of money from you because someone in his family has fallen ill. He is from the village and has the ability to repay the amount. Would you lend it to him?” Large land-owners have more than 5 acres. Low land owners have 0–2.5 acres. Estimations are probits (except AES) where the reported coefficients are the partial derivatives of the predicted probability.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

estimate of these six dependent variables confirms the findings on the  $\beta_1$  coefficient when examining the outcomes independently.

The increased prevalence of Marathas (upper castes) in a village should make the reported provision of insurance from “upper castes” more likely, even if insurance is simply provided at random. This introduces a bias into the estimation of the coefficient  $\beta_2$ . Specifically, clientelist vote trading predicts the effects of *MPROP* through clientelist vote trading to be zero, but the regression that we run also picks up a direct effect of *MPROP* through this mechanical channel. So the interpretation of this parameter’s magnitude is confounded in this case due to the direct effect.

The model interpretation of the coefficient on the interaction term,  $\beta_3$ , however is uncontaminated by the direct effect of *MPROP*. These results are reported in the third column. Since  $\beta_3 < 0$ , and always significantly so, the finding is that  $X < T$ , again suggesting the relative importance of Maratha trading networks.

Column 4 reports estimates of  $\beta_1 + \beta_3$ . Here, once again, this linear combination of coefficients is rarely significant. The implication in terms of model parameters is again that  $\alpha_v[X_M - X_N + X]$  is not significantly different from zero, and hence that superior social cohesion amongst Marathas does not seem to directly contribute to their political power.

Considering now the other side of the insurance relationship, we again see a similar pattern. Large landowners answer that they are more likely to lend to a hypothetical “lower caste man in need” (Insurer) in *MLD* villages. This is mitigated by an increase in *MPROP*. We also ran regressions for this insurance liability question

(Insurer) over restricted samples: large landholders, Marathas with low and large land ownership, and low castes with large and low land ownership. Again, consistent with the theory, the estimated coefficients are only significant for Marathas with large land-holdings. Lower castes with large land-holdings and Marathas with small land-holdings are *not* more likely to lend to lower castes in *MLD* villages, nor are they less likely to lend in villages with greater *MPROP*. This is again consistent with the Maratha landowners being the ones who act cohesively in providing insurance, and with that happening in return for vote trading.

*Landlord Benefit/Worker Cost of Vote Trading: Wages* ( $w(\tilde{P}) - w(P) < 0$ ).—According to the clientelism hypothesis, vote trading is a means to make labor cheaper, so wages should fall with the probability of clientelist vote trading: ( $\alpha_v < 0$ ), a negative coefficient for  $\beta_1$ . As the first row of estimations in Table 4 documents,  $\beta_1 = -2.2$  for the average worker in a village. This implies that the average daily wage of workers in *MLD* villages with negligible *MPROP* compared with non-*MLD* villages is 2.2 rupees lower, which is significant at the 1 percent level. This is 6–7 percent of the average daily wage, or about 2 percent when adjusting for the interaction term. According to the model, the lowering of wages through clientelist vote trading should be indiscriminate since it works through a village general equilibrium channel by reducing external labor demand (EGS) as well as lowering labor's opportunity cost (programs). This is in contrast with other vote trading schemes, for instance the one highlighted in Chile by Baland and Robinson (2008). There, the finding was that wages rose as a reward for political support. Here wages are predicted to fall as a general equilibrium consequence of landlord village control. Consequently, we should observe wage declines across the village as a whole, not just for the workers who report increased insurance benefits. To check for across the board effects, we measure whether lower wages are restricted to workers reporting insurance benefits, low caste workers, low caste and insured, or workers of either gender. The remaining rows in the first panel of Table 4 indicate an effect that is consistent with a general equilibrium channel. The magnitude of wages for all categories of workers falls by about the same amount irrespective of gender, insurance access, and caste.

The coefficient  $\beta_2$  is, as expected, again generally not significantly different from zero. The sign of  $\beta_3$  is in all cases positive, and usually highly significant: again consistent with  $T > X$ .<sup>31</sup> Finally, the implication of column 4, that  $\beta_1 + \beta_3$  is in almost all cases not statistically different from zero, again suggests that the direct benefits of Maratha superior social cohesion are likely to be small.

*Landlord Benefit of Vote Trading: Yields and Profits* ( $\pi(\tilde{P}) - \pi(P) > 0$ ).—We obtain information about yields and profits from surveys of large agricultural producers. We focus on the *kharif* (four-month wet season) growing period which is the main one in our villages. In our data, *kharif* crops are grown on 77 percent of

<sup>31</sup>Note these findings also strongly suggest that mismeasured land quality is unlikely to be an important contributor to our results. As conjectured earlier, mismeasured land quality would tend to manifest through land being higher quality in Maratha land dominated villages than we have controlled for. If this is the case, it makes the lower wages found in such villages even more difficult to understand.

