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Caste Dominance and Economic Performance in Rural India

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I. Introduction

A. Aim and Motivation

In economics, various mechanisms are recognized that, in a stratified society, link economic welfare with signifiers of social identity such as caste, religion, and ethnicity. Some mechanisms originate in "taste-based" (e.g., Becker 1971) or "statistical" (e.g., Arrow 1972) discrimination by others and are external to the affected group. Other mechanisms are internal and hinge on not how a group is seen and treated by others but how its members perceive and interact among themselves. The consequences for economic performance of a self-image that group membership imparts (Akerlof and Kranton 2000) and of the onset of collective inertia (e.g., Peyton Young 2001) are two examples.

In this article we explore empirically the proposition that the balance of forces linking social identity to economic performance is influenced by the relative economic or political power of the various social groups that live and work in each other's vicinity—to be precise, reside in the same village. We undertake this empirical inquiry for rural India, whose village communities can be seen as a paradigm of social stratification (e.g., Deshpande 2001, 2011; Anderson 2011).

We study three complementary explanations for identity-based disadvantage. The first, the oppression hypothesis, originates in M. N. Srinivas's theory of caste dominance, which portrays a caste that apart from strong numerical presence is also economically powerful (Srinivas 1955).[1] The oppression hypothesis captures the external mechanisms linking social identity and economic welfare and suggests that historically disadvantaged and other marginalized social groups fare worse when resident in villages dominated by upper castes.

The second, the village enclave hypothesis, corresponds with the internal mechanisms linking identity and welfare, is theoretically ambiguous, and depicts a situation in which a marginalized group is dominant at the village level. Upward mobility may then be inhibited, or conversely encouraged, by factors internal to the group in question. To illustrate, the absence of role models or a preference for traditional occupations could lock individuals of marginalized backgrounds into low-level equilibrium traps (Akerlof and Kranton 2000). By reducing the social distance between parties to rural transactions, own enclaves could also improve the operation of vital rural markets (Anderson 2011).

Third, we evaluate the merit of the proximity hypothesis, which is anchored in a theory of public goods provision and suggests that minority groups may benefit from being proximate to politically well-connected and prosperous upper castes (e.g., Sethi and Somanathan 2010). We explain why proximity and oppression provide complementary insights about the roots of caste-based disparities in rural India.

Our article adds a timely political economy dimension and new empirical insights to the literature addressing identity, economic disadvantage, and its persistence. Existing studies linking economic performance to the village-level balance of power are few, and Anderson (2011) is the only other comprehensive effort.

Pertaining to India and in spite of bold legislation that made reservations of government jobs and seats in legislative assemblies and educational institutions a hallmark policy, households of scheduled caste (SC; formerly "untouchables") and scheduled (indigenous) tribe backgrounds continue to feature disproportionately on key indicators of rural deprivation.[2] This persistence remains a puzzle that we attempt to shed new light on.

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[1] Apart from Anderson (2011), the caste dominance concept has been applied in economic studies by, among others, Besley, Pande, and Rao (2005), Dercon and Krishnan (2007), and Do and Iyer (2010).

[2] Caste may refer to *jati* (subcaste) or to the more general *varna*, the latter comprising four broad occupational groups with Brahmins at the top followed by Kshatriyas (warriors), Vaishyas (traders and merchants), and Shudras (manual workers and craftspersons) at the bottom. SCs may be portrayed

Finally, India's so-called silent revolution manifested in the rapid rise in lower-caste representation in state-level legislative assemblies (Jaffrelot 2003) suggests that a key ingredient for social change is already in place. Banerjee and Somanathan's (2007) study of parliamentary constituencies and rural infrastructure provision between 1971 and 1991 supports this view since social groups that politically mobilized, namely, SCs, appear to have leaped forward relative to those that did not (STs and Muslims).

We see two reasons for questioning the growing optimism about the remedial and transformative potential of the democratic process, whether on its own or aided by political reservations (e.g., Pande 2003). First, the data used in previous studies are too coarse to undertake the necessary welfare and poverty comparisons: village variables do not adequately account for (infrastructure) quality variation, while state-level expenditure and other variables do not capture benefit incidence and the magnitudes of improvements in enough depth. The second is the analytical bypass of village-level institutional hurdles to social change. With the emergence of a new, rich data set described in detail below, we aim to remedy this neglect.

B. Background and Contribution to the Literature

> March 1949: A group of Scheduled Caste members from villages around Delhi had been thrown out of their homes by Jat landowners angered that these previously bonded servants had the cheek to take part in local elections and graze their cattle on the village commons.
> June 1951: A village in Himachal Pradesh. A conference of SCs is attacked by Rajput landlords. The SCs are beaten up with sticks, their leaders tied up with ropes and confined to a cattle pound.
> June 1952: A village in the Madurai district of Madras State. A SC youth asks for tea in a glass at a local shop. Tradition entitles him only to a disposable coconut shell. When he persists, he is kicked and hit on the head by caste Hindus.
> June 1957: A village in the Parbani district of Madhya Bharat. Newly converted Buddhists [previously "untouchable" Hindus] refuse to flay carcasses of dead cattle. They are boycotted by the Hindu landlords, denied other work and threatened with physical reprisals. (Guha 2007, 380–81)

More than 50 years later and in spite of a weakening of the more forbidding caste barriers, SC and ST households remain overrepresented among India's

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as a subset of the Shudras or a separate category. Their main distinguishing characteristic is a particularly degrading ("polluting") traditional occupation. The criteria for scheduled tribe (ST) classification are (i) tribal origin, (ii) primitive ways of life and habitation in remote and less accessible areas, and (iii) general backwardness in all respects (Pande 2003, 1138).

rural poor, illiterate, and in the former case, also the landless.[3] While rural poverty is declining, these two groups, which represent 16.2% (SC) and 8.2% (ST) of the country's population, account for 47.3% of India's rural poor (Gang, Sen, and Yun 2008a). A less sharply delineated category of disadvantaged citizens mentioned by the constitution, other backward classes (OBCs), also continues to have lower living standards than the mainstream population (Gang, Sen, and Yun 2008b).[4] The results reported below suggest that the same holds for Muslims, the largest religious minority, accounting for 13.4% of the population (Census of India, 2001).

Shah et al.'s (2006) study of untouchability, covering 550 villages in 11 main states, found that SCs were prevented from full participation in local markets and often from entering village shops in 30%–40% of the villages surveyed; in 45%–50% of these villages, SCs were prevented from selling milk to village dairy cooperatives. Such "bans" are rooted in purity and pollution ideals and the ensuing sensitive links between a person's caste and the preparation and handling of food and water (e.g., Madsen 1991; Iversen and Raghavendra 2006). Indeed, as is well known, SC hamlets tend to be separate from the main village and often have their own drinking water source.[5]

We test our hypotheses by examining the relationship between the social identity of the groups that are economically or numerically dominant at the village level and the income of households belonging to marginalized groups, advancing the literature as follows. First, a few studies test for identity-based disadvantage in India (e.g., Kijima 2006; Gang et al. 2008a) but do not test whether village-level upper-caste or own-group dominance affect economic performance.[6] In addition, little remains known about whether and in what

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[3] Examples from the recent past include caste demarcators in how people dressed and spoke and what they were allowed to do. In nineteenth-century Kerala, "when a Namboodiri Brahmin approached, a Paraiya labourer had to cry out in advance, lest the sight of him pollute his superior" (Guha 2007, 287). Also in Kerala and during conversations with a person of higher caste, members of lowly ranked castes were expected to use debasing words to describe themselves (Menon 1994, 19). Nambissan (1996) presents historical evidence of how SC children, while permitted to attend school, could be denied entry to the classroom.

[4] The issue was first addressed by the Other Backward Class Commission, appointed by Prime Minister Nehru, and later and more decisively by the Mandal Commission (1978–80). The latter's recommendations, extending reservation benefits to OBCs, were declared constitutionally legitimate in 1992.

[5] This is in contrast to the widespread changes in social practices in western and eastern Uttar Pradesh reported by Kapur et al. (2010). However, unlike Kapur et al. (2010), we focus on a fundamental, namely, household income.

[6] Existing studies make use of nationally representative cross-sectional data and Blinder Oaxaca or alternative decomposition techniques to quantify the disadvantage associated with SC, ST, or religious identity (e.g., Kijima 2006; Gang et al. 2008a). Dercon and Krishnan (2007) use the In-

direction patterns, magnitudes, and causes of identity-based disadvantage have transmuted during the postreform years.

Second, we broaden the remit of empirical research on identity aspects of economic performance. In India, empirical research on caste has focused mainly on labor market discrimination (e.g., Banerjee and Knight 1985; Kingdon 1998; Thorat and Attewell 2007). Evidence suggests that individuals of SC and ST backgrounds are indeed disadvantaged—through lower wages, a higher propensity of being stuck in dead-end jobs (e.g., Banerjee and Knight 1985), or inferior employment terms, such as casual employment (e.g., Madheswaran and Attewell 2007).[7]

To date, much anecdotal but little systematic knowledge exists about discrimination in credit, insurance, or other key markets or, particular to rural areas, markets for agricultural inputs and outputs. There is also limited evidence on whether caste, religious, or tribal identity circumscribes the access to poverty-oriented public policy programs or public services in general.[8]

Third, we provide a major push forward of the empirical literature using sociological and anthropological notions of caste dominance in which Anderson (2011) is the other main contributor. For a data set covering 120 villages in Uttar Pradesh and Bihar, she observes that Yadav households in villages where Yadavs are the dominant landowners have higher incomes than Yadav households in villages where the dominant landowners belong to a local upper caste. Anderson attributes this result to the market for irrigation water's failure to operate in villages with upper-caste land dominance and concludes that social distance may prevent the efficient operation of vital rural markets.

