Caste Hierarchies and Social Mobility in India*

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Abstract

Since the 1950s an expansion in public education and affirmative action programs have combined to reduce group inequalities in India. One of the puzzling patterns within this overall picture of greater social equality in India is the asymmetry in the gains made by the Scheduled Castes and the Scheduled Tribes. Both groups were equally disadvantaged in the pre-independence period and there was much more overt discrimination against the castes than the tribes. Yet, many of the formerly *Untouchable Castes* have performed better than the tribes in terms of educational levels, jobs and political representation. We document these changes and explain them using a model in which individuals have both geographical and social identities and social groups compete for public goods from the state. We argue that many of the observed empirical patterns can be explained by the relative geographical isolation of the tribes and the co-habitation of the castes with politically active groups.

1 Introduction

There is a long tradition of using caste divisions to articulate, understand and attenuate social inequality in India. Colonial administrators routinely recorded caste in census operations

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and affirmative action programs in India since the first half of the twentieth century have been based on caste identities. In the absence of well-accepted racial or ethnic markers, caste enumerations have been largely based on self-reported identities and, over the years, these reports have included thousands of distinct groups.[1]

In the 1950s, soon after political independence, the several thousand castes and tribes that had previously been enumerated in the Indian census were classified into one of four categories: *Scheduled Castes* (SCs), *Scheduled Tribes* (STs), *Other Backward Classes*(OBCs) and a residual category often referred to as the *General* or *Forward Castes* (FCs). In 1961, SCs and STs were 15% and 7% of the population respectively[2] and became the recipients of a range of affirmative action policies leading to their greater representation in politics, state employment and publicly funded education. The *Other Backward Classes* was a category designed to include poor and socially backward individuals, irrespective of caste, but the only official lists of these communities are based only on caste and the terms *Other Backward Classes* and *Other Backward Castes* are now used interchangeably. The census has never enumerated the OBCs and they are believed to be between 30-50% of the population.[3] The OBCs first began to received caste-based preference in public employment in the nineties and affirmative action towards them has recently been extended to higher education. Castes not included among the STs, SCs and OBCs are define as *General* based on the absence of any legally institutionalized preferential treatment by the state.

[1]The effect of colonialism on caste hierarchies is controversial. Dirks (2001) argues persuasively that the colonial power did not simply record caste, they reinvented it to help establish its undisputed superiority over former Indian rulers:

> What Orientalist knowledge did most successfully in the Indian context was to assert the precolonial authority of a specifically colonial form of power and representation...Caste had been political all along, but under colonialism was anchored to the service of a colonial interest in maintaining social order, justifying colonial power, and sustaining a very particular form of indirect rule...By the time of the first decennial census of 1872, caste had become the primary subject of social classification and knowledge (Dirks 2001; Chapter 1, pp. 14-15).

[2](Census of India 1961 1966; p. XLIV)

[3]The National Sample Survey of 2004-2005, a nationally representative household survey of over 1,00,000 households across the country reports the current shares of the four groups to be roughly 9%, 20%, 41% and 30% respectively. The shares for the SCs and STs reported in the 2001 census are 16.2% and 8.2% respectively, so the discrepancy in the two sources for the SCs is considerable (http://censusindia.gov.in and National Sample Survey Organisation (2007).)

The combination of massive programs of public good construction in Indian villages, caste-based reservations in political bodies and preferential selection in education and employment resulted in considerable convergence in educational and occupational outcomes across social groups [4] The gaps observed today are, as a result, small in historical perspective. In 1931, although 17% of Indian males were literate, male literacy rates varied from 60% among the Kayasthas, who were employed in large numbers in the colonial administration, to less that 1% among many of the groups that later formed the Scheduled Castes and Scheduled Tribes. By 1961, male literacy was 34%, overall literacy was 24% and literacy rates for SCs and STs were 10 and 8.5 percent respectively. In 2001, literacy rates were, respectively, 54%, 45% and 38% for the these three groups[5]

Gaps at higher levels of education also narrowed, but more slowly: only 11% (SCs) and 7.7% (STs) of the relevant age group completed 8 years of school in the mid-seventies as compared with over a fifth of comparable children in other social groups. In 1927 out of 55,000 college students in India only 82 or less than one-sixth of 1 per cent were from these groups, this number had gone up to between 1 and 2 per cent by 1961 (Galanter 1984; p. 60-61) Both SCs and STs also occupied a higher fraction of rapidly expanding public employment in the post-independence period. Between 1953-1975 the SC share of jobs in central government in higher administration went from .3 to 3.4 per cent (or from 20 to 1,201 employees) and for STs from .1 to .6 per cent. The share of clerical jobs went from 4.5% to 11% for SCs and from .47 to 2.3% for STs.

One of the puzzling patterns within this overall picture of greater social equality in India is the asymmetry in the performance of the disadvantaged castes and tribes. As seen in the above figures, the castes gained more than the tribes in both education and employment. This is in spite of very similar levels of literacy in the 1930s and far greater overt discrimination against the castes who were commonly referred to even in official colonial documents as the *Exterior Castes* and *Untouchables* (Hutton 1933; p. 471, 502). Atrocities against these groups have occurred and, in some places, continue to occur over their access to water, inter-caste marriage and their refusal to perform their traditional tasks (Mendelsohn and Vicziany 2002; chapter 2).

[4] An excellent discussion of the range of affirmative action programs and their likely effects on mobility can be found in (Galanter 1984; chapters 3 and 4).

[5] All literacy rates have been computed as total literates in the group divided by the total population of the group. These may be lower than literacy rates typically reported because the latter exclude the population below 6 years of age. An age-wise break up is not available by caste for the colonial period and we have therefore included all ages to make rates comparable across years.