TABLE 4—ESTIMATIONS OF WAGES, YIELDS, AND TRADING RELATIONS

Dependent variable	Subsample	Coefficient ( $\beta_1$ ) <i>MLD</i>	Coefficient ( $\beta_2$ ) <i>MPROP</i>	Coefficient ( $\beta_3$ ) <i>MLD · MPROP</i>	Coefficient $\beta_1 + \beta_3$	Observations
Daily wage	All laborers	-2.23 (0.91)***	-1.70 (1.82)	5.41 (2.13)***	3.18 (1.58)**	13,546
Daily wage	Males	-2.42 (1.19)**	-2.25 (2.22)	6.70 (2.71)***	4.28 (1.99)**	7,480
Daily wage	Females	-1.98 (0.86)**	-1.05 (1.71)	3.76 (1.93)**	1.77 (1.42)	6,066
Daily wage	Landless	-2.09 (1.02)**	-1.05 (2.29)	4.79 (2.50)**	2.70 (1.95)	5,518
Daily wage	Low castes	-2.34 (0.99)**	-1.92 (1.95)	4.75 (2.35)**	2.42 (1.78)	9,167
Daily wage (insurance)	Low castes	-2.79 (1.29)**	-1.91 (2.58)	5.93 (3.05)**	3.14 (2.27)	4,343
Daily wage (no insurance)	Low castes	-2.06 (0.98)**	-2.17 (1.87)	4.12 (2.35)*	2.05 (1.83)	4,833
log kharif yields	Large land-owners	0.32 (0.12)***	0.13 (0.20)	-0.51 (0.23)**	-0.19 (0.16)	2,320
log kharif profit	Large land-owners	0.48 (0.15)***	0.43 (0.28)	-1.04 (0.30)***	-0.56 (0.21)***	1,838
Labor/total costs (kharif)	Large land-owners	-0.04 (0.02)*	-0.05 (0.04)	0.07 (0.04)*	0.03 (0.03)	1,800
Maratha trader	Marathas	0.001(0.06)	0.08 (0.12)	0.10 (0.12)	0.10 (0.08)	2,725
Outside Maratha trader	Marathas	0.04 (0.06)	0.12 (0.11)	0.03 (0.11)	0.07 (0.07)	2,655
Maratha lender	Marathas	-0.26 (0.16)	0.12 (0.25)	0.04 (0.29)	-0.22 (0.21)	371
Terms of payment (inputs)	Marathas	0.11 (0.06)**	0.08 (0.11)	-0.15 (0.11)	-0.03 (0.08)	9,864
Interest rate on loan	Marathas	-9.0 (5.9)	-32.3 (8.7)***	32.3 (9.9)***	23.3 (6.3)***	392
Maratha trader	Low castes	0.09 (0.04)**	0.18 (0.09)**	-0.01 (0.11)	0.09 (0.08)	3,012
Outside Maratha trader	Low castes	0.10 (0.03)***	0.18 (0.06)***	-0.18 (0.08)**	-0.08 (0.06)	2,793
Maratha lender	Low castes	0.24 (0.08)***	0.45 (0.16)***	-0.21 (0.19)	0.04 (0.15)	452
Terms of payment (inputs)	Low castes	0.08 (0.05)*	0.24 (0.10)**	-0.26 (0.11)**	-0.18 (0.09)*	10,034
Interest rate on loan	Low castes	-8.41 (4.15)**	-2.03 (10.7)	1.73 (11.27)	-6.68 (9.51)	250

Notes: All regressions include: latitude, longitude, elevation, presence of river/canal, distance to water source, distance to railways and national roads, soil quality measures, rainfall levels, proportion SC/ST, village population, whether GP is reserved, education, land-ownership, caste, and regional fixed effects. Regression disturbance terms clustered at village level. Acronyms: Maratha land dominated (MLD); Maratha population proportion (MPROP). Sample of laborers: all working for a daily wage in agriculture. Individual controls: gender, age, education, included in wage estimations. Regression disturbance terms clustered at household and village level for these estimations using Cameron, Gelbach, and Miller (2011). Sample for yields, profits, proportion of labor costs regressions is large cultivators (> 5 acres of land). All measures are per acre of land. Kharif yields: total value of output per acre for given crop, summed over all kharif crops. Kharif profit is yields net of input costs (seeds, fertilizer, irrigation, electricity, pesticides, labor). Workers include part-time and full-time. Additional crop controls included in yields and profits estimations. Maratha trader equal to 1 if household traded with a Maratha for any tradable good: agricultural inputs, outputs, farm enterprise, non-farm enterprise goods, conditional on trading goods. Outside Maratha Trader refers to trader residing outside of village. Maratha lender refers to borrowing money from a Maratha. Estimates are probits, coefficients are partial derivatives of predicted probability. Terms of payments equals 0 if trader requires advanced payments; 1 if full payment required at time of sale; and 2 if payment in installments acceptable. Ordered probit estimations.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

cultivated land, they generate 73 percent of total annual yields, and form 81 percent of total annual profits. Typical crops include grains and pulses (*tur*, *bajra*, *jowar*, *chana*, soybean, and wheat) as well as cotton. Labor comprises 31 percent of total kharif input expenses, fertilizer 30 percent, and seeds 24 percent (irrigation expenses are negligible as these are rain-fed).

