# JATI, LOCAL PUBLIC GOODS AND VILLAGE GOVERNANCE: PRIVATE ACTIONS AND PUBLIC OUTCOMES

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**Abstract**

This paper purports to understand whether voting along narrow parochial lines in socially and ethnically fragmented societies has measurable gains. Using data from rural India, we establish that identity based voting, driven by membership in social and informal networks, will lead to enhanced participation in welfare programs, which in turn leads to increased consumption growth. We also show that reducing agency costs does not necessarily remove the need for identity-based voting, and that such voting behavior is a means for engaging in capture of public and private benefits by these groups. Some policy recommendations are also advanced.

*Keywords:* Economic development; voting behavior; decentralization; parochial politics

JEL Classification**: D71, D72, H41, O12**

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## 1. Introduction

Apart from their own private consumption, households derive utility from public goods and public services. Indeed, the disutility resulting from paucity of public goods and services, such as roads, education, health centers and the like, could be very significant and, in some cases, even overwhelm the utility from private consumption.

By their very nature, such services are collectively provided and, in rural India, quite scarce. This has led to less than satisfactory human development outcomes and prompted the Indian Parliament to pass the 73rd and 74th amendments to the Indian Constitution in 1992 requiring local self-governance and decentralization. The rationale was that such decentralization and self-governance would lead to improved decision making, and augment and make more equitable the provision of public goods. The local self-governance institutions entrusted with this task are called *Panchayats*.

Access to several public services is crowdable whence households compete to avail of them. Since price does not act as a rationing mechanism, households have an incentive to use the political process to improve access, a theme we explore in this paper. The Panchayats that were created to enable equal access to public services and goods in Indian villages have been fraught with implementation anomalies issues, agency cost and pathologies e.g. lack of responsibility in service provision and poor accountability.

Reservations for women are a means to reduce agency costs and achieve efficiency in governance (Nagarajan et al., 2014). The literature on the effects of reservations on governance is extensive and shows that specific dimensions of governance have improved[1].

[1] See, Iyer et al (2010), Krishnan (2007), Ban and Rao (2008) and Deininger et al. (2014).

However, Munshi and Rosenzweig (2008) show that women leaders are efficient only in the presence of caste equilibrium, i.e., when the numerically-dominant caste in a constituency selects its most competent member as leader, while concurrently ensuring that their choices reflect the preferences of the median individual in the group.

Voting along lines of ethnic identity has been previously explored as a necessary condition to increase the likelihood for program participation, suggesting that it has critical implications for welfare maximization. If households are unable to participate in welfare programs (WP), then their welfare will decline. They are unable to know or access these programs due to information asymmetry because of poor quality of governance. In this paper, we explore whether household welfare rises by having an elected representative of one's own ethnic identity in-charge of administering WP.

In the context of Indian politics, castes (henceforth Jatis)[2] play a significant role both during and after elections, whence it becomes important to understand the drivers of participation in elections[3], and relate these to specific outcomes in the context of local governance.

Identity based voting (IBV) is a voting strategy wherein Jati of the candidate up for election is a key determinant of voting choice. IBV is a collective decision of households to influence the outcome of public decisions, especially in terms of enabling access and implementation of WP and, therefore, improvements in household welfare.

This paper extends the analysis of Munshi and Rosenzweig (2008) and Banerjee and Pande (2007) who show with data from North India that numerical dominance of a particular caste on average leads to lower quality of leaders elected (thereby linking IBV to corruption). Bhalotra

[2]The term caste is an aggregation. An appropriate reference to the social position of a member (and household) is Jati. In this paper we will refer to the social position by Jati.

[3] There is a substantial literature on the voting behavior in India e.g. (Khemani, 2001), Several factors including social status and knowledge of issues affect elections but we consider jati as the most significant variable.

et al. (2014) analyze the impact of district-level voting driven by the religion of the candidate on development outcomes. They find improved health and education outcomes in districts without any evidence of religious favoritism – Muslim children, relative to children from other religions, did not benefit any more from having an elected Muslim representative. While this is critical evidence of private benefits from IBV under a specific type of political regime, it is worth studying whether such outcomes persist even under improved quality of governance (reservations for women).