Accompanying the mobility gains of the disadvantaged castes is their greater political visibility. The Bahujan Samaj Party (BSP), a major political party under Scheduled Caste leadership, was formed in the mid-1980s and in 2007, it came to power in India's most populous state, Uttar Pradesh. In contrast, parties explicitly representing tribal interests have had limited political success until very recently, even in constituencies where various tribes form a majority of the population. The Scheduled Castes have succeeded in forming political alliances with many of the upper castes but there appears to be little solidarity among the different tribes inhabiting even the largely tribal states such as Jharkhand (Guha (2007) Chandra (2004) Pai (1999)). This asymmetry also appears in a study of voting behavior of the two groups. In the early seventies, the Congress party dominated Indian politics and won two-thirds of SC seats and three-quarters of ST seats. By the early nineties it had lost many of the SC seats but retained two-thirds of the ST seats. This changing balance of political power was reflected in the distribution of public spending by the state and parliamentary constituencies with high concentrations of Scheduled Castes received a disproportionate share of public amenities constructed during the 1971-1991 period, while those inhabited by the Scheduled Tribes received systematically less than the average constituency.(Banerjee and Somanathan 2007).

This paper seeks to explain the contrasting fortunes and the political behavior of the different caste groups in India using a model in which individuals have both geographical and social identities and mobility occurs through access to public goods. Public good allocations by the state depend on the intensity of collective action by geographical units (villages). Individual effort into collective action depends however on the social group to which they belong and we assume that social groups can impose on its members the level of this action that maximizes the expected gains for the group as a whole. We use this framework to argue that many of the observed empirical patterns can be explained by the relative geographical isolation of the tribes and the co-habitation of the disadvantaged castes with other politically active groups.

There is a large literature that relates demographic composition to collective action and public goods and examines the role of measures of fractionalization on collective action.[6] The results on fractionalization are mixed. The framework used in this work assumes that it is the demographic composition of the village or unit receiving the good that determines collective action within the village. We depart from this assumption by allowing social identities to extend beyond the village. We believe this is a more realistic approach, certainly for the Indian case and it appears to do better explain the differential mobility that has been observed across social groups in India.

[6]This is surveyed in Banerjee et al. (2008).

The next section documents patterns of historical disadvantage and village demography in India. It also discusses mobility differences across the Scheduled Castes and Tribes. Section 3 presents a static model and Section **??** characterizes equilibrium. In Section **??**, we computeequilibria over multiple periods and trace the time path of skills and effort by different groups. We conclude with a couple of remarks on extensions and work that remains to be done.

2 Empirical Patterns

Historical Disadvantage

Two features of the traditional caste system, hierarchy and endogamy, have tightly linked caste identities to social mobility[7]. Although the several thousands of castes into which the Indian population is divided are not all placed in a well-accepted hierarchy, the notion of such a hierarchy is an essential part of the caste system, and mobility is seen as a result of actions taken collectively by the caste groups rather than individually by its members. [8]

Inter-caste differences in social standing in the early part of the twentieth century were staggering. Many of the Scheduled Castes were considered *Untouchables* and barred from public utilities such as roads and water sources, from shrines and from trade with other groups. J. H. Hutton, a well known anthropologist and the Census Commissioner for 1931, comments on the limited access to public facilities by exterior castes: (Hutton 1933; p. 483)

> Generally speaking, if the exterior castes have succeeded in asserting their right to use public wells, the higher castes have given them up...The same applies to the use of dharamshalas and of public burning ghats and the burial grounds.

and on the enormous social divide between upper and lower castes:

[7] Srinivas (1969), p.5

[8] As Béteille points out in his study of a south Indian village in the 1960s, "..there are significant differences between social mobility in the caste system and social mobility in the class system. In the latter, it is the individual who moves up and down, whereas in the former, entire communities change their position."(Béteille (1996) p. 190)

> ...a caste has been found in Tamilnad, the very sight of which is polluting, so that its unfortunate members are compelled to follow nocturnal habits, leaving their dens after dark and scuttling home at the false dawn like the badger, hyaena or aard-vark.

The tribes were less subject to explicit atrocities but were typically too geographically isolated to effectively use public facilities and also suffered on account of being offered a primary education in a language that was not their own. Nomadic tribes and those that migrated seasonally also found it difficult to combine regular schooling with their migratory lifestyle.[9]

Table 1 lists literacy rates at the time of the 1931 census for some major castes from each of these categories. Male literacy rates varied from 60% among the Kayasthas who were employed in large numbers in the colonial administration, to less that 1% among most of the Scheduled Castes. Interestingly, the Iluvans (the only backward caste with literacy rates comparable to the upper castes) were concentrated in Kerala which has historically had very good access to public schools. This inequality in educational outcomes was accompanied by occupational stratification. Professional jobs went almost entirely to the upper castes and the lower castes and tribes were primarily engaged in agricultural labor or their traditional occupations.

Geographical Concentration

Table 2 shows the proportion of these two groups in the rural and urban areas of each of the major Indian states in 1961. The table includes only those states where the populations of both of these groups was not insignificant. We see that both SCs and STs were more rural than the rest of the population. This is especially true of the tribes, who were 7% of the Indian population, but only 1% of its urban population. We also see that the distribution of the castes was more even across the states while the tribes were concentrated in a handful of states in central and eastern India.