The model predicts increased yields and profits to be the main source of benefit for farmers from vote trading, so  $\alpha_v > 0$  and hence  $\beta_1 > 0$ . As the first row in the second panel of Table 4 indicates, the model's sign restriction on  $\beta_1$  is again respected by the data. Log yields are higher in *MLD* villages, and this is significantly different from zero at the 1 percent level. The coefficient is very large. A *MLD* village has the log of kharif yields that are 0.32 higher (32 percent higher) than a non-*MLD* village (again for a village with negligible *MPROP*). When adjusting

for the differences in Maratha population numbers using the interaction term, the overall rise in yields when moving from the average *MLD* to non-*MLD* villages is:  $0.32 - 0.3 \times 0.51$ , or an increase of around 17 percent. Log profits are 48 percent higher in such villages, but similarly adjusting for the higher *MPROP* in such villages yields 17 percent higher profits.

Since we do not have information on the hourly wages paid to workers by specific farmers, nor how many hours worked, we can only use the information on hired and total workers, for a given farmer, to estimate the channels through which yields and profits may be higher in *MLD* villages. Paid workers and total workers have higher point estimates, but are not significant statistically. If worker compliance is the channel of effect, we should expect that clientelist vote trading will be associated with a lower proportion of total input expenditures going to labor. This implies a negative prediction of the model on  $\beta_1$  for this variable. The ratio of labor costs to total costs (the last row in the middle panel of Table 4) is lower in *MLD* villages, suggesting some contribution to increased profits could be arising through lower wages. But the effect here is statistically weak: significant only at the 10 percent level.

The coefficient on  $\beta_2$  is again not different from zero, as expected. The negative sign of  $\beta_3$  again suggests a stronger contribution of trading networks than superior caste cohesion to Maratha dominance; this is statistically significant at the 1 percent level. Similarly, the sign of  $\beta_3$  when labor/total costs is the dependent variable is also consistent with trading networks being the more important cause of Maratha dominance. A similar conclusion about the relative unimportance of direct effects of Maratha social cohesion is shown in column 4 where  $\beta_1 + \beta_3$  is not statistically different from zero (the exception is the case of kharif profits).

*Worker Benefit: Trading Network Access ( $T > 0$ ).*—So far, coefficient signs are consistent with the predictions of the model and consistent with trading network access being a more important determinant of Maratha dominance than direct benefits from superior social cohesion. We should therefore see this also directly reflected in the patterns of reported trading network access, which we now consider.

A number of survey questions allow us to obtain information about access to Maratha trading networks. We asked individuals about their trade in inputs and outputs, if they traded inputs, we asked them what the terms were for payment. Since agricultural inputs must be utilized before returns are realized (often with a lengthy delay), small scale producers often receive a form of implicit loan by being able to defer payment for inputs until returns are had. We also asked if individuals received loans, and if so what the interest rate was on the loan. For all of these variables we obtained the caste of the individual with whom the respondent was trading, and we asked whether the trader was a village resident or someone residing outside the village. As mentioned earlier, there are effectively only two castes in our villages who perform these trading functions: the Marwaris, an itinerant trading caste; and Marathas. The variable “Maratha trader” equals 1 if the household has traded with a Maratha for any tradable good (which includes agricultural inputs and outputs, farm enterprise, and non-farm enterprise goods). “Terms of payments” is an index variable equal to 0 if the trader requires advanced payments, 1 if full payment is required at the time of sale, and 2 if instead payment in installments is acceptable.

According to the model, if clientelist vote trading occurs, low caste individuals should report increased access to various forms of Maratha trading network. They should be more likely to transact with a Maratha, on better terms, and to borrow at a lower interest rate. Thus for each measure of trading network access we should see  $\alpha_v > 0$  which implies  $\beta_1 > 0$ . There should be no such pattern for Marathas however, as they have access independent of vote trading. The final panel in Table 4 shows that this sign restriction of the model is again observed in the estimates. Low caste individuals in *MLD* villages are 0.09 more likely to trade with a Maratha (5 percent significance), 0.10 more likely to trade with a Maratha trader who is a non-resident of the village (1 percent significance), and 0.24 more likely to obtain a loan from a Maratha (1 percent significance). These all reflect increases of more than 50 percent since the averages of these probabilities are 0.18, 0.19, and 0.24 respectively for low castes.<sup>32</sup> They are also more likely to obtain input trade on beneficial terms (non-advance or deferred repayment), and pay 8.4 percent lower annualized interest rates on their loans (5 percent significance). Note again that this does not simply reflect an increased village wide prevalence of Marathas as we are controlling for Maratha population in this regression. In contrast, again as predicted, the coefficient does not generally differ from zero for Marathas, except for terms of payments which also appear better for them; a finding for which the model provides no direct explanation.

The model's prediction on  $\beta_2 = 0$  however is more problematic to test for this variable. This is because trading with a Maratha is mechanically more likely to occur in villages where there is a large Maratha population. Thus the coefficient  $\beta_2$  should directly reflect not just the vote trading effect (0) but also the greater frequency of Marathas. Accordingly, we see positive and large effects of Maratha population numbers on a number of the Maratha trader variables due to this mechanical effect.