Although Caillaud and Tirole (2002), Snyder and Ting (2002), and Alesina and Spear (1988) argue that a decentralized political apparatus is adequate to ensure commitment by elected representatives this may not carry over to fragmented societies.[4,5] Khemani (2001) suggests that if decentralization is an outcome of political compulsions only, then the electoral process will reflect such pathology.[6]

Finally, Besley et al. (2005) suggest that both identity of and changes to identity of dominant group alter allocation of public goods. Foster and Rosenzweig (2004) and Banerjee and Iyer (2007) show that electoral outcomes and performance of the local governments broadly reflect the composition of villages. Though the literature has addressed motivations for strategic voting in the context of gaining public and private benefits, there is no study thus far dealing with this issue in the context of decentralization and local governance.

The plan of this paper is as follows. Section 2 describes data.. Section 3 articulates a simple game-theoretic model to capture IBV and explains empirical methodology used to test

[4]Much of social policy in India has been designed to afford primacy to welfare of specific groups Nagarajan et al (2014) show that programs designed to affect group welfare are better targeted compared to those meant for enhancing individual welfare (such as PDS)

[5] GOI (2001).

[6] Bardhan et al. (2009).

predictions of the theory. Section 4 presents the results, and section 5 concludes with policy implications.

## 2. Data

We use data from the Rural Economic and Demographic Surveys (REDS) conducted by National Council for Applied Economic Research (NCAER).These surveys were started in 1969 and represent a panel of 241 villages representing 17 major states of India.

The size of the sample in 1999 and 2006 surveys is 7474 and 8659 households respectively, of which 5885 households were interviewed in both rounds. We use surveys for these two Panchayat periods[7] and refer to the 2006 survey as the "current" Panchayat and the 1999 survey as the "previous" Panchayat.

Table 1 provides information on household and village characteristics.

**Table 1 here**

Table 2 shows summary statistics on the determinants of voting decisions.

**Table 2 here**

## 3.Theoretical Framework

Consider an economy with households (HH) and prospective Panchayat representatives (PR). These HH and PR belong to two jatis: $j$ and $k$. We consider case of jati $j$ here and consider jati $k$ to indicate all other jatis. In all other ways HH and PR are homogeneous. HHs vote for potential PR candidates who, in turn, are responsible for supply of public goods. Now consider the vote of a representative HH. There is jati affinity in the sense that, *ceteris paribus,* people

[7] One Panchayat period is approximately 5 years and starts with the election of the Pradhan. Since both the village and listing were completed by end 2008 we are able to cover two Panchayat periods in 230 out the 241 villages. .

of the same jati will help each other more than people from other jatis. Thus people of any given jati will be more inclined to vote for PF candidates from their own jati than from other jatis. In return, the candidate once elected, can discriminate in favour of HHs from their own jati in the provision of public goods.

HH belonging to jati $i$ $(i = j, k)$ is interested in increasing access to benefits from WP. Given a wide election field there is potential for uncertainty: PRs do not know about jati affiliation of individual voters, nor do individual voters know about the jati affiliation of individual PR candidates.[8] A representative HH would like to vote for a PR candidate in order to maximise the amount of public goods that can be obtained from PR.

Thus, every HH incurs some effort (advertising or search expenditure) to indicate their "type" to potential PR candidates. This expenditure is $e$ and cost of incurring this expenditure is $c(e, \theta)$ where $\theta$ $(= j, k)$ indexes jati. We assume that $c(0, \theta) = 0, c_e(0, \theta) > 0$ and $c_{ee}(0, \theta) > 0$. Let the probability that the HH is of type $j$ be λ whence the probability that the HH is of type $k$ is (1-λ).