It is not only the case that the tribes are regionally concentrated, they are also concentrated in particular villages within a region.Figure 1 shows this concentration of Scheduled Tribes at a more disaggregated level. The histograms in this figure use village level shares of the two groups in 2001. There were roughly half a million villages in the major Indian states in 2001. Of these, the ST population was less than 5% in over two-thirds of these villages and 7% of all

[9] (Hutton 1933; p. 331) and (Sharma 1988; Chapter 4)

Table 1: Literacy by Caste, 1931

Caste	*Occupation*	*Category*	*Literacy (M)*	*Share*
Kayastha	Administration	FC	60.7	1.61
Brahman	Priests	FC	43.7	8.9
Iluvan	Palm Growers	OBC	42.8	.71
Rajput	Warriors	FC	15.3	5.99
Teli	Oilmen	OBC	11.4	4.35
Mahar	Village Servants	SC	4.4	2.18
Yadava	Herdsmen	OBC	3.9	8.41
Bhangi	Scavengers	SC	1.9	.43
Gond	Agriculture	ST	1.6	1.49
Santal	Agriculture	ST	1.2	1.52
Bhil	Agriculture	ST	1.1	.43
Chamar	Tanners	SC	1	7.17

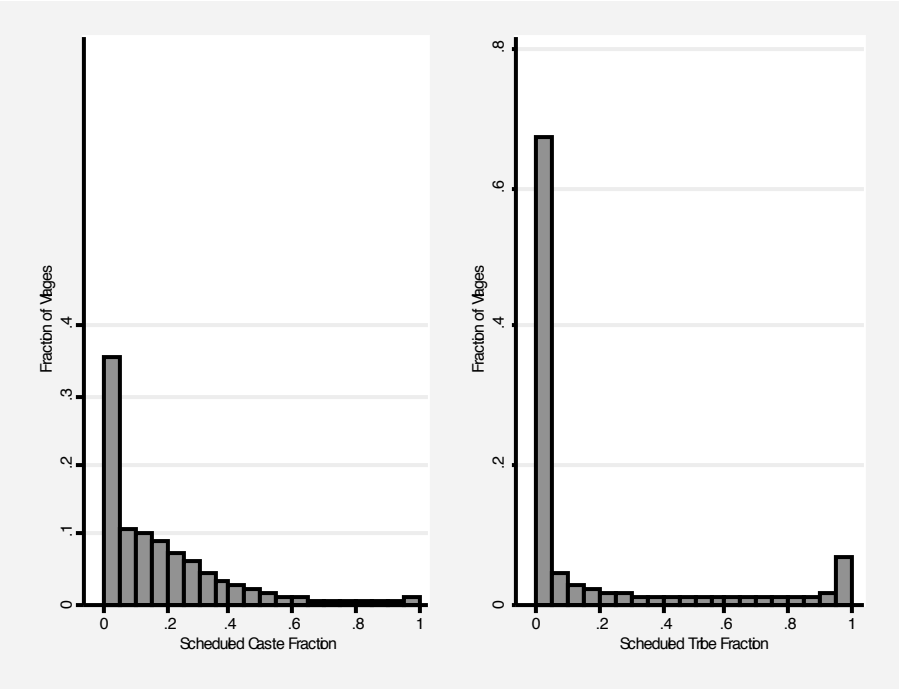
Source: Census of India, 1931

Table 2: The Distribution of SCs and STs, 1961

State	*%SC-rural*	*%SC-urban*	*%ST-rural*	*%ST-urban*
India	16	9	8	1
Andhra Pradesh	15	9	4	1
Assam	6	7	18	7
Bihar	14	9	10	3
Gujarat	7	6	17	3
Kerala	9	5	1	0
Madhya Pradesh	14	10	24	2
Madras	21	10	1	0
Maharashtra	6	4	8	1
Mysore	14	10	1	0
Orissa	16	11	25	8
Rajasthan	17	13	14	1
West Bengal	24	8	8	1

Source: Census of India, 1961: V(a) and V(b)

Figure 1: The Fraction of SCs and STs in Indian Villages, 2001



villages had ST shares of more than 95%. In contrast, about 40% of all villages had SC shares of between 5% and 25% and there were very few villages with high concentrations of these castes.

Table 3 relates village demographic to the access to primary and high schools. Two interesting pattens emerge from this table. The first emphasize a finding that we have already discussed; villages that are homogeneous in STs and SCs do worse in terms of both literacy and school access than the 18% of Indian villages where there are neither SCs nor STs. The second is that both groups, but especially the tribes do much better when they are combined with the higher castes. Mixed villages, defined as those with all three categories, do well, but they are also significantly larger than the homogeneous villages and since size is an important factor in public good allocation rules, it is hard to know the relative importance of demographics and size in determining outcomes for these villages.

Table 3: Village Demographics and Access to Education

Village Composition	*% Villages*	*Population*	*%Literate*	*% Primary Sch*	*% High Sch*
ST	7	417	28	64	2
SC	1	329	41	43	2
Other Castes	18	815	50	65	7
SC and ST	1	392	30	61	1
ST and Other	7	573	41	73	4
SC and Other	42	1633	49	84	13
SC, ST and Other	25	1575	48	91	18

Source: Census of India, 2001: Village Directories

Intergenerational Mobility

While possible, it is not straightforward to examine relative changes in educational attainment for each of these caste categories over time because of changes in definitions of both caste status and educational categories. The lists of SCs and STs that were drawn up in the 1950s were specific to particular states of the country and to particular districts within each state where the caste was believed to be socially disadvantaged. In 1976, many of these geographical limitations within states disappeared and SC or ST status was typically extended to a caste or tribe throughout a state if it had previously applied to the group in any part of the state. This makes it difficult to use the data on SC and ST outcomes across census years to arrive at their rates of mobility.