The coefficient on  $\beta_3$  again indicates the relative strength of trading network benefits versus superior caste cohesion. The point estimates are always negative, and with  $\alpha_v < 0$  would again imply  $T > X$ . Though these estimates are not all significantly different from zero at conventional levels. This evidence again points in the same direction: trading networks seem a more important underpinning of Maratha Dominance than superior Maratha social cohesion.

### B. Indirect Evidence

There are a number of variables that we may intuitively expect to be affected under a system of clientelist vote trading even though we do not include them in the formal model. We consider those variables here.

*Maratha Pradhan.*—One direct prediction of elite capture is that the caste of the elected village government leader (*Pradhan*) is a Maratha. As seen in Table A5 in online Appendix A, though Marathas comprise about 40 percent of the population, they are significantly over-represented as the *Pradhan*. We now check the correspondence between this over-representation and our Maratha variables. Estimates

<sup>32</sup>These magnitudes are similar when controlling for population numbers as the interaction terms are small, with the exception of the outsider trader term which is halved in effect across the average village.

reported in the village level results (Table 2) confirm that controlling for *MPROP*, *MLD* villages are 0.43 more likely to elect a Maratha Pradhan: this relationship is statistically significant at the 1 percent level. Again, this effect is over and above that arising through the mechanical effect of increased Maratha population numbers captured through the coefficient  $\beta_2$ . Moreover, there is a negative and statistically significant coefficient on the interaction term  $MLD \times MPROP$ . Marathas are thus *less* likely to become pradhan in *MLD* villages the more Marathas in the village population. This is a highly surprising result on a priori grounds, but would again be consistent with clientelist vote trading where the Maratha landlord advantage in sustaining such vote trading derives from trading network access.

*Voter Motivation.*—We also asked respondents why they voted the way they did in the last election, suggesting a list of reasons ranging from candidate qualifications, personal characteristics, party affiliation, and policies, to reasons related to a personal connection with the candidate. We construct the variable “voted-personal” equal to 1 if the household voted for a candidate due to a personal connection rather than due to the other reasons, which are coded 0.

We break up the sample and report results for “voted-personal” for low caste individuals separately from Marathas. We would expect the coefficient  $\beta_1$  on *MLD* to be positive for low caste individuals. Vote trading should be more likely in *MLD* villages, and if this is more likely, the probability that low caste individuals report that they “voted-personal” should be higher. This should not, however, be the case for high castes (Marathas), as if trading network access is at the heart of the Maratha advantage, this is not a benefit that can be traded with a Maratha worker in return for vote support. As before, *MPROP* should have no effect on “voted-personal” once *MLD* and the interaction between *MLD* and *MPROP* are included in the regression.

The data is again consistent with these predictions; results from an estimation of (12) with “voted-personal” as the dependent variable are reported in the top two rows of Table 5. The coefficient on “voted-personal” for low caste individuals,  $\beta_1$  (of (12)), is equal to 0.11 (and significant at the 1 percent level), suggesting that in a *MLD* village, with negligible *MPROP*, lower caste individuals are more likely to report that they voted based on personal connections to the candidate than in villages where another caste is land dominant.<sup>33</sup> The average of this variable is 0.24 so this reflects a 46 percent increase, or an increase of 25 percent when accounting for Maratha population number differences across the two types of village. The coefficient on *MPROP*,  $\beta_2$  (of (12)), is not significantly different from zero. No such pattern of response was found for Marathas, the coefficient  $\beta_1$  for Marathas is negative but not significantly different from zero. The model interpretation of this is that Maratha landlords do not have a comparative advantage in vote-buying from Maratha workers, again consistent with trading network access being a key benefit to be traded.

<sup>33</sup>We also ran analogous estimations where we conditioned on being in an unreserved area (so that Marathas are free to stand for election). We then distinguished between whether there is a Maratha Pradhan or not. Interestingly, the sign of the coefficient  $\beta_1$  is consistent with the model’s predictions only when the outcome of voting is a Maratha Pradhan. This coefficient is insignificant if the Pradhan is non-Maratha.