The household, irrespective of type, is assumed to have a separable utility function between consumption of private goods and consumption of public services and the effort put in to indicate their jati or "type" to potential PR candidates. Let $u(w, e \,/\, \theta)$ denote the utility of a type $\theta$ ; $(\theta = j, k)$ HH who chooses advertising expenditure $e$ and where $w_\theta$ is the monetary value of the public service obtained by the HH, $\theta = j, k$. To simplify matters we assume that $u(w, e \,/\, \theta) = w - c(e, \theta)$. It is assumed that if HH does not participate in the public service program its return is zero. There are two periods in the model so the augmented utility function:

[8] This is a safe assumption to make given the wide proliferation of jatis in India.

$$U(w, e/\theta) = w1 - c1(e1, \theta) + [w2 - c2(e2, \theta)]/(1 + \delta) \quad (1)$$

where $\delta$ is rate of discount.

Since the utility function is additive each period's utility function needs to be maximised separately whence discount rate δ plays no role in maximization and can be ignored.

The timing for this signalling game is as follows. Initially a random move of nature determines type of various HH and PR. Figure 1 contains the tree diagram. Then, conditional on its type, a HH undertakes advertising expenditure. The expectation is that HH with the same θ as the PR candidate would have a greater chance of increasing the amount of public service they get. If the PR candidate gets elected, the benefits follow for HH.

**Figure 1 here**

In line with such signalling models, the equilibrium concept employed is that of a weak perfect Bayesian equilibrium (PBE). This requires that HHs beliefs have the property that for each possible choice of *e* by the PR candidate there exists a number

$$\mu(e) \in [0,1]$$

Where, $\mu(e)$ is the belief of a PF of type $j$ that the HH is of type $j$.

The PBE notion can be simply stated as a set of strategies and a belief function $\mu(e) \in [0,1]$ giving the PR's common probability assessment that the HH is of type $\theta$ after observing HH expenditure level *e* is PBE if

(i) The HH strategy is optimal given the PR's strategies.

(ii) The belief function $\mu(e)$ is derived from the HH strategy using Bayes' rule where possible.

(iii) The PR's offer of the amount of program benefits following each choice of *e* constitute a Nash equilibrium of the simultaneous-move wage offer game in which the probability that the HH is of type θ is $\mu(e)$.

We solve this game by backward induction. Assume that after observing a HH's level of *e,* the PR candidate attaches a probability of $\mu(e)$ that the HH is of type θ. Let $e^*(\theta)$ be the HH's equilibrium advertising expenditure as a function of its type and let $w^*(e)$ be the amount of public service that would be given to this HH as a function of its effort level.

Thus, it can be shown that there is a separating perfect Bayesian equilibrium $w^*(e^*(j))$ for j type HH and $w^*(e^*(k))$ for k type HH. This is a fully separating equilibrium (Mas-Colell et al., 1995, chapter 13, pp.453). In any PBE, beliefs on the equilibrium path are correctly derived from the equilibrium strategies under Bayes' rule. This implies that upon seeing expenditure level $e^*(\theta_k)$ PFs must assign probability one to the HH being type *k*. The PR of type $k$ will then promise to give the HH $w_k$. Likewise, upon seeing expenditure level $e^*(\theta_j)$, PRs of type $j$ will recognize the household to be of type *j* and give them $w_j$ level of program benefits. In return for this HH of type *j(k)* will vote for potential PF candidates of type *j(k)*.

Mas-Colell et al. (1995) show that a pooling equilibrium can also exist (pp.456). Considering the result above, participants in the game would learn from sub-optimality of the pooling equilibrium in the first period and opt for a separating equilibrium in the second period. Those who indulged in IBV in the first time-period (separating equilibrium) will continue with this in the second time-period. Those who indulged in pooling equilibrium in the first time period will move toward a separating equilibrium (IBV) in the second time period

Our empirical model therefore aims to test how HHs incur the advertising expenditure to signal their type to PRs, which in turn determines the likelihood that they will receive program

benefits. We propose that $e$ is manifest in the cost index derived from membership in social networks. The strength of social networks for a household in the village is:[9]

$$CI_{1i} = SI_i / 9 \quad (2)$$

Where $CI_{1i}$ is a social network index of household *i* and $SI_i$ is number of households of the village identified by household *i* as belonging to the same Jati and can provide social support. $CI_{1i}$ measures the cost (e.g. reduced access to WP, private benefits) of breaking the network. When $CI_{1i}$=1 household $i$ will rely on households that belong to its own Jati for mutual insurance. The index rises with an increase in the cost of leaving the network.