Unlike Anderson (2011), we distinguish first theoretically and then in our empirical specifications, to the extent that these specifications allow, between the potential "proximity gain" for SCs and other social groups from residing in upper-caste-dominated villages and offsetting, social group specific, oppression effects within the same villages. In the light of Sethi and Somanathan

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ternational Crops Research Institute for the Semi-arid Tropics (ICRISAT) household panel, but their analysis is limited to 204 households from six villages and two states. Lower educational attainment accounts for the slower standard-of-living improvements of SCs and STs.

[7] As Gang et al. (2008a) note, current labor market disadvantage may not reflect labor market discrimination but that cross-sectional analysis picks up premarket variation in the quality of education received. While recent studies of upper-end labor markets use field experiments to tackle such hurdles to identification, inferences are limited to discrimination at the point of labor market entry (e.g., Thorat and Attewell 2007).

[8] Exceptions include Dreze and Kingdon (2001), who find that rural SC children have an "intrinsic disadvantage" and a lower chance of attending school even after household wealth, parental education, and motivation and school quality are controlled for. See Hoff, Kshetramade, and Fehr (2009) for an experimental explanation for the greater economic vulnerability of lower castes.

(2010), this distinction is crucial for obtaining a balanced understanding of the origins of caste-based disparities in rural India.

C. Empirical Strategy and Main Findings

We use a unique household panel data set for rural India to make detailed standard-of-living comparisons across social groups at two points in time—before the effects of the 1991 liberalization reforms had started to kick in (1993–94; round 1) and 11 years later (2004–5; round 2).[9] We exploit our access to uniquely detailed information on the largest landowning and population groups in villages where panel households reside to explore three possible complementary explanations for identity-based disadvantage in rural India.

We identify the effects on household income of belonging to a particular social group, of belonging to a particular social group and living in a village dominated by upper castes (UCs), and ditto but living in a village dominated by one's own group (the "enclave" effect). The effect of living in a UC-dominated village represents the net of the "oppression" and the "proximity" effect (regardless of which group one belongs to). The proximity effect captures the idea that UCs are likely to be prosperous, politically well connected, and able to ensure better access to rural infrastructure and other public goods.[10] In our main regression specification, we first condition on the state of residence and agroecology at the district level and proceed to control for contemporaneous household- and village-level characteristics.

In UC-dominated villages, we initially find that proximity gains dominate oppression effects for OBCs and SCs: this is not, as others have suggested, because of better access to village public goods but because such villages are located in more productive areas. Once agroecology is controlled for, this net gain disappears, and proximity and oppression effects cancel each other out.

We do, moreover, find large, positive own-dominance or enclave effects on income for UCs, OBCs, and especially for SCs in the postreform era. A striking finding is that these village regime effects on income are confined to the Hindu social groups in our panel. We also find UC dominance to inhibit the educational progress of other social groups and negative own-enclave effects on the educational progress of Muslim women and ST men.

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[9] We hence consider the liberalization not as a discrete historical event but an ongoing process with cumulative impacts over time. Neither gross domestic product growth, nor growth in the services sector, nor private sector investment had picked up by the time the first panel round (1993–94) was completed. For supportive evidence and more comprehensive accounts of India's growth turnaround, see Sen (2007) and Panagariya (2008).

[10] Banerjee and Somanathan (2007) find that parliamentary constituencies with a concentration of Brahmins had better access to schools and piped water in 1971.

We use the estimated coefficients in our main specification to compute counterfactual income and poverty figures. UC dominance brings an own-group advantage of about 10% of mean income in both survey rounds. Even if other groups benefited as much as UCs from a positive externality conferred on them, this proximity gain is more than offset by group-specific "oppression" effects for SC and OBC households, which in round 2 depress mean income of SC and OBC households in UC-dominated villages by, respectively, about 14% and 12% and raise the percentage in poverty by, respectively, 6 and 5 points. Although the second effect is larger, the net effect of proximity and oppression is, as noted above, statistically insignificant after controlling for agroecology and state of residence.

We confirm robustness of our main results to how dominance is measured: whether as a zero/one variable, which we prefer for parsimony and ease of interpretation, or as the share of village land held by the dominant group or as a dominance-adjusted Herfindahl index capturing that if landholdings among the nondominant groups are more fragmented, the intensity of the largest group's dominance should be expected to increase. Finally, we combine pathway and income source analysis to explore the mechanisms through which these village regime effects manifest themselves. Pathways are explored by gradually introducing sets of variables that capture village infrastructure, household education, and household land. It transpires that village infrastructure has no effect, education negligible effect, and land the largest such effect: once all three are controlled for, virtually no village regime effects remain. A key insight from the income source analysis is that the resilient SC round 2 enclave effect has agricultural and not, as perhaps expected, nonfarm or business roots.

The article is laid out as follows. Section II describes the data set, elaborates on the theoretical background, and presents the empirical model for testing our hypotheses. Section III presents descriptive statistics on income and poverty levels and change and on human capital endowments by social group and village regime. Section IV presents the main empirical results, followed by robustness tests and a computation of counterfactual income, growth, and poverty, to illustrate the order of magnitude of the village regime effects that we identify. Section V concludes.

II. Data, Theoretical Background, and Empirical Framework

A. The Data Set

The data are from two large-scale household surveys that cover most of the territory of India, the earlier known as the Human Development Profile of India (HDPI) surveys, and the later as the Indian Human Development Survey (IHDS). The first round, HDPI-I (1993–94), was carried out by the Na-

tional Council of Applied Economic Research (NCAER) on behalf of the UN Development Programme. The second round, HDPI-II IHDS (2004–5), was carried out by NCAER on behalf of the University of Maryland. The primary purpose of the surveys was to collect detailed information on a large range of human development indicators, including income, the variable reported on here. These surveys are the first major ones for India to measure household income in a comprehensive and refined manner, including carefully assessed income from cultivation, self-employment, and a large number of other sources (Desai et al. 2009, 16).[11]

The way in which data on income are collected in both rounds is identical or similar for all sources with the exception of crops. At the national level, the figures suggest an annual rural income per capita growth of 4.2% and a poverty head count ratio of 38.3% for 1993–94 and of 29.0% for 2004–5. These figures are very close to estimates of the incidence and decline of rural poverty in India based on the National Sample Survey Organisation (NSSO) Consumer Expenditure Surveys (CESs), despite the use of expenditures, not income, in the latter. According to the fiftieth NSSO CES (1993–94), 37.1% of the rural population was in poverty; in the sixty-first round (2004–5), rural poverty stood at 28.4%.[12]

A unique feature of these data is that a village questionnaire was administered in the second round and enables the construction of village social composition and landownership distribution variables by *jati* (subcaste). Further, the subdivision of social groups in the household questionnaires allows us to precisely identify the *jati* of individual households and thus to make comparisons of the economic performance of other social groups with that of UC households, who mostly are Hindus.[13] These features depart notably from official data sets with collection of information on *jati* terminated after the 1931 census.

The first round of the survey used a random sample of households located in and representative of each of the rural areas in all (then 16) of India's major states. The attrition rate between the two rounds is 18%, due to recontact details not being available in two states, migration (of the entire household),

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[11] A full description of the variables, summary statistics including comparison with other major India surveys, and an exposition of the sampling methodology can be found in Desai et al. (2009).

[12] These point estimates are close between the data sources, as is the implied reduction in rural poverty. The NCAER income data imply a rural poverty decline of 9.3 percentage points, and the NSSO expenditure data, of 8.7 points.

[13] See Singh's (1984) account of caste among non-Hindus. Among Muslims, Fuller (1996) and other contributors to the same volume contend that while caste-like arrangements are common, few admit to their existence. See also app. A, available online.

and natural demise (Desai et al. 2009, 3).[14] After removing about 20 villages with missing social composition and landownership information, our panel comprises 9,108 households spread over 679 villages.

Since a residence-based sampling rule was adopted, the findings reported here are, strictly speaking, valid only for households who choose not to migrate (e.g., Baulch and Hoddinott 2000; Rosenzweig 2003). However, the comparison of living standards and changes therein across social groups—the focus of this article—should not be much affected by this limitation: the variables caste, religion, education, and income are not substantially different in the panel from those in a randomly selected rural refresher sample drawn to check the round 2 representativeness of the panel household sample.[15] Furthermore, we performed a statistical test on whether the inclusion in the panel of all households who participated in the first round is associated with our dependent variable, household income. After controlling for household demographic composition and educational attainment, household income is not associated with selection into the panel, suggesting no endogenous panel attrition and that our panel households, with respect to income, are a randomly selected subsample of all rural households that participated in the first round.[16]

B. Upper Caste and Own Dominance—Theory and Definitions

The caste dominance concept originates in the sociological and anthropological literature. In Srinivas's (1955, 18) own words: "A caste may be said to be 'dominant' when it preponderates numerically over the other castes and when it wields preponderant economic and political power. A large and powerful caste group can more easily be dominant if its position in the local hierarchy is not too low." UC dominance is perhaps best expressed as a combination of secular power and ritual status, where the latter reflects the Varna hierarchical order with Brahmins topmost among four broad occupational

[14] States included in the panel are Andhra Pradesh, Bihar (+Jharkhand in round 2), Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh (+Chattisgarh in round 2), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh (+Uttarakhand in round 2), and West Bengal. Recontact details were largely lost in Assam due to a flood and in Karnataka because of human error. The 12 remaining households in Assam do not feature in the final analysis because of lack of information on agroecological zones (see below).