TABLE 5—ESTIMATIONS OF INTER-CASTE RELATIONS, COLLECTIVE VILLAGE LIFE, AND VOTING

Dependent variable:	Subsample	Coefficient ( $\beta_1$ ) <i>MLD</i>	Coefficient ( $\beta_2$ ) <i>MPROP</i>	Coefficient ( $\beta_3$ ) <i>MLD · MPROP</i>	Coefficient $\beta_1 + \beta_3$	Observations
Voted: personal	Marathas	-0.07 (0.05)	-0.03 (0.07)	0.10 (0.07)	0.03 (0.05)	2,780
Voted: personal	Low castes	0.11 (0.04)***	0.11 (0.08)	-0.18 (0.09)**	-0.07 (0.07)	2,108
Trust	Low castes	0.14 (0.06)**	0.14 (0.11)	-0.44 (0.13)***	-0.31 (0.10)***	4,954
No cheat	Low castes	0.04 (0.02)*	-0.02 (0.05)	-0.05 (0.06)	-0.08 (0.78)	4,743
Repair	Low castes	0.08 (0.03)**	0.001 (0.06)	-0.11 (0.08)	-0.03 (0.05)	4,927
Donated cash	Low castes	0.08 (0.04)**	-0.001 (0.06)	-0.05 (0.09)	0.03 (0.06)	4,965
Donated labor	Low castes	0.08 (0.03)***	0.07 (0.06)	-0.06 (0.08)	0.02 (0.06)	4,965
Agree	Low castes	0.07 (0.04)*	0.18 (0.07)***	-0.21 (0.09)***	-0.14 (0.06)**	4,959
Social capital (AES)	Low castes	0.07 (0.01)***	0.07 (0.03)***	-0.14 (0.03)**	-0.07 (0.02)***	4,693
Share water	Low castes	0.27 (0.06)***	0.54 (0.13)***	-0.26 (0.14)**	0.01 (0.10)	2,929
Target village	Marathas	1.31 (0.37)***	1.92 (0.67)***	-2.18 (0.66)***	-0.87 (0.49)**	3,053
Target village	Low castes	1.05 (0.32)***	0.44 (0.66)	-1.79 (0.77)***	-0.74 (0.53)	4,865
Shared funds	Marathas	1.75 (0.53)***	2.23 (0.77)***	-2.63 (0.78)***	-0.88 (0.46)**	2,790
Shared funds	Low castes	0.85 (0.33)***	1.56 (0.70)**	-2.05 (0.80)***	-1.19 (0.63)*	4,584
Festivals		0.08 (0.04)**	0.02 (0.05)	-0.07 (0.07)	0.01 (0.05)	8,167

Notes: All estimations include village-level controls (latitude, longitude, elevation, presence of river/canal, distance to natural water sources, distance to railways and national roads, soil quality measures, rainfall levels, proportion of the population that is SC/ST, total village population, and whether the GP is reserved), household-level controls (education, land ownership, and caste identity), and regional fixed effects. Regression disturbance terms are clustered at the village level. Acronyms used are: Maratha land dominated (*MLD*); Maratha population proportion (*MPROP*); and average effect size (*AES*). “Voted: personal” equals 1 if the household voted for a candidate due to a personal connection rather than due to the characteristics of the candidate (honesty, good reputation, qualifications). Samples are conditional on voting. The sample of low castes in the voting regressions is SC/STs. “Trust” is response to: “Would you say that the large landholders can be trusted?” 1 = almost none; 2 = some; 3 = majority; 4 = almost. “Cheat” refers to answering that someone from a higher caste is most likely to cheat you (compared to other castes or wealth levels). “Repair” is the answer to “If someone from your village noticed something wrong on your farm they would?” repair it themselves (compared to conditional answers, such as “alert you if he is from a lower caste,” etc.). “Donated cash” or “labor” are dummy variables equal to 1 if the household did donate (cash or labor respectively) in the past year to a development project within the village. “Social capital (*AES*)” is the estimated average effect size of the six variables: trust, no cheat, repair, donated cash, donated labor, and agree. “Share water” is equal to 1 if the household shares a water source with members of the Maratha caste. Samples are conditional on sharing a water source. Probit models are estimated for all of these variables except for the trust question. The reported coefficients for the probit estimations are the partial derivatives of the predicted probability. “Target village” refers to GP funds should be targeted to the village as a whole, compared to poor or low caste individuals. “Shared funds” refers to GP funds are shared across the village (e.g., for development projects, public goods) compared to going directly to: the poor or low status; the rich and high status; or to GP members or other government officials directly. These four estimations are estimated as multinomial logit models. “Agree” refers to answering that most people in the village would agree on the type of development project the village should have (compared to differences of opinions within the village). “Festivals” is equal to 1 if there are village projects to finance festivals.

\*\*\*Significant at the 1 percent level.

\*\*Significant at the 5 percent level.

\*Significant at the 10 percent level.

This is corroborated by the sign of the coefficient on  $\beta_3$ . The negative and significant sign indicating that *MLD* has weaker effects on vote trading from lower castes the larger is *MPROP*. The larger is *MPROP*, the less important for achieving GP control it is for landlords to “buy” votes from non-Marathas.

*Social Capital/Village Cohesion.*—A natural alternative to the clientelist explanation for the low level of programs in *MLD* villages could be that the traditionally dominant Maratha landlords and majority non-Maratha workers are unable to coordinate on effective governance that would yield a good level of programs. A large literature (an early prominent example of which is Putnam, Leonardi, and Nanetti 1993) suggests that local governance depends critically on good grass roots level

social cohesion—or social capital. This would suggest that less functionality in local government arises where Marathas are dominant landholders because of a legacy of mistrust between upper caste landowners and the poor that persists to the present day.<sup>34</sup>

We asked a number of questions about trust and social capital. The variable “Trust” is the response to: “Would you say that the large landholders can be trusted?” (1 = almost none; 2 = some; 3 = majority; 4 = almost all). “No cheat” refers to answering someone from a higher caste is less likely to cheat you (compared to individuals from other castes or wealth levels). “Repair” is the answer to “If someone from your village noticed something wrong on your farm they would?” repair it themselves (compared to conditional answers, such as “alert you if he is from a lower caste,” etc.). Another measure of social capital, suggested by Putnam, is indicated by voluntary donations on the part of individuals—both time and money. Accordingly, we include the variables “donated cash” and “donated labor,” which are dummy variables equal to 1 if the household did donate (cash or labor respectively) in the past year to a development project within the village. “Share water” is equal to 1 if the household shares a water source with members of the Maratha caste. We report the answers to these questions for low castes.