Different groups of households or even different households have various levels of information of WP, access, grievance redressal etc. This prompts the creation of an information network, often based on Jati, for households. We compute the information index as follows[10].

$$CI_{2i} = SJ_i / 34 \quad (3)$$

Where $CI_{2i}$ is the information network index and $SJ_i$ is the number of households of the same Jati that can be relied upon to provide information on a range of issues such as healthcare, education, conflicts, access to WP etc. The maximum number of items that households in these villages seek information on is 34. If $CI_{2i}$=1, then the source of information for household *i* is originating entirely from a network based on its own Jati and, consequently, the cost of leaving such a network will be larger.

[9]Each respondent at the time of listing was asked three questions. "identify 3 households in descending order of preference from this village from whom you can borrow money during a family medical emergency", identify 3 households from whom you can borrow vegetables when in need for cooking" and, identify 3 households whom you wish to be your immediate neighbor". The index is constructed using 9 possible responses from each household.

[10]A total of 34 items (including information on health, education, employment, WP, credit, marketing channels, prices, extension, social issues, and local and national politics) were identified on which a household member will seek information. Such information can come from members of own Jati within the village or any other random household.

Thus, CI measures the cost of breaking the network: when CI=1 households will rely only on other same-Jati HHs for mutual insurance. Thus, one way for HHs to increase their advertising expenditure is to rely increasingly on other households of the same Jati for social support and mutual insurance. They may do this by increasing their interactions with members of their own Jati for borrowings, information, and mutual insurance, and ensuring that household $i$ is present in other households' (of the same jati) social networks. Thus, any HH that relies on an ethnically diverse set of HHs will have a lower CI, and therefore lower advertising expenditure to signal to elected representatives about their intent to access benefits along parochial lines.

Under such conditions, the theory predicts that upon observing an optimal level of expenditure $e^*$, the representative will assign higher probability to identifying jati of the household, and then provide improved access to benefits. Thus, the empirical model incorporates this by using the CI in explaining household decision to engage in IBV. If the relationship is positive, it means that the results are consistent with the model, since the level of $e$ identifies the household type.

**Empirical Strategy**

Changes in IBV, consumption growth and program participation are simultaneous decisions of HH, making it challenging to econometrically model. Indeed, these variables could also be mutually endogenous. To address this, we implement a three-stage estimation strategy presuming the existence of a linear system of $M$ equations with jointly dependent and predetermined variables. The distributions of the disturbances are assumed to be independent of the predetermined variables in the system, the reduced form is assumed to exist and the equations are either just identified or over identified.

*Estimating the Determinants of IBV*

In the equation explaining IBV, we factor in village-level variables such as nature of devolution of powers that could affect the nature of access to WP – typically exogenous to the household. HH specific factors include social network indices ($CI_{1i}$ and $CI_{2i}$), Jati of household and of candidate for elections. Both $CI_{1i}$ and $CI_{2i}$ are measures of costs which would arise if a person were to lose the network, and uniquely identify changes in IBV. Preferences for membership in such networks are inherited by the households and therefore are exogenous and uniquely identify IBV equation.

Two other identifiers are used to estimate changes in IBV. IBV could be the result of uneven governance[11]. Devolution of powers is exogenous to the village and the Panchayat hence these indices can uniquely identify IBV. The village and the Panchayat receive three types of grants: labor generating, social welfare, and untied (Block) grants. A simple averaged index that measures the extent of autonomy for each of these three grants is constructed. One index measures the extent of autonomy over the use of untied grants, and the other two indices measure the degree of autonomy Pradhan has over beneficiary selection with regard to employment-generating grants and non-employment generating social welfare grants. *A priori* if the Pradhan has powers over say, beneficiary selection, this could lead to discrimination in selection and, consequently, households could engage in IBV to elect a Pradhan from their own Jati (tested using the impact of regime change leading to Jati congruence) which would minimize discrimination.