Figure 2 examines intergenerational mobility among the SCs and STs though figures for the educational attainment of different age cohorts in the 2001 census. We consider two coarse and extreme measures of attainment; literacy and college graduation. We find that for older age-groups outcomes for STs are similar to those for SCs, but this is not true for younger cohorts suggesting a divergence between these two categories over time. This is especially stark for college graduation rates. In each case, we compute attainment for only those age cohorts which were old enough in 2001 to complete the required level. This leads us to include those above 13 years of age in our literacy computations, and those above 20 for graduation rates.

We now turn to a model which tries to explain these patterns. In the following section we

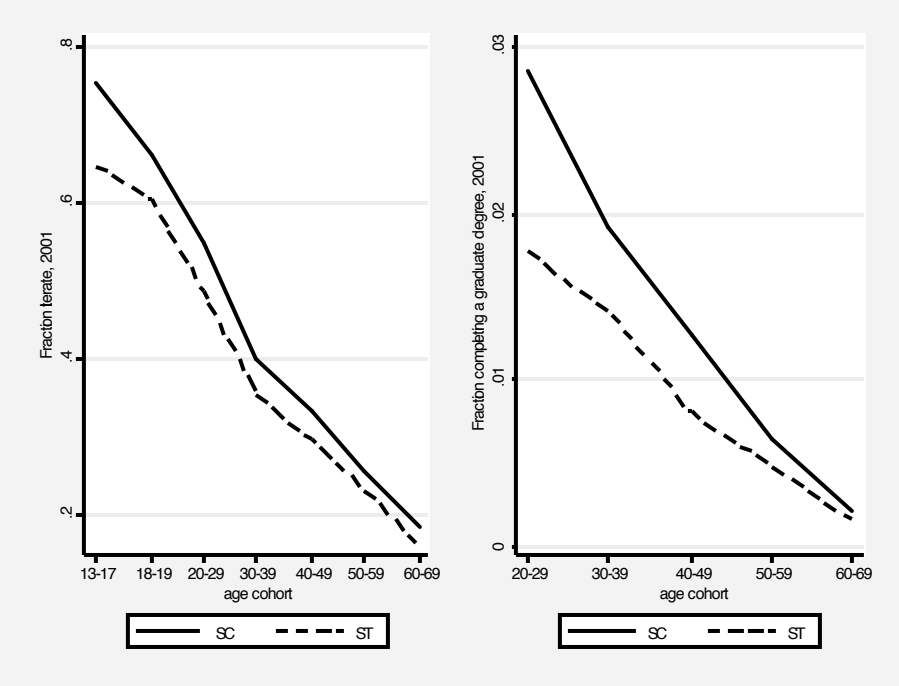


Figure 2: Educational Attainment by Age Cohorts, 2001

use a model that relates village demographics, collective action and public good access. Our model shows that, starting from similar levels of disadvantage, groups sharing villages with those who have incentives to invest in collective action can experience greater mobility than similarly disadvantaged groups that are isolated. This challenges much of the fractionalization literature which does not explicitly allow for groups to be part of established social hierarchies.

3 A Model of Public Action

A continuum population of unit measure is distributed across geographical units which we call villages. Each individual is identified by his caste or social group i and his village k. The set of castes is $C = \{1, \ldots, c\}$ and the set of villages is $V = \{1, \ldots, v\}$. We shall use subscripts i and j to refer to castes, and k and l to refer to villages.

Let n_i denote the number of individuals who belong to caste i, and n_{ik} the number who are

both in caste i and reside in village k. That is,

$$\sum_{k \in V} n_{ik} = n_i$$

Our focus is on the interaction between village demographics, processes of collective action and social mobility. We begin with a static model and are in the process of extending this to multiple periods to capture the dynamics of social mobility.

Suppose that there is a (possibly endogenous) measure of public goods that could be allocated to one or more of the villages. The public good allocation secured by a village depends on the political effort invested by the village, as well as the efforts made by the residents of other villages.

Let e_{ik} denote the effort level undertaken by individuals belonging to caste i in village k. Then the effort level in village k is given by

$$\mu_k = \sum_{i \in C} n_{ik} e_{ik} \tag{1}$$

Let p_k denote the allocation of public goods to village k at time t, given by the function

$$p_k = f(\mu_k, \mu_{-k}),$$

where f is assumed to be increasing in μ_k, and decreasing in μ_l for $l \neq k$. We assume that public goods are perfectly divisible, and are allocated deterministically. A special case of this is

$$p_k = \frac{\mu_k}{\sum_{l \in V} \mu_l}. \tag{2}$$

This means that there is a total of one (inelastic) unit of the public good to be divided across villages, based on the level of collective action at each location.

Let b_{ik} denote the benefits of access per unit of the public good for each member of case i in village j. The cost to each individual from investing effort into the political process is given by an increasing and convex function $c(e_{ik})$ satisfying $c(0) = c'(0) = 0$. Although this cost is borne at the level of the individual, the levels of effort e_{ik} across villages is determined collectively by all caste members and maximizes expected welfare of the group, which is simply the expected return from the public good minus aggregate costs.

The expected payoff to an individual in caste i and village k after public goods assignments have been made is

$$\pi_{ik} = b_{ik} p_k - c(e_{ik}). \tag{3}$$

The expected payoff to caste i, aggregating across all villages, is therefore

$$\pi_i = \sum_{l \in V} n_{il} \left(b_{il} p_l - c(e_{il}) \right) \tag{4}$$

This depends on the entire profile of effort levels e through the effect of these on the village levels effort levels and public goods assignments.