[15] See appendix table 1 in Desai et al. (2009), which reports the proportions of the panel household sample in round 2 and those of the refresher sample in categories of age (8 categories), gender (2), individual education (6), social group (6), place of residence (4), maximum adult education (6), and income (6). The absolute differences between the proportions of the two samples (38 comparisons in total) range from 0.04 to 5.28 percentage points, with a mean value of 1.20 and a median of 0.56 percentage points.

[16] The p-value corresponding to the null hypothesis that income is not associated with panel inclusion is equal to .937.

ranks and with former untouchables (SCs) as a separate category. The dominant social group could be defined as the group (i) that represents a larger share of the village population than any other social group (n_d), (ii) owning more village land than any other social group (l_d; e.g., Dumont 1970), or (iii) both (n_d and l_d; e.g., Srinivas 1955). While not exhaustive, i–iii are alternative measures of secular power.

Numerical strength could translate into village-level political muscle, especially after the seventy-third constitutional amendment's elevation of the status and significance of village Panchayats. However, Anderson (2011) finds no effects of population dominance on economic outcomes. As explained below, our empirical focus on land dominance partly reflects a constraint imposed by de facto village structures in rural India but also exploratory regressions supportive of Anderson's (2011) observations and Dumont's (1970) assertion that dominance is rooted in economic power captured by landownership alone.[17]

Conceptually, let the land of village j, L_j, be distributed over m groups, where n_i represents the share of the village land that belongs to social group i. Hence,

$$L_j = \sum_{i=1}^{m} n_i = 1. \tag{1}$$

> **Definition:** A dominant social group has the largest share of the village land of any social group. For members of the dominant social group in village j, village j is own-group dominated or an own enclave. If the dominant social group in village j is UC, village j is UC dominated. UC dominance exemplifies a village regime.

This forms the conceptual backbone for the main analysis, with our preferred dominance measure being sociologically anchored and easy to interpret. This preferred measure neglects the relative size of the dominant group's land-holdings, as well as fragmentation or concentration among other social groups within a village. We therefore make use of two alternative dominance measures as robustness checks. The first is the share of village land owned by the dominant group; the second, a modified Herfindahl index.

The Herfindahl index of concentration for village j may be defined as

$$H_j = \sum_{i=1}^{m} n_i^2, \quad \text{where } H_j \in (0, 1]. \tag{2}$$

Situations in which two groups have landholdings of equal size would imply considerable concentration but not dominance. To equip H_j to capture dominance, we introduce the following modification:

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[17] These results are not presented or further discussed here but are available on request.

$$D_j = n_d^2 - \sum_{i \ne d} n_i^2, \tag{3}$$

where n_d is the land share owned by the dominant group. For a given n_d, the more fragmented is the landownership of other groups, the higher is D_j. In the example above, the value of D_j will be exactly zero, as it should be.

To construct village-level dominance measures, we combine village-level information on social structure and land ownership with evidence on the hierarchical status of precisely identified *jatis*. The village questionnaire administered in round 2 identifies the *jati* of the numerically dominant social group in each village, the percentage of village land this social group owns, along with similar information for the next four to eight most numerous social groups. Anthropological and other relevant evidence (e.g., Jaffrelot 2003) on the status of different *jatis* is then invoked to develop a more refined UC definition as explained in appendix A. Given the general inactivity of rural land markets and that land-dominant groups typically hold a much larger share of village land than any other group, we assume that the village regime is identical in rounds 1 and 2.[18]

C. Empirical Model

The proximity, oppression, and enclave hypotheses refer to the extent to which the income level of households from different social groups is affected by the social identity of the dominant landowners in the village of residence. To test these hypotheses, we model the relative differences in income by social group and village regime, controlling for location and household characteristics, as follows (see app. C, available online, for more details):

$$
\begin{aligned}
\ln(Y_{ht}) = {} & \alpha_{0t} + \alpha_{1t}SC_h + \alpha_{2t}ST_h + \alpha_{3t}MUS_h + \alpha_{4t}OBC_h \\
& + \beta_{1t}SC_h \times DSC_{v(h)} + \beta_{2t}ST_h \times DST_{v(h)} \\
& + \beta_{3t}MUS_h \times DMUS_{v(h)} + \beta_{4t}OBC_h \times DOBC_{v(h)} \\
& + \beta_{5t}UC_h \times DUC_{v(h)} + \gamma_{1t}SC_h \times DUC_{v(h)} + \gamma_{2t}ST_h \times DUC_{v(h)} \\
& + \gamma_{3t}MUS_h \times DUC_{v(h)} + \gamma_{4t}OBC_h \times DUC_{v(h)} \\
& + \pi_t X_{ht} + \theta_h + \eta_{v(h)} + \varepsilon_{ht}.
\end{aligned} \tag{4}
$$

[18] See the extensive literature review on land markets in Dreze, Lanjouw, and Sharma (1999). Details are available from the authors regarding land-dominant groups' share of village land.

Subscript h denotes households, t time ($t = \{1993\text{–}94, 2004\text{–}5\}$), and $v(h)$ the village of residence of household h. Household real per capita income is denoted by Y, and the five social groups a household can belong to are denoted by SC (scheduled caste), ST (scheduled tribe), MUS (Muslim), OBC (other backward classes), and UC (upper caste). These are all dummy variables and take the value 1 if a household belongs to this group and 0 otherwise.[19] The village regime is modeled using the dummy variables DSC, DST, DMUS, DOBC, and DUC, which take the value 1 if this particular social group is land dominant in the village of residence and 0 otherwise.

The last three right-hand-side terms of equation (4) form the error structure of the model. The first two error terms are, respectively, a random household-specific effect, θ_h, that is assumed to be independently distributed across households and a random village specific effect, $\eta_{v(h)}$, which is assumed to be independently distributed across villages. The third error term, ε_{ht}, is an idiosyncratic error term and is assumed to be independently distributed across households, villages, and time. The assumption of a random household-specific effect, as opposed to a fixed effect, is required because incorporating a household-specific fixed effect would make it impossible to identify proximity, oppression, and enclave effects since the village regime is constant over time and panel households live in the same village in both rounds. We estimate equation (4) by least squares separately for each round and thus allow all parameters to vary over time. Arbitrary correlation between households within a village is accounted for when calculating the standard errors (e.g., Cameron and Trivedi 2005).

The α parameters refer to the relative income differences between households of different social groups with UC as reference group. For instance, the parameter α_{1t} ($\times 100$) corresponding to the variable SC, is interpreted as the percentage difference in income between SC and UC households living in a village dominated neither by SC nor by UC (ceteris paribus).

The enclave hypothesis refers to the β parameters. For instance, the parameter β_{1t} ($\times 100$) corresponding to the variable SC $\times$ DSC represents the percentage difference in income between SC households living in a village dominated by their own social group and SC households living in a village dominated neither by SC nor by UC. Further, the parameter β_{5t} ($\times 100$) corresponding to the variable UC $\times$ DUC is interpreted as the percentage difference in income between UC households living in a UC-dominated village and UC households living in a village not dominated by UC. The net of

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[19] Throughout, income is per capita per annum and in constant 1993–94 prices, converted using NSSO state-specific rural consumer price indexes.

the proximity and oppression effects is captured by the γ parameters. For instance, γ_{1r}, corresponding to the variable SC $\times$ DUC, is interpreted as the percentage difference in income between SC households living in a UC-dominated village and SC households living in a village dominated by neither SC nor UC.

In order to disentangle proximity and oppression effects, we use estimated coefficients to compute counterfactual income as if the externality conferred on other social groups from living in a UC-dominated village is equal to the UC own-enclave effect. That is, we assume that the proximity gain for non-UC households is (at most) equal to the UC enclave effect. In practice it is possible that the externality that causes this proximity effect is smaller, so we provide an upper bound on the (absolute) oppression effects.[20] See appendix C for details.

Following Anderson (2011), who contends that landholding patterns in village India are historically determined, our village regime variables are assumed to be exogenous determinants of (per capita) household income. To the extent that contemporaneous village-level and household-level characteristics such as village infrastructure, household land, and education are correlated with village regime, it is legitimate to think of these as pathways along which the village regime affects household income. This leaves open the possibility that landholding patterns are historically and jointly determined with land quality. For instance, if UCs, on average, were more successful in the scramble for fertile land, the proximity coefficient could simply pick up that UC-dominated villages are located in areas with greater agricultural potential.[21] In addition, land reforms, which fell within the jurisdiction of individual states after independence, could have upset the historical landownership patterns that Anderson's identification strategy relies on. However, and as Besley and Burgess (2000) document, while state-level legislation included introducing land ceilings, redistribution of land has, by and large, been evaded because of loopholes and the absence of political commitment (394).[22] The

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[20] This is equivalent to estimating eq. (4) with one modification: replace β_5UC $\times$ DUC with β_5DUC, which we did in a previous version of the article. All coefficients are unaffected by this modification, apart from the γ parameters, the effects on income for other social groups of living in a UC-dominated village, which are then net of the approximated proximity effect and can thus be thought of as an oppression effect.