We estimate change in IBV as:

$$\Delta IBV_{it} = a_0 + b_1 CI_{1it} + b_2 CI_{2it} + c_1 \Delta RC_3 + d_l S_{lit} + \alpha_i A_i + \varepsilon_{it} \quad (4)$$

[11] Uneven governance occurs when impact of good governance is not felt equally on all households, e.g. beneficiary selection along parochial lines.

$$\Delta NOIBV_{it} = a_0 + b_1 CI_{1it} + b_2 CI_{2it} + c_1 \Delta RC_1 + c_2 \Delta RC_2 + c_3 \Delta RC_3 + d_l S_{lit} + \alpha_i A_i + \varepsilon_{it} \quad (5)$$

Where, $\Delta IBV_{it}$ is change (across two Panchayat periods) in the number of households who engage in IBV during local elections, and $\Delta NOIBV_{it}$ is the change in the number of households who do not engage in IBV during local elections, $CI_{1it}$ is the social network and $CI_{2it}$ is the information network, $\Delta RC_1$ and $\Delta RC_2$ are the regime change indicators associated with gender of the Pradhan (the former indicates male to female, and the latter female to male), $\Delta RC_3$ is the regime change associated with the Jati of the Pradhan (this is the measure of Jati congruence), $A_i$ refers to autonomy indices for degree of autonomy over beneficiary selection for employment-generating grants and non-employment generating grants, and degree of autonomy over use of untied (Block) grants. $S_{lit}$ is the vector of all the other explanatory variables such as predicted participation in GS meetings[12], support from political parties, whether candidate was standing for re-election etc.

*Change in Participation in Welfare Programs*

In the second stage, we estimate the change in number of WP participated in as:

$$\Delta WP_{it} = \pi_0 + \varpi_1 \hat{I}_{it} + \tau_1 P_{it} + \gamma_m D_{mit} + \vartheta_{it} \quad (6)$$

Where, $\Delta WP_{it}$ is the change in the number of WP participated in by the households, $I_{it}$ change in the proportion of households members of a household voted using IBV during local elections (predicted from (4)), $P_{it}$ is a dummy for households where all members voted based on identity, i.e. complete pooling, $D_{mit}$ is a vector of variables that includes, IBV interacted with political reservations for women, political reservations for women, poverty status, growth in untied

[12]If participation in GS meetings removes information asymmetries then the coefficient should either be negative or at worst be insignificant. A positive coefficient implies that such meetings are avenues of capture of information and formation of cliques.

resources and growth in the number of WP. The unique identifier for this equation is the change in the number of WP in the village.

We use a 3-stage least squares seemingly-unrelated regression for estimating equations 4, 5, and 6 jointly to contrast the outcomes of program participation for IBV as well as non-IBV households. Additionally, testing the impact of a regime change leading to Jati congruence is carried out by comparing IBV and non-IBV households.[13]

*Estimating Change in Per Capita Consumption*

Change in household welfare is measured by changes in its per capita consumption (PCC) estimated as:

$$\Delta PC_{it} = \alpha_0 + \alpha_1 \Delta \hat{W}_{it} + \sigma \Delta \hat{WP}_{it} + \beta \Delta I_{it-1} + \lambda_k X_{kit} + \mu_{it} \quad (7)$$

Where, $\Delta PC_{it}$ is the change of PCC expenditure, $\hat{W}_{it}$ is predicted wealth, $\Delta \hat{WP}_{it}$ is the predicted change in program participation (from (6)), $\Delta IBV_{it-1}$ is change in IBV from two periods ago to the previous period , $X_{kit}$ is a vector of exogenous variables including public expenditures on agricultural programs, village untied grants, village level shocks, household level shocks, education of head of the household and, change in household size, and other household characteristics. $\mu_{it}$ is the random error. We use predicted changes in household wealth to uniquely identify this equation as changes in wealth. There is evidence that although wealth is correlated with consumption, when predicted by household splits as in Foster and Rosenzweig

[13] We make extensive use of derived estimates (predicted values, linear combinations of coefficients etc.) to disentangle specific effects of IBV.