We shall explore three different specifications for the determination of effort levels. The case that is standard in the literature is that in which choices are individualistic: each person maximizes their own payoff given the effort choices of all others. Identity does not play a direct role in effort choice, although aggregate efforts and access to public goods will vary across groups and villages. Second, we explore the case in which identity matters directly for effort choices: group leaders set effort levels in such a manner as to maximize aggregate payoffs for the group, given the decisions made by leaders of other groups, and allowing for variations in within group effort across villages. The third case is identical to the second, except for the fact that effort choices within a group are constrained to be identical across locations. This would be the case if group leaders attempt to alter effort choices through exhortation and appeals to identity that cannot be fine tuned for different audiences.

Consider each of these cases in turn.

3.1 Individualistic Choices

Suppose that choices are made individualistically, and consider an individual in group i and village j. Let $e_{i'k}$ denote the effort level of this individual, which may or may not differ from that of others in the village. From (3), the first order condition for optimality is

$$b_{ik} \frac{\partial p_k}{\partial e_{i'k}} = c'(e_{i'k}).$$

Let $\bar{e}$ denote the aggregate effort level at any effort profile:

$$\bar{e} = \sum_{l \in V} \mu_l.$$

Using (2), and recognizing that $\partial \mu_k / \partial e_{i'k} = 1$, we obtain:

$$\frac{\partial p_k}{\partial e_{i'k}} = \frac{\bar{e} - \mu_k}{\bar{e}^2}.$$

Hence optimality requires

$$b_{ik}\left(\bar{e}-\mu_k\right)=\bar{e}^2c'(e_{i'k}). \tag{5}$$

Several characteristics of equilibrium are apparent. First, all individuals choose positive levels of effort. Second, there in *intravillage homogeneity* conditional on benefits: choices within a village are the same for all individuals (regardless of identity) as long as they face the same benefits of access. Third, within any village, effort is increasing in benefits. Fourth, there is *strategic substitutability*: of two otherwise identical individuals, the one residing in a high effort village will choose a lower effort level. This immediately implies that, holding constant benefits, larger villages will have lower levels of individual effort but higher levels of aggregate effort.

3.2 Flexible Identity Group Choices

Next consider identity based choices that are flexible in the sense that within-group efforts may vary by location. An equilibrium profile of effort levels is such that no group i can gain from a unilateral change in e_{ik} for any k. First order conditions for such an equilibrium are, for each caste i and village k,

$$\sum_{l\in V} n_{il}\left(b_{il}\frac{\partial p_l}{\partial e_{ik}}-\frac{\partial c(e_{il})}{\partial e_{ik}}\right)=0. \tag{6}$$

For the special case if assignments given by (2), we have, for $l\neq k$,

$$\frac{\partial p_l}{\partial e_{ik}}=-\frac{n_{ik}\mu_l}{\bar{e}^2} \tag{7}$$

and

$$\frac{\partial p_k}{\partial e_{ik}}=\frac{n_{ik}\left(\bar{e}-\mu_k\right)}{\bar{e}^2} \tag{8}$$

where $\bar{e}$ is the aggregate effort level as before. Using (7-8), the equilibrium conditions may be written

$$n_{ik}b_{ik}\left(\bar{e}-\mu_k\right)-\sum_{l\neq k} n_{il}b_{il}\mu_l=\bar{e}^2c'(e_{ik})$$

or, equivalently,

$$n_{ik}b_{ik}\bar{e}-\sum_{l\in V} n_{il}b_{il}\mu_l=\bar{e}^2c'(e_{ik}). \tag{9}$$

A few comparative statics results can be deduced immediately. First, within any group i, effort will be greatest in those villages where the population weighted benefits $n_{ik}b_{ik}$ are highest. This follows from the convexity of c, and is very intuitive. Second, for any caste i, an increase in

the effort levels of those with whom one shares space *anywhere* results in a decline in one's own effort levels *everywhere*. To see this, define the *locational advantage* of group i as

$$\lambda_i = \sum_{l \in V} n_{il} b_{il} \mu_l, \tag{10}$$

and note that is λ_i is increasing in the effort levels of other castes with whom caste i shares space. Hence a rise in such effort levels reduces the marginal returns to effort for caste i in every village k; the interaction is characterized by strategic substitutability. Third, concentration raises effort levels: other things equal, a group that is concentrated in a few villages will put in more effort than one that is spread thinly across villages. This is because dispersion causes intragroup competition for resources: bringing resources to one village lowers access at other locations.

Note that in villages where n_{ik} is sufficiently small, no effort will be forthcoming from members of group i. This is because the (10) is independent of location for any given group, and is strictly positive in equilibrium. Since costs are increasing in effort, condition (**??**) cannot possibly be satisfied for villages in which a group i has too small a presence. Hence effort levels must satisfy $e_{ik} = 0$ at such locations. Generalizing this, small villages will have low (or zero) effort levels, especially if the population is heterogeneous with respect to identity.

3.3 Inflexible Identity Group Choices

In some circumstances, group leaders may be unable to fine tune effort choices across locations, especially if directives to increase effort are made using coarse messages or norms. In this case $e_{ik} = e_i$ for all villages k, and the first order conditions for an equilibrium are, for each caste i,

$$\sum_{k \in V} n_{ik} \left(b_{ik} \frac{\partial p_k}{\partial e_i} - c'(e_i) \right) = 0.$$

For the special case of assignments given by (2), we have

$$\frac{\partial p_k}{\partial e_i} = \frac{n_{ik}\bar{e} - \mu_k \sum_{l \in V} n_{il}}{\bar{e}^2} = \frac{n_{ik}\bar{e} - n_i \mu_k}{\bar{e}^2}.$$

Hence the equilibrium conditions may be written

$$\sum_{k \in V} n_{ik} b_{ik} \left(n_{ik}\bar{e} - n_i \mu_k \right) = \bar{e}^2 \sum_{k \in V} n_{ik} c'(e_i)$$

or, equivalently,

$$\bar{e} \sum_{k \in V} n_{ik}^2 b_{ik} - n_i \sum_{k \in V} n_{ik} b_{ik} \mu_k = n_i \bar{e}^2 c'(e_i). \tag{11}$$

In the special case of within-group homogeneity in benefits ($b_{ik} = b_i$ for all k), this may be expressed as follows:

$$n_i b_i h_i \bar{e} - b_i \sum_{k \in V} n_{ik} \mu_k = \bar{e}^2 c'(e_i),$$

where

$$h_i = \sum_{k \in V} \left(\frac{n_{ik}}{n_i} \right)^2$$

is the fractionalization index for group i. Other things equal, therefore, higher fractionalization results in greater equilibrium effort under this specification of individual behavior.