If clientelist vote trading is a voluntary quid pro quo, then we may expect this to actually build social capital, or at least not lower it. Workers willingly reduce access to programs (benefits from the government) in return for insurance (benefits from patrons). If however this is a consequence of forced landlord hegemony, then the low castes should be more likely to report ill of their higher caste neighbors. As the sign of  $\beta_1$  from the second panel of Table 5 makes clear, caste relations are clearly no worse, and indeed probably better, in villages where the dominant landowners are Marathas. Low caste individuals are more likely to report that large landowners in their village can be trusted, that they are less likely to be cheated by higher castes, and that someone from their village will “repair themselves” damage they notice on the respondent’s land. Low caste households are also more likely to have donated cash or labor to village level development initiatives in the last year if they reside in *MLD* villages.

The interaction term,  $\beta_3$ , again informs the relative importance of the sources of Maratha dominance. As the trading network explanation suggests, the effects of *MLD* are mitigated by an increase in *MPROP*:  $\beta_3 < 0$ . This result is particularly striking as it suggests that the positive social capital enhancing effect of *MLD* is less likely to arise even as *MPROP* increases. That is, there is a negative effect on social capital with increased caste coherence between the two economic classes: an a priori surprising finding. Once again, Maratha trading networks being a key factor in sustaining clientelism would predict this. Increased *MPROP* in a *MLD* village makes trading network access less usable in vote trading and thus lowers the probability of clientelist vote trading. If clientelism induces improved social relations between the classes, this explains the signs on both  $\beta_1$  and  $\beta_3$ .

<sup>34</sup>The recent and growing literature on the historical determinants of social capital (Nunn and Wantchekon 2011; Guiso, Sapienza, and Zingales 2009; Tabellini 2010; Algan and Cahuc 2010) emphasizes the importance of such historical factors in affecting contemporary social capital.

Additional variables of interest include “Agree,” which refers to answering “That most people in the village would agree on the type of development project the village should have” (compared to differences of opinions). “Target village” refers to that GP funds should be targeted to village as a whole, compared to poor or low caste individuals. Similarly, “Shared funds” refers to that GP funds *are* shared across the village compared to going directly to poor or low caste individuals. “Festivals” is equal to 1 if there are village funds for festivals. All of these variables are significantly higher in *MLD* villages. These results suggest that clients are not simply acceding to Maratha power in these villages grudgingly. Instead they view the village more as a collective undertaking, and the GP not as a possible source of redistribution, but as an expression of this collective will. This is consistent with good social capital in a village not being correlated with good governance but with its converse: the capture of democratic political structures by the landed elite. Consistent with Acemoglu and Robinson’s (2008) argument, and the examples discussed in Acemoglu, Reed, and Robinson (2014), the advent of democratic structures may induce the elite to switch strategies in order to maintain control. Here this is consistent with their cultivating better social relations with the non-elite (workers) via insurance provision and would explain the higher social capital in *MLD* villages.

### C. Robustness Checks

In online Appendix B we report the results from a number of robustness checks. Tables B1 and B2 exclude all village controls.<sup>35</sup> Tables B3 and B4 also interact all the key village-level variables with *MPROP*. Tables B5 and B6 utilize an alternative continuous measure of *MLD* constructed from household surveys. The main results discussed above all continue to hold.

## IV. Alternative Interpretations

In line with the theory we have developed, we have used *MLD*, *MPROP*, and their interaction to identify clientelism occurring in a village. We have estimated reduced-form relationships between these variables and a set of outcome variables that our theory predicts will be affected when clientelism arises. The theory predicts that *MLD* should make clientelism more likely, that *MPROP* has no independent effect on it, and that the sign of the interaction term indicates which one of two prominent explanations for Maratha political hegemony is most important. The two predictions almost always hold for all dependent variables, and the implication from the interaction term consistently favors Maratha trading networks as a key source of Maratha political dominance.

As discussed, interpreting the evidence this way depends on the outcome variables we have reported not themselves being directly affected by either *MLD* or *MPROP*. In Section IIB, we pointed to some main threats to our exclusion restrictions; we now further assess these.

<sup>35</sup>Though not reported here, the main results are also robust to excluding the household-level control variables.

### A. Mismeasured Land Productivity

One threat we have already discussed is through a potential correlation between village productivity and Maratha prevalence—quite conceivably, Marathas, as the dominant caste, expropriated the highest quality lands for themselves. We do not find any significant differences on observable dimensions of soil quality and the geographic and climatic cultivatability of land across *MLD* and non-*MLD* villages. However, if these are inadequately controlled for and either of our Maratha variables are correlated with land productivity then the interpretation of the coefficients we have forwarded above is not correct. If it is impossible to measure this directly, but we will now argue that the sign of our results suggest that even if there is some direct effect of our Maratha variables on land quality, and we have not picked it up with our controls, this cannot explain the findings we have presented.