[21] The relevance of locational disadvantage, which corresponds highly imperfectly with state boundaries, for poverty (and inequality) in rural India is extensively documented by Palmer-Jones and Sen (2003).

[22] This echoes Bardhan's (1970) assertion that redistributive reforms have not been implemented with sincerity.

most powerful effects on poverty have been observed instead for reforms strengthening tenurial security (394).[23]

To address these two concerns that may cause a violation of our assumption of exogenous village regime variables, we use Palmer-Jones and Sen's (2003) mapping of agroecological zones onto Indian districts and state dummy variables as additional controls.[24] Both sets of variables are included in the vector of control variables (X) in equation (4). Vector X also includes variables for household demographic composition, education and landholdings, and village infrastructure (the full variable list is reported in app. B, available online).

As noted, all parameters of equation (4) are allowed to vary with time, which makes it possible to investigate changes in enclave effects and obtain clues about changes in proximity and oppression effects between the two rounds and in turn the implications for income growth and for poverty incidence and persistence. As discussed, we explore the robustness of the main results to two alternative measures of dominance, and for this purpose we replace the dummy dominance variables (e.g., DUC) with the UC land share (the first alternative) or the value of the dominance-adjusted Herfindahl index (the second alternative, eq. [3]).

III. Descriptive Statistics

Anchored in Dumont's (1970) conception of caste dominance, as set out above, our empirical focus is on villages where a particular social group owns the largest proportion of village land. The technical challenge posed by separate identification of land and population dominance is discernible from the diagonal of table 1, which shows the strong correlation between population and land dominance: for each social group, if it is population dominant, in over 90% of cases it is also land dominant and vice versa. Table 1 shows that UC dominance is the most common village regime, closely followed by villages dominated by OBCs. The number of SC- and Muslim-dominated villages is comparatively small.

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[23] The general inactivity of land markets emphasized in Dreze et al. (1999) adds further impetus to Anderson's (2011) claim.

[24] Their map (Palmer-Jones and Sen 2003, 14–15) divides India into 19 agroecological zones, where careful classifications of land surface capture initial conditions that indicate agricultural productivity potential. The zones are classified by variation in soil types, rainfall patterns, altitude, whether they are coastal, and other factors that affect this potential. Two examples of these zone definitions are zone 7 (Deccan Plateau of Telangana and Eastern Ghats—hot semiarid ecoregion with red loamy soils and a growing period of 90–150 days) and zone 5 (Central [Malwa] highlands, Gujarat plains, and Kathiarwar peninsula—hot arid ecoregion with medium and deep black soils and a growing period of 90–150 days).

TABLE 1
NUMBER OF LAND- AND POPULATION-DOMINATED VILLAGES BY SOCIAL GROUP

Largest Population Group in Village	Largest Landholding Group in Village						Total
	SC	ST	OBC	MUS	UC	OTH	
Scheduled castes (SC)	**24**	2	12	1	25	4	68
Scheduled tribes (ST)	0	**65**	3	0	2	0	70
Other backward classes (OBC)	1	0	**196**	3	25	10	235
Muslims (MUS)	0	0	2	**35**	4	2	43
Upper castes (UC)	0	1	1	0	**223**	6	231
Others and none (OTH)	2	0	8	0	18	**1**	29
Total	27	68	222	39	297	23	**676**

Sources. Human Development Profile of India panel, authors' calculations.
Note. Data are number of panel villages in which the row social groups are the largest population group and the column social groups own the largest land share. "Others" consists of villages in which either an unclassified group or no single group is land or population dominant.

Table 2 reports the distribution of households across village regimes and illustrates the extent to which households are clustered in own-dominated villages. Such clustering, which can be read off the bold diagonal, is pronounced for STs, UCs, OBCs, and Muslims, while the SC population is more dispersed. Relevant to the oppression hypothesis, table 2 also shows the presence of households from each social group in UC-dominated villages: 45.9% of the households residing in such villages are UCs, 26.4% SCs, and 21.6% OBCs. STs and Muslims account for 6.1% between them.

Next, we present descriptive statistics on village regimes that are pertinent to the proximity, oppression, and enclave hypotheses.[25] Figure 1 reports round 1 and round 2 mean household per capita incomes and poverty head count by social groups for villages with (i) UC land dominance, (ii) own-group land dominance, and (iii) the remaining "other" villages. Unsurprisingly, in the aggregate, SCs and STs are on average worse off than OBCs and Muslims, who are in turn poorer than UCs, which is true in both rounds and whether measured by income or poverty incidence. However, a more nuanced picture is obtained once we compare living standards by social group across village regimes.

Figure 1 suggests pronounced village regime effects on income levels, growth, poverty incidence, and the speed of poverty reduction (or conversely, poverty persistence). In round 1, SCs and OBCs in UC-dominated villages have mar-

[25] Other descriptive statistics for this panel include mean household income by state, landholdings, level of education (of the household head), occupation, and real household income per capita for different social groups and show a close correspondence between a priori expectations and summary statistics. Marginalized social groups own less land and are less educated than others: 41% of SC households and 48% of Muslim households have their own land; the figures for STs, OBCs, and UCs are 70%, 63%, and 81%, respectively. Consistent with Kijima (2006), marginalized communities also appear to receive lower returns on their human capital.

TABLE 2
NUMBER OF HOUSEHOLDS BY SOCIAL GROUP AND VILLAGE REGIME

Social Group of Households	Land-Dominant Social Group						Total
	SC	ST	OBC	MUS	UC	OTH	
Scheduled castes (SC)	**222**	68	694	109	1,040	119	2,252
Scheduled tribes (ST)	23	**552**	141	21	95	3	835
Other backward classes (OBC)	86	169	**1,608**	64	852	130	2,909
Muslims (MUS)	52	10	130	**337**	145	25	699
Upper castes (UC)	44	61	381	29	**1,810**	91	2,416
Total	427	860	2,954	560	3,942	368	9,111

Sources. Human Development Profile of India panel, authors' calculations.
Note. OTH = others.

ginally higher average incomes. For STs, round 1 incomes outside own enclaves were notably higher. The average UC household was much better off in own enclaves, while Muslim incomes show little variation across village regimes. In terms of how income by social group ranks across village regimes, the second-round picture is broadly similar to that of the first round for OBCs, Muslims, and UCs but strikingly different for STs and SCs: STs in round 2 appear to do much better in UC-dominated villages, while SCs fared much better in own enclaves.
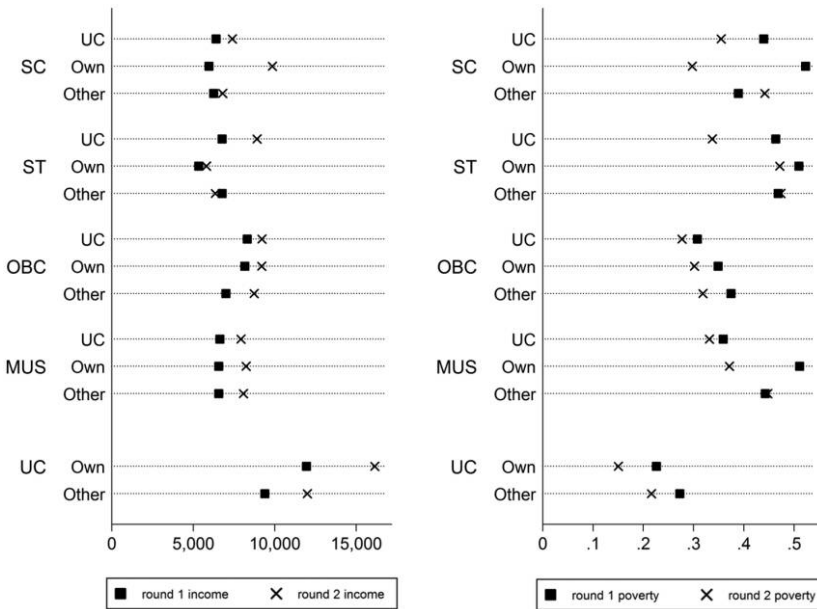

Figure 1. Mean per capita household income (in 1993–94 Rs) and poverty head count (proportion) by social group, round, and village regime. Poverty is the share of the indicated subsample with income below the National Sample Survey Organisation state-specific rural poverty lines. Source: Human Development Profile of India panel, authors' calculations.

In terms of average living-standard improvements, enclaves seem to favor UCs and SCs very strongly and Muslims marginally; STs did remarkably well in UC-dominated villages but made little progress overall. Contrasting this dynamism, SCs and OBCs in UC-dominated villages and STs and OBCs in own enclaves experienced little progress between the rounds.

Were these average income changes confined to the better off, or did they extend to poorer households as well? In the first round, the incidence of poverty among SCs, STs, OBCs, and Muslims was lower in UC-dominated villages than in own enclaves. Consistent with the income growth observations, the most dramatic poverty reductions appear for SCs in own enclaves and STs in UC-dominated villages. However, in spite of modest income rises, poverty reduction among Muslims in own enclaves looks dramatic. Poorer ST households made slightly more progress than the average ST household. Consistent with the income figures, OBCs seem to have experienced limited poverty reduction between the two rounds.