4 Simulation Results

We next explore an extended simulation of the model, based on a calibration using the data in Table 3.

Consider the case of 100 villages and assume that the benefits of access to the public good satisfy $b_{1k} = b_{2k} = 10$ and $b_{3k} = 40$ for all villages k. That is, there is within-group homogeneity in benefits, and the two disadvantaged groups are symmetrically placed. Assume also that $c(e_{ik}) = e_{ik}^2/2$.

Table 3 identifies seven distinct village "types" based on the set of groups that are residents. Using data on the mean population composition in each village type, we obtain the following:

Village Type	1	2	3	4	5	6	7
Size	417	329	815	392	573	1633	1575
Number	7	1	18	1	7	42	24
ST share	100	0	0	70	55	0	18
SC share	0	100	0	30	0	28	25
OC share	0	0	100	0	45	72	57
ST population	24%	–	–	2%	18%	–	56%
SC population	–	1%	–	1%	–	66%	32%
OC population	–	–	17%	–	2%	56%	25%

The most frequently occurring village type is also the largest, and contains a mixture of SC and OC residents with the latter constituting a significant majority. Larger villages in general occur

more frequently and have significant OC populations. Villages without OC populations are small and rare. The populations shares of the three groups are 9, 23 and 68 percent respectively.

The last three rows of the table show how individuals in each group are distributed across village types. A majority of scheduled castes and other castes are found in villages of type 6, which are large and contain no members of scheduled tribes. On the other hand, a majority of scheduled tribes are in villages of type 7, which contain all three groups. Scheduled castes are seldom isolated from other groups, while scheduled tribes and other castes are often found in homogeneous villages.

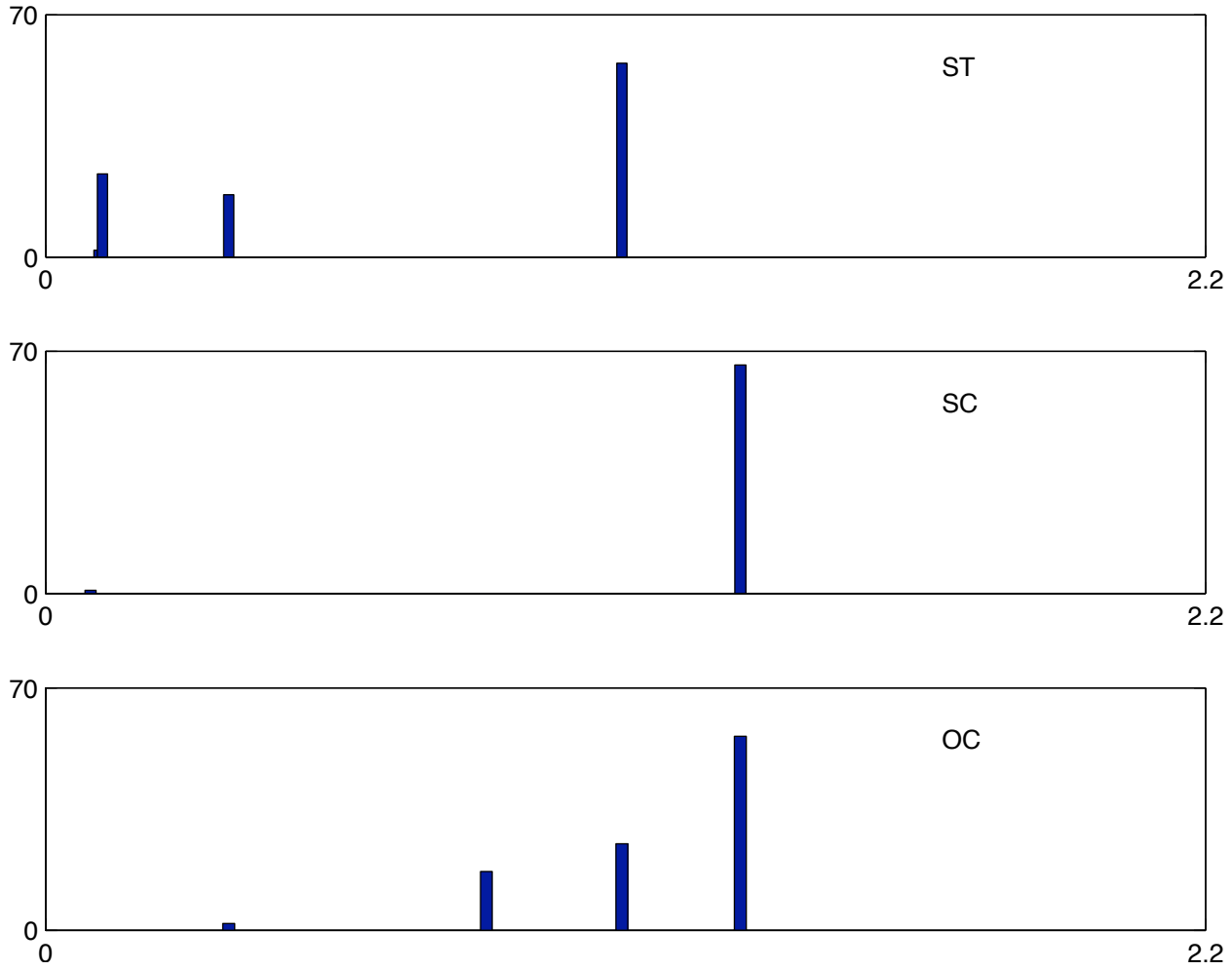
Using the conditions (5-11) we can obtain equilibrium effort levels in all village types numerically for each of the three specifications. These efforts determine access to public goods by village, and hence inequality both within and among groups with respect to access.