If *MLD* is positively correlated with an unobserved land quality dimension then consider our specifications with log yields, log profits, and wages as dependent variables. For any one of these, then the true relationship between the dependent variable and the covariates includes, in addition to the effects of our clientelism channel (measured through the  $\beta$  variables as before) a direct effect (denoted  $\alpha_1$  and  $\alpha_2$  below):

$$Y_{ik} = \beta_0 + \beta_1 MLD_k + \beta_2 MPROP_k + \beta_3 MLD_k \cdot MPROP_k + \psi \mathbf{Z}_{ik} \\ + \gamma \mathbf{Z}_k + \alpha_1 MLD_k + \alpha_2 MPROP_k + \epsilon_{ik}.$$

Thus the estimated coefficient on *MLD* includes  $\beta_1$  interpretable through the model and  $\alpha_1$  via direct effects of land quality (similarly for *MPROP*). Consider how such mismeasurement would tend to bias these dependent variables. For yields and profits the bias introduced by mismeasured land quality, correlated with either of our Maratha variables, makes  $\alpha_1$  and  $\alpha_2 > 0$ . This biases upward our estimates of  $\beta_1$  and  $\beta_2$  and indeed could explain the positive coefficient that we reported on *MLD* in the middle panel of Table 4. But another implication of such mismeasurement of productivity would also be higher wages. Similarly, this would imply that *MLD* in the top panel of Table 4 where wages are the dependent variable are also upward biased. Here, however, we find a strong and significant negative coefficient on *MLD*. Mismeasured land productivity correlated with *MLD* would then suggest a true effect operating through our model larger than that reflected in the coefficient on  $\beta_1$ . Mismeasured land productivity cannot consistently account for the full pattern of results. To the extent that it explains some part of the coefficient on log profits and yields, it makes the negative coefficient on wages from *MLD* even harder to understand. Further, such mismeasurement provides no clear implication for the sign of the interaction term. It is positive for wages and strongly negative for log profits and yields. *MLD* villages having higher unmeasured productivity could not explain an interaction term that always enters in the opposite direction to the effect of *MLD*.

With respect to the other dependent variables—insurance, social capital, and Maratha traders—there are simply no obvious implications of mismeasured land productivity in *MLD* villages. One may hypothesize that mismeasurement could

perhaps rationalize insurance and social capital being higher in *MLD* villages—a wealth effect could perhaps be at play—but it would not be possible to explain why such insurance or social capital would be mitigated by increasing *MPROP*, as implied by the sign of the interaction term. Moreover, this channel seems inconsistent with any systematic pattern of Maratha trader access.

### B. Direct Maratha Power

Another threat to the exclusion restriction may arise through the power of Maratha landlords and population numbers making the village more effective in receiving state-level support. In a direct form, this is entirely inconsistent with the data. Marathas' traditional positions of prominence and power in state organizations should lead them to be favored in receipt of programs, the EGS, and have greater GP budgets. We find the opposite for all of these, and a zero coefficient on *MPROP*. Again, predictions that are expected with the clientelism channels of the model.

A more subtle variant of such a channel arises if Maratha landlords are able to use their power to get what they want from the state—i.e., as we have argued, reduce programs. This could then lead to knock on effects consistent with our model, and as observed in the data: higher yields, profits, and lower wages in *MLD* villages. Extending this story further, where Maratha workers are numerous, the capacity of Maratha landlords to exert their power and block programs from the center is mitigated. So the interaction term on *MPROP* for programs is positive and the knock-on effect is similarly to mitigate higher profits/yields and the lower wages in *MLD* villages.

The difference between this explanation and one based on the quid pro quo of clientelism that we have explored comes from other elements of the posited vote trading. Since clients are not forced by their patrons, but must be co-opted, landlords must “pay” workers for their political support. As predicted by the clientelist story then, workers in such villages should report greater insurance provision from landlords—something we would not see if landlords are able to force policy reduction on their own. We also see greater access to Maratha trading networks, again consistent with clientelism, and not something that would arise were it simply the case that Maratha landlords are able to get their way. Such an explanation would also be unable to account for the higher social capital we see in *MLD* villages—especially that reported from low castes to Marathas—if the Maratha landlords are merely forcing the policies that they want. In contrast, with the clientelism explanation, social capital is higher because the workers are in a voluntary agreement with the landlords. They obtain fewer programs due to their support, but receive valuable insurance instead. A further implication of this alternative explanation can be checked through our household surveys. In these we also asked individuals to report their approval of the GP's personnel and behavior. If Maratha landlords are forcing the policies they want, then workers should report lower approval of the GP and its personnel in such villages. In contrast, under clientelism, workers understand the price they pay for their personal benefits is landlord control of the GP, so they will not report dissatisfaction with the activities of the GP and more so than in villages without clientelism. The latter is what we find. Table B7 in online Appendix B reports that the landless are not significantly more dissatisfied in *MLD* villages with

regards to the quality and performance of the GP. In particular, they do not report significantly more dissatisfaction with regards to honesty and fairness, qualifications, providing public goods, allocating funds fairly, not discriminating across villagers, obtaining upper level government funds, and solving village disputes. Even though, as we have shown, programs are lower, the EGS is less frequent, and village level expenditures are diminished.