Figure 2 illustrates how social identity interacted with village regime related to one important factor endowment in rural India, namely, basic education as measured by male and female illiteracy. For both male and female literacy, SCs and OBCs do better in their own enclaves than in UC-dominated villages, and Muslims do worse, in both survey rounds. No such clear pattern is discernible for STs. Among groups with low initial male literacy (SCs, STs, Muslims), we observe across-the-board improvements with Muslims and STs in own enclaves progressing more than those in UC-dominated villages. SCs had higher, and Muslims lower, initial male literacy in their own enclaves. Although these observations on educational levels and progress correspond imperfectly with the income and growth patterns in figure 1, they do provide hints of positive enclave level and growth effects for SCs. While STs in UC-dominated villages experienced rapid income growth, male education does not appear to be responsible for this spur. Female STs experienced dramatic educational progress in general, while female SCs did better, and female Muslims worse, in own enclaves.

To sum up, in terms of the level of income and poverty in both rounds, as well as income growth and poverty reduction, UCs and STs do better on average in UC-dominated villages than anywhere else. By contrast, SCs in their own enclaves do not, on average, outperform SCs elsewhere in terms of income and poverty in round 1 but do so and apparently very strongly in round 2. Excepting poverty reduction (but not mean income growth) of Muslims in their own enclaves, the differences across village regimes for Muslims and OBCs are small. Some factor endowments—most notably SC literacy rates in SC-dominated villages—are consistent with these patterns, but observations so far are incon-
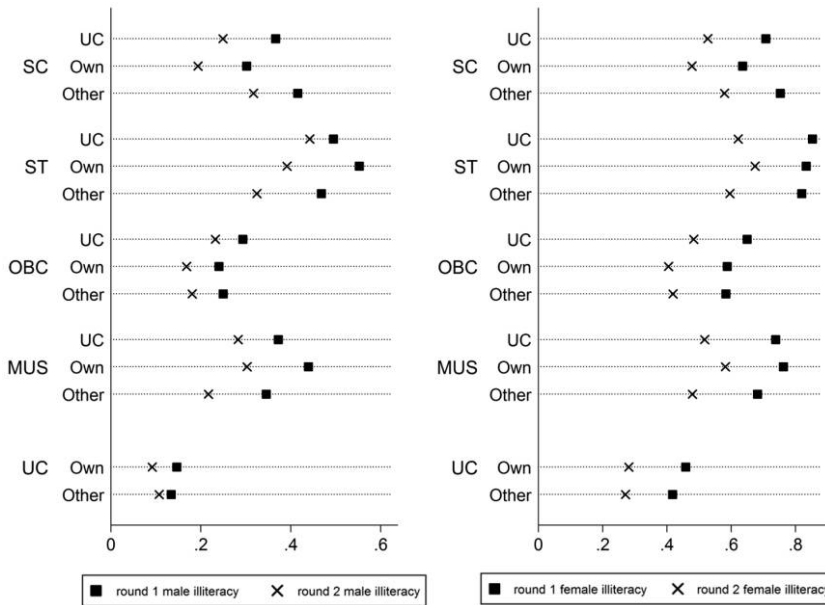
Figure 2. Male and female illiteracy by social group, round, and village regime. Data are averaged across all households in the subsample indicated and are based on the highest level of educational achievement in the household, that is, on households of which not a single (female or male, as appropriate) member is literate. Source: Human Development Profile of India panel, authors' calculations.

clusive about how village regimes affect household welfare. We next implement the empirical strategy laid out in Section II.

IV. Empirical Results

A. Estimation Results

Equation (4) is estimated for rounds 1 and 2 using alternative specifications in which extra variables are gradually introduced, a first set primarily to ensure that key effects of interest are not locationally confounded and a second set to investigate pathways through which enclave, proximity, and oppression effects operate. The estimation results for these specifications are reported in tables 3 and 4 and in full in appendix B. The natural logarithm of real household income per capita is the dependent variable.

The first specification contains social identity dummy variables (SC, ST, MUS, and OBC) with UCs as a benchmark category. We add the enclave village regime variables capturing own-group land dominance (SC × DSC, ST × DST, MUS × DMUS, and OBC × DOBC), the enclave effect for UCs (UC × DUC), and, finally, the social group interaction terms with UC dominance (SC × DUC, ST × DUC, MUS × DUC, and OBC × DUC). These last interactions facilitate identification of how SCs, Muslims, and OBCs perform

TABLE 3

ESTIMATION RESULTS OF THE EFFECTS ON INCOME OF SOCIAL IDENTITY, VILLAGE REGIME,
AND LOCATIONAL AND DEMOGRAPHIC CONTROLS

	Village Regime Terms (1)		Plus Controls (2)	
	Round 1	Round 2	Round 1	Round 2
Social identity:				
HH is SC	−.383***	−.506***	−.380***	−.450***
	(−8.21)	(−10.15)	(−8.58)	(−9.45)
HH is ST	−.316***	−.461***	−.315***	−.372***
	(−4.37)	(−5.67)	(−4.89)	(−5.35)
HH is OBC	−.296***	−.310***	−.230***	−.241***
	(−4.85)	(−4.40)	(−4.10)	(−3.92)
HH is MUS	−.294***	−.445***	−.207***	−.323***
	(−5.34)	(−5.96)	(−3.68)	(−4.71)
Village regime variables:				
SC × DSC	.037	.264***	.145**	.300***
	(.49)	(2.74)	(2.04)	(3.06)
ST × DST	−.088	−.050	−.018	.003
	(−1.16)	(−.59)	(−.27)	(.05)
OBC × DOBC	.167***	.113*	.105**	.094*
	(2.88)	(1.74)	(1.97)	(1.75)
MUS × DMUS	−.023	.164*	−.016	.124
	(−.29)	(1.74)	(−.20)	(1.37)
UC × DUC	.198***	.288***	.105**	.109**
	(3.84)	(5.14)	(2.22)	(2.13)
SC × DUC	.088**	.139***	.0264	−.024
	(2.04)	(3.01)	(.60)	(−.54)
ST × DUC	−.020	.260**	−.023	.103
	(−.15)	(2.10)	(−.20)	(.341)
MUS × DUC	.013	.142	−.037	.026
	(.16)	(1.46)	(−.46)	(.29)
OBC × DUC	.176***	.156**	.032	−.0105
	(2.85)	(2.32)	(.55)	(−.18)
Control:				
Household composition	No	No	Yes	Yes
Agroecological zones	No	No	Yes	Yes
State dummy variables	No	No	Yes	Yes
R^2 (overall)	.0667	.1065	.2124	.2837

Sources. Human Development Profile of India HDPI-I ("round 1") and II ("round 2") surveys, panel households only; authors' calculations.

Note. N = 9,108; HH = household; SC = scheduled castes; ST = scheduled tribes; OBC = other backward classes; MUS = Muslims; UC = upper castes. Dependent variable is the natural logarithm of annual per capita household income in constant 1993–94 prices, with round 2 data converted using National Sample Survey Organisation state-specific rural consumer price indexes. Random effects, with standard errors that are robust to heteroskedasticity and clustering within villages; robust t-statistics are in parentheses. Demographic controls are the sex of the household head, number of boys age 0–5, girls 0–5, boys 6–14, males 15–19, females 15–19, males 20–24, females 20–24, males 25–49, females 25–49, males 50–59, females 50–59, males 60 and older, and females 60 and older. See table B1 for the full specification.
* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

TABLE 4

ESTIMATION RESULTS OF THE EFFECTS ON INCOME OF SOCIAL IDENTITY, VILLAGE REGIME, AND ADDITIONAL
CONTROLS (VILLAGE INFRASTRUCTURE, HOUSEHOLD EDUCATION, AND LAND)

	Plus Education (HH) (1)		Plus Land (HH) (2)	
	Round 1	Round 2	Round 1	Round 2
Social identity:				
HH is SC	−.255***	−.316***	−.166***	−.248***
	(−6.17)	(−7.18)	(−4.27)	(−6.06)
HH is ST	−.177***	−.232***	−.157***	−.202***
	(−2.85)	(−3.49)	(−2.73)	(−3.08)
HH is OBC	−.154***	−.158***	−.136***	−.128***
	(−2.85)	(−2.83)	(−2.81)	(−2.62)
HH is MUS	−.119**	−.216***	−.070	−.138**
	(−2.17)	(−3.31)	(−1.38)	(−2.22)
Village regime:				
SC × DSC	.129**	.249***	.067	.202**
	(2.01)	(2.70)	(1.09)	(2.41)
ST × DST	−.007	.009	.012	−.008
	(−.12)	(.14)	(.21)	(−.14)
OBC × DOBC	.100*	.074	.067	.030
	(1.94)	(1.50)	(1.51)	(.68)
MUS × DMUS	.005	.15*	−.047	.087
	(.07)	(1.80)	(−.74)	(1.15)
UC × DUC	.120***	.108**	.032	.026
	(2.66)	(2.16)	(.79)	(.56)
SC × DUC	.015	−.04	.044	−.018
	(.34)	(−.98)	(1.18)	(−.46)
ST × DUC	−.006	.124	.003	.138
	(−.05)	(1.24)	(.04)	(1.51)
MUS × DUC	−.004	.050	.062	.026
	(−.05)	(.54)	(.83)	(.30)
OBC × DUC	.039	−.009	.11**	.023
	(.69)	(−.18)	(2.25)	(.49)
Control:				
Household composition	Yes	Yes	Yes	Yes
Agroecological zones	Yes	Yes	Yes	Yes
State dummies	Yes	Yes	Yes	Yes
Village infrastructure	Yes	Yes	Yes	Yes
Household education	Yes	Yes	Yes	Yes
Household land	No	No	Yes	Yes
R^2 (overall)	.2702	.3413	.4255	.4182

Note. Sources and note as for table 3. Education variables are dummy variables used as controls for the highest level of male and female education in the household. Land refers to controls for the logarithm of owned household land measured in acres and the logarithm of irrigated household land measured in acres. Village size is captured by village population (logarithm) and total village land. Village infrastructure controls are the presence within the village of a bus stop (1) or within its vicinity a railway station (2), medical clinic (3), schools—and if so, at which level of education (4)—or a market/*mandi* (5), as well as the type of road (footpath only, kutcha road, pucca road) that leads to the village (6). The full specification is reported in table B2.
* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

within UC-dominated compared to own enclaves and to the "benchmark" other villages, with the latter captured by the "raw" social identity terms.