4.1 Individualistic Choice

Consider first the case of indivdiualistic choices. The following table shows the equilibrium effort levels by each group, and the public good assignment to each village type.

Village Type	1	2	3	4	5	6	7
ST effort	0.0051	–	–	0.0051	0.0051	–	0.0050
SC effort	–	0.0051	–	0.0051	–	0.0050	0.0050
OC effort	–	–	0.0202	–	0.0203	0.0201	0.0201
Public Good Assignment	0.1081	0.0853	0.8361	0.1016	0.3475	1.3177	1.0929

There is very littel variation in effort levels within groups, and OC efforts are much higher than those of other groups. As a result, villages in which they are present get most acces. The implies pattern of inequality is as follows:



4.2 Flexible Group Choice

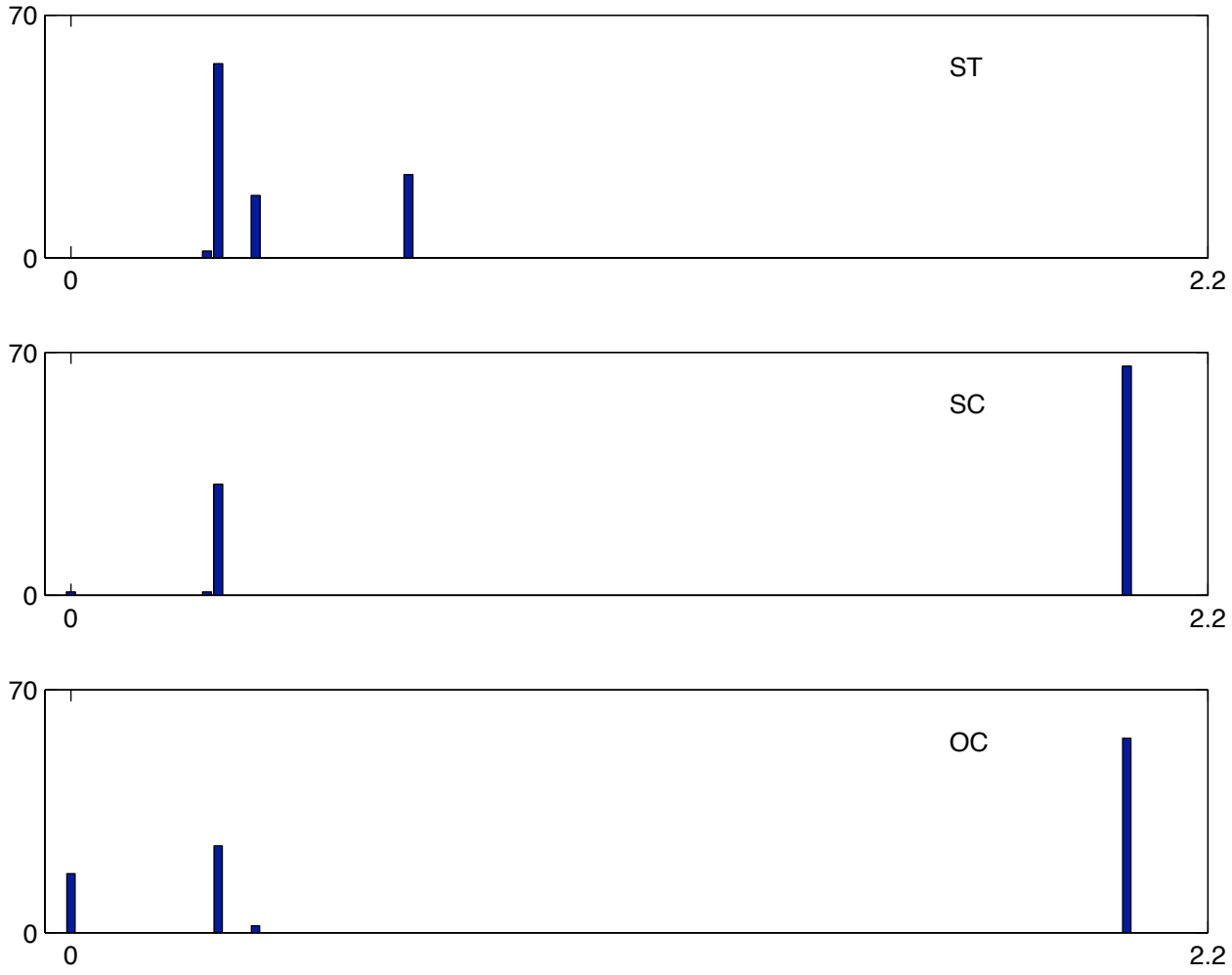
The following table shows the equilibrium effort levels by each group, and the public good assignment to each village type.