Overall, it is not possible to definitively rule out that mismeasurement of land productivity or other factors of the village correlated with its Maratha variables—such as Maratha influence at higher government levels—could be biasing some of the estimates we report for some of the dependent variables. However, it is extremely unlikely that such channels of omitted influence could either explain the patterns that we have documented in the data or not lead to inconsistencies on numerous other dimensions of the data. In contrast, the patterns in the data are consistent with the channels of the postulated clientelism model, and consistent with Maratha trading networks providing a key underpinning of Maratha landlord power. The model can also explain the reported reasons for voting, the provision of insurance, and the inferred levels of social capital.

However, we emphasize again that the test of the model we provide here is indirect. We do not observe vote trading directly, nor do we observe the provision of benefits directly in return for an individual's vote. It is thus impossible to rule out alternative explanations of the empirical regularities we had documented, perhaps due to omitted factors that we have not considered. Alternatively, a combination of the factors that we have argued are insufficient to explain the results on their own could also conceivably be behind these patterns.

## V. Conclusions

An extensive data collection exercise in the Indian state of Maharashtra has allowed us to study the performance of local democracies there. We conclude that local governments—though elected through a process that is fully consistent with a vibrant democracy—do not act to benefit the poor majority that elects them. We have argued that government behavior, wages, profits, yields, the patterns of help in contingencies, and trading network access observed across these villages all line up as predicted by clientelist vote trading between large landowners who are buyers of votes and workers who are selling them.

Our analysis makes an unambiguous conclusion about the welfare implications of vote trading. It is bad for the majority worker group taken as a whole. But we take this conclusion with some caution as it rests on modeling assumptions that, though defensible, cannot be definitively proved from our data. Two aspects are important. First, we have assumed that all of the surplus generated by vote trading goes to the landlords as they are able to make take-it-or-leave-it offers to workers. The offers thus make workers just indifferent to the clientelist vote trading and hence no better off than if they were to control the GP themselves. That landlords should hold such control over surplus division is certainly consistent with a degree of monopsony power, with many other studies, both in Maharashtra and in other agrarian contexts (Padhi 2007), but not an assumption that we can directly prove. A second assumption makes workers as a whole worse off even while the vote-trading subset are not.

This derives from our modeling of the local democratic process where it was posited that landlord control of the GP necessitated a mere one-half of the village's workers to vote in support of their candidate. So the vote-trading half is no worse off—they receive insurance and trading network access in return for their political support which costs them lower wages and reduced programs. But the remaining one-half—whose support is superfluous—just suffer the lower wages and programs. Perhaps, in some villages, workers as a whole can stand together against such divided support. In that case, a simple majoritarian calculus—where 50 percent of votes buys control—understates the degree to which landlords must extend benefits to workers across the village. Though there is no organized labor in our villages, and almost no organized worker political movements, there may still be informal coalitions among workers able to hold out for both better conditions in the vote trade, and for the broader extension of benefits that we cannot observe. To the extent these are present, such welfare implications will be mitigated, and perhaps even overturned. This appears unlikely, but is impossible to rule out.<sup>36</sup>

Persisting with a negative welfare implication, the results here nod toward policy that removes pro-poor policy discretion to a higher level of government that may not be so easily captured by local landed interests. It also suggests, more generally, that progressive policies designed to improve welfare are less likely to spread if a single cohesive group dominates access to key economic opportunities such as insurance or labor markets. Again, administering benefits from higher levels of government should weaken the cohesiveness of such blocking agents—it is easier for landlords in a village rather than a coalition spanning a larger region to agree on a course of action. A national-level program directly targeting beneficiaries is currently being trialed in India—the Unique Identification Project (commonly referred to as UID). The benefits of this cannot be bartered for votes locally, and should benefit all workers. Which, given the overwhelmingly poor nature of our worker sample, should also lead to declines in measured poverty too.

Taking local interests as given and immovable, the analysis suggests that policies uniformly beneficial in their distributional impacts should be preferred. It may be necessary to trade off the magnitude of benefits to the poor in order to co-opt landlords in to accepting such policies. For instance, many of the policies here would raise worker wages without benefiting landlords. But policies that benefited landlords as well, even if these had lower effects on wages—such as private well construction projects—may be preferable as they would be more likely to pass through with elite support.

<sup>36</sup> Since clientelism reduces resources flowing in to the village, it is also possible to imagine a welfare improving Coasian bargain between workers and landlords acting as cohesive groups. In it, landlords would agree to allow programs in, which inject resources to the village but also raise wages. In return, workers would agree to share some of these benefits with landlords. In reality, such a scheme is unworkable due to standard commitment problems. It would not be possible for workers to agree to transfer benefits to landlords *ex post*, after the programs are implemented. Workers would be unable to resolve this by making *ex ante* transfers as they are likely to be liquidity constrained. Perhaps more importantly, such a bargain would require solving a large collective action problem.

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