Table 3 is laid out to facilitate round 1 and round 2 comparisons. We discuss the enclave, proximity, and oppression effects before and after introducing locational and demographic controls and proceed to address the pathways through which each of these effects operates.[26] In columns 1 and 2 we interact the village regime variables with households' social group, first without and then with control variables added. Before adding agroecological, state, and household demographic controls, it appears that residing in a UC-dominated village not only benefits UC households, as suggested by the large (and significant at the 1% level) UC enclave coefficient (UC × DUC), but also bestows sizable benefits on OBC and SC households. The UC enclave coefficient leaps notably in size between the two rounds, but only before controls are added.

Starting with round 1 and before adding controls, it is evident that UC households do better than everyone else, irrespective of location, and do particularly well in UC-dominated villages. OBCs do better than SCs and marginally better than STs and Muslims outside but much better than STs and Muslims if resident in UC-dominated or in OBC enclaves. In fact, OBCs are the only group that does not lose out relative to UCs in UC-dominated villages. For SCs, a significant but smaller gain from residing in UC-dominated villages is observed. We interpret the positive interaction terms for OBCs and SCs as the difference between positive proximity and negative oppression effects. In this first specification, the former dominate the latter.

Turning to the postliberalization era, we first register a general widening of identity-based disparities in favor of UC households. The UC enclave effect is larger and consistent with the descriptive statistics—STs do much better in UC-dominated villages than anywhere else, while Muslims do better in their own enclaves (weakly significant coefficient). There is, moreover, a large and strongly positive SC enclave effect. While SCs benefited from proximity to UCs before the reform effects started to kick in, SCs in own enclaves appear to have made significantly more progress during the postreform era.[27]

We next investigate whether the above effects are locationally confounded. UC-dominated villages might be clustered in areas with greater agricultural potential, and SC-dominated villages, in states with more progressive policies

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[26] We report the "raw" social identity coefficients without any controls in table B1. These coefficients suggest that the disparity between UCs and each of the other social groups widened during the reform years.

[27] The responses of the "raw" identity and village regime coefficients to the stepwise introduction of each of the three sets of "pure" controls may be gauged in full in table B1.

toward SCs or in states that experienced more (or less) income growth and poverty reduction in the aftermath of the 1991 reforms; the locational disadvantage of ST-dominated villages was remarked on above.

We add three sets of controls and note that, in contrast to state dummies, the main changes occur when agroecological zone controls are introduced. Adding Palmer-Jones and Sen's (2003) mapping of agroecological zones onto Indian districts makes clear that location matters.

The results reported in table 3, column 2, show that the UC enclave coefficient sizes are sharply reduced in both rounds. Further, the interaction terms capturing OBC and SC residence in UC-dominated villages turn insignificant. In contrast, the OBC enclave coefficients remain significant (shrink in size in round 1), while the SC enclave coefficients are now significant in both rounds. The SC enclave effect remains statistically stronger and of a much larger order of magnitude in round 2. Unlike for the three broad Hindu groups, there are no discernible village regime effects for STs and Muslims.

A key insight so far is that the proximity hypothesis has merit but that the proximity gains for OBCs (but see below) and SCs (and STs in round 2) are all locationally confounded—once we control for location, the proximity and oppression effects for OBCs and SCs cancel each other out. The main enclave coefficients are not, it turns out, locationally confounded. OBCs do better in their own enclaves in both rounds, while SCs do far better in their own enclaves in both rounds but particularly in round 2. However, the weaker round 2 enclave effect for Muslims turns insignificant.

The precise implications of the proximity gain and of the oppression and enclave effects for income levels, growth, poverty incidence, and poverty persistence are illustrated in the computations of counterfactual income, growth, and poverty in Section IV.C below. Our results so far suggest positive and significant enclave effects for UCs, OBCs, and SCs in both rounds and no village regime effects for the other two groups. Once we control for location, the OBC and SC net proximity gains that we observed to start with are wiped out. Put differently, the Hindu social groups benefit from the dominance of "their own kind" in the village communities where they reside.[28]

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[28] The results in our first raw regressions appear to be inconsistent with the observation of STs making less progress than SCs in the postliberalization era (e.g., Iversen 2012). We observe that STs do better than SCs in non-UC and non-(SC or ST)-dominated villages, while SCs do better than STs in UC-dominated villages in round 1 and better than STs in UC-dominated villages and in particular in their own SC enclaves in round 2. This, if anything, provides a more nuanced picture than offered elsewhere. We also, in response to a request from a reviewer, included villages dominated by OBCs along with social group interactions to explore whether OBC dominance affected SCs or other social groups differently. The only insight on offer is that ST households in such villages fare notably worse in round 2. Sample size limitations prevent the exploration of these enclave effects at the *jati* level.

We next shift the analytical attention to the underlying processes at work and first study the pathways through which village regime effects operate and possibly change between the rounds. We gradually control for village infrastructure, household education, and household landholdings, with results for the latter two reported in table 4.

Following Kijima (2006), we introduce dummies for the maximum female and male education within a household in which the educational categories are up to primary, middle, matriculation, higher secondary, and graduate plus. A hypothesis resonating with Dercon and Krishnan's (2007) findings would be that social identity disparities—by caste, religion, or tribe—should evaporate once educational attainments are controlled for. The results reported in table 4, column 1, include controls for village infrastructure and education.[29]

For both rounds, we observe a marked reduction in the raw identity coefficients (see app. B) and thus in the relative disadvantage of SCs, STs, Muslims, and OBCs from adding educational controls. For STs, the raw coefficient drops from -0.31 to -0.17, or by around 45%. For SCs, in comparison, education nets out about 33% of the remaining disadvantage vis-à-vis UC households. Our results concur with Dercon and Krishnan (2007) in suggesting that education is crucial: it is evident from the table, however, that education is only part of the solution.

Turning to the village regime effects, we observe a marginal weakening of the enclave effects for OBCs, with the round 2 coefficient turning insignificant and the t-value for the round 1 coefficient slightly reduced. Overall, therefore, education sharply reduces the raw identity coefficients while leaving the village regime effects largely intact.

We next consider landholdings as a potential oppression buffer or asset that may bolster enclave advantage. Starting with the raw identity terms, it is evident that controlling for household land further and substantially reduces the disadvantage of SCs and Muslims, while the effect on OBCs and STs is close to negligible. For the village regime effects, the UC enclave and the first-round SC enclave effects turn insignificant once household landholdings are controlled for: it transpires that land distribution is responsible for the own-enclave advantages of SCs in round 1 and the UC advantages in both rounds. For SCs in the postliberalization era, other explanations must be sought. Further, and

[29] As can be seen in app. B, adding the village infrastructure controls detailed in the note to table 4 has close to negligible effects on the raw identity and village regime coefficients. On the face of it and contrary to received wisdom (e.g., Pinstrup-Andersen and Shimokawa 2006), the scope for reducing identity-based disadvantage by improving village infrastructure appears more limited than expected.

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after all controls have been added, the round 1 net proximity gain for OBCs in UC-dominated villages resurfaces.

Notice, once more, that the raw coefficients, excepting Muslims in round 1, remain stubborn, large, and statistically significant. Hence, even after location, demography, village infrastructure, and key factor endowments are carefully controlled for, the raw coefficients suggest that SCs with the same resource base and attributes as others not only remain the worst off but fell further behind STs and OBCs in the postreform years. The main exception is SCs in own enclaves; the SC enclave coefficient remains large and strongly significant even after landholdings and all other controls are added and is large enough to eliminate 80% of the remaining disadvantage vis-à-vis UC households. Notice that Muslims also experienced a relative postreform setback since the raw coefficient reappears as (strongly) significant in round 2.

The pathway analysis provided valuable clues about the origins of the strong enclave effects observed for UCs and SCs and less for OBCs, which as noted essentially represent the Hindu communities in our sample. The village regime effects for Muslims and STs, once location was controlled for, virtually disappeared.

Favorable land distribution holds the key to the UC and first-round SC enclave advantage. What remains is to explain the persistent round 2 SC enclave effect. To obtain further clues about the underlying mechanisms, we use income share as the dependent variable in four alternative specifications (e.g., Benjamin, Brandt, and Giles 2011): income share from cultivation, income share from wage work, income share from business, and income share from remittances.[30] The results from these additional specifications are reported in table 5.

With a complete set of controls (including household landholdings), the cultivation share of income for SC households is higher in SC enclaves: this coefficient is large and significant at a 1% level. From the pathway analysis, we already know that SC income in round 2 is much higher in such villages even after household land is controlled for. Not surprisingly, wage income share is much lower, while there is no difference in the business income share of SC households within and outside their own enclaves, nor is there a difference in the share of income from remittances. There is thus no sign that business acumen outside agriculture or higher remittances can be held responsible for the SC enclave effect. Given the strong preoccupation with enterprise and nonfarm development within the development literature, this is a surprising finding. However, and in tune with Anderson's (2011) results, the explanation

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[30] The full set of results is available on request.