Village Type	1	2	3	4	5	6	7
ST effort	0.24	–	–	0.15	0.17	–	0.15
SC effort	–	0.00	–	0.00	–	0.02	0.00
OC effort	–	–	0.00	–	0.00	0.26	0.00
Public Good Assignment	0.65	0.00	0.00	0.26	0.36	2.04	0.28

The village type with the greatest access is the sixth; these are large villages in which the majority of SC and OC individuals reside. All SC and OC effort is concentrated here. In

contrast, ST effort is spread across multiple locations, and not just in those village where they are isolated.

Even though groups have been assumed here to be homogeneous, within group inequality emerges endogenously from the process of assignment. Not only do the SC and OC groups gain greater access, they end up with greater levels of within group inequality. The distributions of access are shown below:



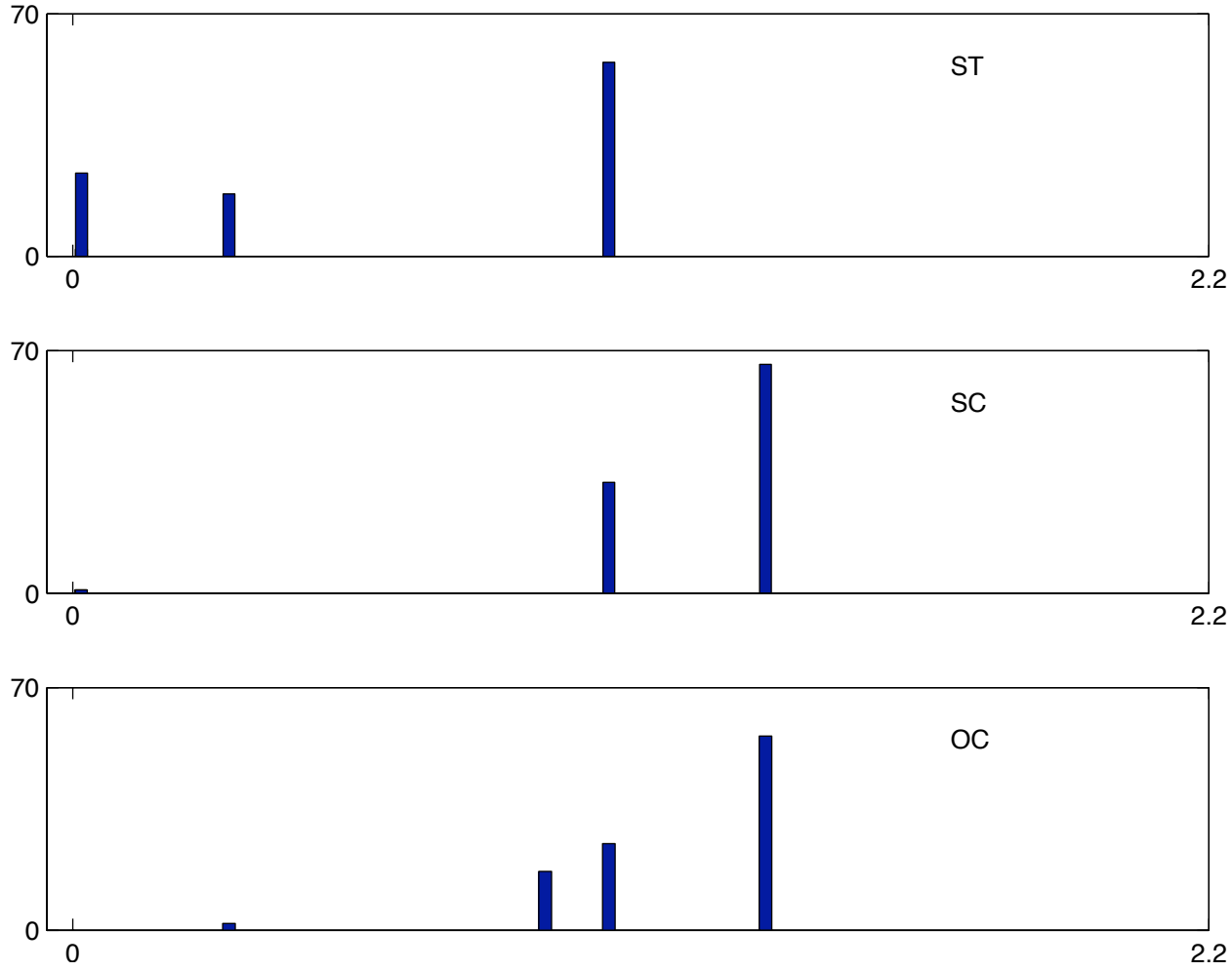
ST access is very low compared to other groups. SC and OBC access is comparable, with SC access being slightly greater. Although the village type with greatest access has a minority SC presence, it happens to be that case that two-thirds of SCs actually reside in such villages. The benefit greatly from OC effort.

4.3 Constrained Group Choice

Finally consider the case of constrained group choice. In this case OC effort is much larger than that of the initially disadvantaged groups, so any village with significant OC presence gets a lot of the public good.

Village Type	1	2	3	4	5	6	7
ST effort	1.33	–	–	1.33	1.33	–	1.33
SC effort	–	1.51	–	1.51	–	1.51	1.51
OC effort	–	–	36.21	–	36.21	36.21	36.21
Public Good Assignment	0.017	0.015	0.915	0.017	0.303	1.342	1.038

And inequality is as follows:



5 Discussion

We see this paper as contributing to the literature that relates the demographic compositions of geographical units to their ability to extract resources from the state and therefore generate avenues for greater mobility. We have yet to explore many of the implications of this model, generalize it to allow for both forward-looking behavior and endogenous wage setting and fit it more carefully to Indian data.

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