TABLE 5

ROUND 2 ESTIMATION RESULTS OF THE EFFECTS ON INCOME SHARE OF SOCIAL IDENTITY
AND VILLAGE REGIME, WITH FULL SET OF CONTROLS

	Agriculture	Wage	Business	Remittance
Social identity:				
HH is SC	−.137***	.196***	−.030**	−.014*
	(−7.15)	(9.60)	(−2.30)	(−1.71)
HH is ST	−.098***	.186***	−.061***	−.013
	(−3.64)	(6.13)	(−3.44)	(−1.33)
HH is OBC	−.014	.008	.042**	−.013
	(−.60)	(.32)	(2.17)	(−1.38)
HH is MUS	−.098**	−.009	.111***	.005
	(−3.29)	(−.27)	(3.32)	(.33)
Village regime:				
SC × DSC	.116***	−.151***	.023	.006
	(3.84)	(−3.16)	(1.25)	(.41)
ST × DST	.081***	−.112	.040**	−.001
	(2.57)	(−3.39)	(2.55)	(−.14)
OBC × DOBC	.075***	−.034	−.049***	.006
	(3.24)	(−1.34)	(−2.76)	(.81)
MUS × DMUS	.066	.0107	−.070*	−.009
	(1.58)	(.24)	(−1.90)	(−.52)
UC × DUC	.080***	−.060***	−.013	.005
	(3.63)	(2.77)	(−1.04)	(.67)
SC × DUC	−.008	−.066	.002	.006
	(−.50)	(−.33)	(.26)	(.98)
ST × DUC	.036	−.050	.018	−.005
	(−.05)	(−1.15)	(.325)	(−.37)
MUS × DUC	−.106	.071	−.106	−.027
	(−.25)	(1.30)	(−.24)	(−1.52)
OBC × DUC	−.024	.016	−.009	.012
	(.69)	(.56)	(−.47)	(1.43)
Control:				
Household composition	Yes	Yes	Yes	Yes
Agroecological zones	Yes	Yes	Yes	Yes
State dummies	Yes	Yes	Yes	Yes
Village infrastructure	Yes	Yes	Yes	Yes
Household education	Yes	Yes	Yes	Yes
Household land	Yes	Yes	Yes	Yes
R^2 (overall)	.3375	.2679	.0842	.1278

Note. Sources and note as for table 3. Education variables are dummy variables used as controls for the highest level of male and female education in the household. Land refers to controls for the logarithm of owned household land measured in acres and the logarithm of irrigated household land measured in acres. Village size is captured by village population (logarithm) and total village land. Village infrastructure controls are the presence within the village of a bus stop (1) or within its vicinity a railway station (2), medical clinic (3), schools—and if so, at which level of education (4)—or a market/*mandi* (5), as well as the type of road (footpath only, kutcha road, pucca road) that leads to the village (6).
* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

needs to be sought within agriculture itself. Contrast this with ST, OBC, and Muslim enclaves: for STs, there is no enclave effect on income. The cultivation share of income is higher and the wage income share lower also after household landholdings are controlled for: the business income share is also higher in ST enclaves. For Muslims and OBCs, we observe similar patterns for cultivation income, while business income is significantly lower in own enclaves.

B. Robustness Tests and Auxiliary Regressions

As discussed in Section II, we conduct two robustness tests on our main results by replacing the dummy variables for UC and own-group land dominance, first, with the share of village land owned by the dominant group and, second, with the fragmentation-adjusted dominance measure defined by equation (3). Table 6 reports the sign and the level of significance on the village regime parameters in the specification with "pure" control variables only (agroecological zones, state dummy variables, and household demographic controls).

The round 1 results for these alternative specifications feature in the top half, and the round 2 results in the bottom half, of table 6. Seventeen out of the 18 coefficients (nine per round) on the village regime variables when using the land-dominance dummy are robust in terms of retaining sign and statistical significance (or insignificance, as the case may be), regardless of the dominance measure used.[31] Although it is noteworthy and reassuring that significance of coefficients is generally stronger for the more refined measures, the key results presented in Section IV.A are thus not sensitive to how dominance is measured.[32]

We also implemented specifications using growth in factor endowments (land, female and male education) to explore whether UC dominance or own enclaves have separate effects on land or human capital accumulation in rural India. The results, reported in table B4, show that while the landholdings of OBCs and Muslims in UC villages increased, these were not associated with income gains (cf. coefficients in table 3, col. 2). A similar observation holds for OBCs in own enclaves, but there is no change in the income coefficients

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[31] The exception is the coefficient on OBC × DOBC in round 1, which is no longer significant when alternative dominance measures are used.

[32] In response to a referee request, we implemented separate regressions by social groups with results reported in table B3. In spite of the much fewer observations, the enclave results are retained for OBCs and SCs (round 2). For UCs, enclave coefficients turn insignificant in both rounds—at the outset, a source of concern. Given that the latter could simply reflect the much smaller sample, we "compensate" for the loss of observations by replacing the dominance dummy with the two more refined dominance measures in the UC regressions. For these two more refined measures, the significance of the round 1 UC enclave coefficient is restored (at the 5% level), while the round 2 coefficient is borderline insignificant. We hence conclude that our UC enclave results are robust.

TABLE 6
QUALITATIVE SUMMARY OF ROBUSTNESS TESTS

	Main Dominance Measure Result	Land Percentage of Largest Landholding Group in Village	Dominance-Adjusted Herfindahl Index (eq. 3)
Round 1:			
SC × DSC	+ +	+ +	+ +
ST × DST	NS	NS	NS
OBC × DOBC	+ +	NS	NS
MUS × DMUS	NS	NS	NS
UC × DUC	+ +	+ + +	+ + +
SC × DUC	NS	NS	NS
ST × DUC	NS	NS	NS
MUS × DUC	NS	NS	NS
OBC × DUC	NS	NS	NS
Round 2:			
SC × DSC	+ + +	+ + +	+ + +
ST × DST	NS	NS	NS
OBC × DOBC	+	+ + +	+ + +
MUS × DMUS	NS	NS	NS
UC × DUC	+ +	+ + +	+ + +
SC × DUC	NS	NS	NS
ST × DUC	NS	NS	NS
MUS × DUC	NS	NS	NS
OBC × DUC	NS	NS	NS

Note. SC = scheduled castes; ST = scheduled tribes; OBC = other backward classes; MUS = Muslims; UC = upper castes; NS = not significant. Specification includes social group, village regime, agroecological zones, state dummies, and household demographic composition variables.
+ Positive coefficient significant at 10%.
+ + Positive coefficient significant at 5%.
+ + + Positive coefficient significant at 1%.

between the rounds there either (table 3, col. 2). Interestingly and for human capital accumulation, UC dominance appears to inhibit the progress of other social groups. The coefficients are negative for all groups (one exception), for both males and females, with the only statistically significant coefficient observed for male OBCs. We also observe adverse enclave effects on educational progress among the non-Hindu social groups: consistent with the descriptives, these are strongly negative for females in Muslim-dominated villages. A similar and strongly negative own-enclave effect is observed for male STs.

C. Magnitude of Proximity, Enclave, and Oppression Effects

We next explore the order of magnitude of the proximity, enclave, and oppression effects in terms of income, income growth, and the incidence and persistence of poverty. As noted, the proximity effect could reflect a superior quality of schools, health care, and sanitation in UC-dominated villages; alternatively, lower castes may emulate UCs' stronger educational aspirations and farming practices—rich neighbors can make it less risky to adopt high-yielding seed varieties since followers can absorb the good and bad experiences

of wealthy early adopters (e.g., Foster and Rosenzweig 1995). Such proximity gains could exist alongside oppression effects manifested in limitations in the access to resources or markets, a hostile school environment, exclusion from membership in the local dairy cooperative, or restrictions in the access to credit schemes that facilitate response to new postreform opportunities.

To proceed, we compute counterfactual income as if the coefficients on the social identity interacted with village regime variables were equal to zero and use the coefficients from the model with pure controls reported in column 2 in table 3. In that model, the coefficient on the marginalized group dummy interacted with the UC-dominated village dummy is the net effect of proximity and oppression (as explained in Sec. II.C). In order to disentangle the two in the simulations presented here, we set the proximity effect equal to the coefficient on UC × DUC. In other words, we perform a calculation that assumes that the estimated net effect for marginalized groups in such villages can be decomposed into a proximity effect and a remaining oppression effect, by equating the former with the enclave effect for UC Hindus (see app. C for details).

For rounds 1 and 2 income per capita and poverty, and annual income growth between the two rounds, table 7 reports, by marginalized group, actual and counterfactual figures, separately for UC-dominated villages and for own-group-dominated villages. For the latter, counterfactual figures are based on what these variables would have been without the estimated enclave effect. For UC-dominated villages, three sets of counterfactual figures are reported. First, income, growth, and poverty are computed as if there is no general village regime or proximity effect (the coefficient on UC × DUC); next, as if there is no group-specific oppression effect (e.g., the coefficient on SC × DUC); and finally, as if there is neither effect. So, for example, mean income per capita in round 1 for SCs living in UC-dominated villages is equal to Rs 6,395 per year. Had they not benefited from the proximity effect, it would have been Rs 5,758; had they not suffered from oppression, it would have been Rs 6,918; and if neither effect were at work, it would have been Rs 6,228. The last figure is lower than their actual mean income, which shows that, in this case, the positive proximity effect is larger (in absolute terms) than the negative oppression effect.

The proximity effect on income of marginalized groups living in UC-dominated villages is always about 10%, both in round 1 and in round 2: mean income would thus have been some 10% lower had it not been for this effect. Since the effect on income is approximately the same size in both rounds, the growth impact is negligible. The effect on the head count percentage of poverty, however, depends on the group-specific distribution of income in the vicinity of the poverty line. Muslims in round 1 benefited most, and OBCs in

TABLE 7
ACTUAL AND COUNTERFACTUAL ANNUAL PER CAPITA INCOME (IN 1993–94 RS), GROWTH (% PER YEAR), AND POVERTY (%) WITHOUT VILLAGE REGIME EFFECTS, BY SOCIAL GROUP

	Scheduled Castes		Scheduled Tribes		Other Backward Classes		Muslims	
	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Upper-caste-dominated villages:								
Mean income per capita:								
Actual	6,395	7,391	6,760	8,905	8,309	9,200	6,626	7,915
Counterfactual—without proximity effect	5,758	6,628	6,086	7,985	7,480	8,249	5,965	7,098
Counterfactual—without oppression effect	6,918	8,443	7,683	8,959	8,938	10,367	7,637	8,600
Counterfactual—without proximity and oppression effects	*6,228*	*7,571*	*6,917*	*8,034*	*8,046*	*9,297*	*6,876*	*7,712*
Growth in mean income per capita (% per year between 1994 and 2005):								
Actual	. . .	1.32	. . .	2.54	. . .	.93	. . .	1.63
Counterfactual—without proximity effect	. . .	1.29	. . .	2.50	. . .	.89	. . .	1.59
Counterfactual—without oppression effect	. . .	1.83	. . .	1.41	. . .	1.36	. . .	1.09
Counterfactual—without proximity and oppression effects	. . .	*1.79*	. . .	*1.37*	. . .	*1.32*	. . .	1.05
Poverty head count (%):								
Actual	43.9	35.5	46.3	33.7	30.8	27.7	35.9	33.1
Counterfactual—without proximity effect	49.5	42.2	51.6	41.1	35.6	32.4	43.4	40.0
Counterfactual—without oppression effect	38.9	29.9	38.9	31.6	27.2	22.5	29.0	26.9
Counterfactual—without proximity and oppression effects	*45.6*	*34.4*	*46.3*	*41.1*	*32.2*	*27.5*	*33.8*	*36.6*
Own-group-dominated villages:								
Mean income per capita:								
Actual	5,954	9,842	5,331	5,805	8,158	9,187	6,553	8,231
Counterfactual—without enclave effect	5,151	7,291	*5,427*	*5,788*	7,345	8,362	*6,658*	*7,271*
Growth in mean income per capita (% per year between 1994 and 2005):								
Actual	. . .	4.68	. . .	.78	. . .	1.09	. . .	2.09
Counterfactual—without enclave effect	. . .	3.21	. . .	.59	. . .	1.19	. . .	*.80*
Poverty head count (%):								
Actual	52.3	29.7	50.9	47.1	34.8	30.2	51.0	37.1
Counterfactual—without enclave effect	59.9	47.7	*50.4*	*47.3*	40.4	36.1	*50.1*	*45.1*

Note. Counterfactual data are all based on counterfactual income computed for each household in villages land dominated by indicated group, using coefficients from the round 1 and round 2 regressions of the natural logarithm of income on village regime and social identity variables, controlling for agroecological zones, state dummies, and household demographic characteristics, as reported in table 3, column 2, and in full in appendix B. Data in italics are based on coefficients insignificant at the 10% level.

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round 2, least: poverty would have been 7.5 percentage points higher for the former and 4.8 percentage points higher for the latter, were it not for the proximity effect.

The group-specific oppression effect on income of living in UC-dominated villages tends to be of the same order of magnitude and thus offset the proximity effect, which reflects that the net effect is usually not statistically significant, with one exception (Muslims in round 1). Income in such villages would have been 14.2% higher for SCs in round 2, 12.7% higher for OBCs in round 2, and 15.3% higher for Muslims in round 1. The effect on growth is pronounced, too. SCs would have experienced 1.83% instead of 1.32% annual growth (22.1% over the entire period instead of 15.6%), and OBCs 1.36% instead of 0.89% (16.0% instead of 10.7%), were it not for oppression. When either the oppression effect or the proximity effect dominates for income, the same effect does not always dominate in the case for poverty, which must be related to peculiarities of the population density function of income. It is worth noting, though, that poverty reduction would have been very similar in the absence of oppression—marginalized groups would have experienced about the same amount of poverty reduction as they experienced actually because the level effect in both rounds was of the same order of magnitude.

Enclave effects in the specification used are significant only for SCs and OBCs, in both rounds. For OBCs they are of the same order of magnitude (but positive) as the oppression effects remarked on above for this group. For SCs they are much larger. Income per capita would have been 13.5% lower in round 1 and 25.9% lower in round 2, annual growth 1.47 percentage points lower (23.8% less growth over the period), and poverty 7.6 and 18.0 percentage points higher in round 1 and round 2, were it not for the enclave effect. Poverty would thus have been far more persistent for SCs in own-dominated villages in the absence of this effect.

In summary, we find sizable proximity gains to those residing in UC-dominated villages for income and poverty (but not for growth and poverty reduction) and an offsetting oppression effect of roughly the same order of magnitude. Growth for SCs and OBCs is substantially negatively affected by oppression. Enclave effects are large and positive for OBCs and especially SCs in terms of income and the absence of poverty and for SCs in terms of growth, too.

V. Concluding Remarks

Using a unique household panel data set for rural India covering 1993–94 and 2004−5, we have tested whether households from scheduled castes, scheduled tribes, Muslims, and other backward classes fare better or worse in terms of

income levels when residing in villages dominated by upper castes and in villages dominated by their own group. We began by noting that the gap between UCs and all other social groups widened substantially between the two panel rounds.

Our initial specification suggested a positive net gain from proximity to UCs (e.g., Sethi and Somanathan 2010) for SCs and OBCs in round 1 and SCs, STs, and OBCs in round 2 and thus that the proximity effect dominates the oppression effect. However, once we control for the agroecologically more favorable location of such villages, this net gain disappears, and the proximity and oppression effects cancel each other out. A round 1 net proximity gain for OBCs resurfaces once all controls have been included, thus adding clout to the proximity hypothesis.

In order to isolate the oppression effect, we compute counterfactual household income as if all social groups benefit equally from the advantages to the village as a whole that UC dominance brings, and we find that it can be large. For instance, the income levels of SCs living in UC-dominated villages would have been 14.2% higher in round 2 were it not for oppression effects, while annual income growth would have been 0.5 percentage points higher, 1.83% instead of 1.32%. Put differently, while both the proximity and the oppression hypothesis have merit, neither works satisfactorily on its own. They work, moreover, in the expected opposite directions: ignoring either through a focus on the proximity hypothesis or the oppression hypothesis alone would deprive social scientists interested in the origins of caste-based disparities in rural India of vital insights.

When focusing on income, we find strong support for the positive enclave hypothesis for UCs, SCs, and OBCs in both rounds; UCs perform much better in own-dominated villages than anywhere else. SCs and OBCs also perform better in their own villages than in villages dominated by UCs and in benchmark "other villages." Once location is controlled for, these village enclave effects are limited to the Hindu social groups: there are no parallel effects for STs and Muslims. In terms of income, the Hindu social groups thus benefit from the dominance of "their own kind" in the village communities where they reside.

For human capital accumulation, our findings suggest inhibiting effects of UC dominance on males and females from other social groups (negative signs, but only one significant coefficient), while own enclaves negatively affect educational progress for Muslim women and ST men. We shed new light on the pathways through which welfare disparities between different social groups within and outside villages dominated by UCs may be narrowed. Educational attainment matters, but mainly outside UC-dominated villages and outside

own enclaves. The strong enclave effects for UCs in both rounds and SCs in round 1 disappear once landholdings are controlled for. The remaining gaps in the raw identify coefficients are also very substantially reduced, thus underscoring that land distribution remains a key determinant of identity-based disparities in rural India. This is in contrast to Dercon and Krishnan's (2007) findings based on the ICRISAT panel, which indicated that caste-based rural disparities essentially have educational roots.

Consistent with Anderson's (2011) findings for Yadavs in Bihar and Uttar Pradesh, but in our case extending to marginalized groups below the pollution barrier, SC households in own-dominated villages realized higher incomes in both rounds and experienced far more rapid poverty reduction between the two rounds. Our analysis of income shares suggests that the explanation for this advantage, perhaps surprisingly, is unrelated to nonfarm employment or business enterprise development and is instead anchored in advantages in agricultural production: a higher return on own-account cultivation when SCs are not likely to be discriminated against in irrigation (e.g., Anderson 2011) and other markets for agricultural inputs and outputs.

Our results, based on fundamentals, provide a timely empirical corrective to accounts of sustained SC progress relative to other groups and provide an important reminder to those who, inspired by India's "silent revolution," place great hope in the transformative potential of the democratic process, whether on its own or aided by political reservations. A similar caveat applies to strong beliefs in the transformative potential of economic liberalization. The grip of caste in rural India appears to be firmly rooted in patterns of landownership. The exception is SCs in own enclaves who are favorably placed for escaping this grip; the SC enclave effect remains large and strongly significant even after landholdings and all other controls are added.

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