(2004),[14] they may not be similarly associated with other outcome variables related to IBV and participation in WP.

## 4.Results

Table 3 shows results of our estimation. The chi$^2$ statistics are significant suggesting that the variables in each equation are jointly significant. The Hansen-Sargan statistic indicates that the equations are over identified and jointly determined. We see that the change in participation in WP for those who practiced IBV is 22% while it is only 1% for those that did not. Increased participation due to IBV also contributes to growth in consumption by 6%.

**Table 3 here**

*Determinants of IBV*

Higher costs of leaving networks as measured by both cost indices trigger IBV. These coefficients are small, but strongly significant. The impact of social network is slightly larger compared to information network.

Two other findings deserve emphasis. The incidence of IBV drops by 1.7 % with increased participation in GS meetings (a sign of better functioning democracy). The negative coefficient of attendance in GS meeting could mean that voters who participate in such meetings are more empowered and therefore have less need for resorting to IBV (Deininger et al 2014). Table 4

[14]Here we estimate predicted change in household's wealth. Changes in household wealth are often a consequence of household splits. Predicted household splits adequately predict changes in wealth. We predict the change in wealth as follows.

$\Delta W_{it} = \kappa_0 + \phi_j S_{jit} + \nu_{it}$

Where, $i$ indexes households, $j$ the variables and $t$ is time, $\Delta W_{it}$ is the change in household's wealth, $S_{jit}$ is the vector of variables that predict whether a household will split. It includes age of head of the household, change in variance and mean of education of members of household, number of children whose age is less than 15 years, inherited wealth at the beginning of the period (1999), dummies for whether father is co-resident at beginning and at end of the periods (1999 and 2006), dummies for whether both brothers and sisters are co-resident at the beginning and end of the period (1999 and 2006) and, $\nu_{it}$ is the error term.

shows this as results from SUR estimations reveal that participation in GS meetings raises incidence of non-IBV significantly.

**Table 4 here**

One could also conjecture that GS meetings are a means for Pradhan to improve power of their own coalition.[15] Such participants could be less likely to vote in local elections. We compute that 6% of households who attended GS meetings and whose Jatis were similar to that of the Pradhan opted out of local elections (but not for state and central elections). This suggests that such meetings themselves might be accessories to parochial provision of benefits. However, the finding that participation in GS meetings reduces the need for IBV is not necessarily an indicator of poor quality of governance. We have already seen that even under conditions of improved governance (political reservations for women) IBV puts groups engaging in such strategies at an advantage. This is further evidence that such strategies are aimed at capturing institutional mechanisms related to grievance redressal to augment private benefits.

*The effect of regime change leading to Jati congruence*

In view of reflecting greater local preferences, regime changes can be both "positive" and "negative" i.e., elections that lead to the election of a Pradhan of the same Jatis the voter bring about a positive change. A regime change leading to Jati congruence (in the previous period) appears to raise incidence of IBV by 5%; results indicate that regime change leading to Jati congruence increases incidence of IBV by 14% compared to non-IBV choices. This is particularly significant for reforms aimed at the Panchayati Raj Institutions (PRI) or electoral processes at Panchayat level. If most of the WP are to be targeted at households using elected

[15]This conjecture is not borne out. It can be inferred from the results that the distribution of benefits are not necessarily equal. They tend to get more equalized if households engage in IBV. However as we will see later the impact of participation in GS meetings seem to provide negligible private benefits to households in the form of increased consumption.

representatives then, these findings suggest the likelihood of specific groups (often defined by Jati vote) getting increased and continued access to the benefits.

*Determinants of Change in Participation in Welfare Programs*

We find that political reservations by themselves do not necessarily lead to large increases in program participation. In view of positive impacts of IBV in Panchayats reserved for women, it is possible that environment under political reservations encourage IBV. Thus, reservations aimed at improving quality of governance and of the political process have not necessarily yielded all expected results.

Further, growth in number of village level programs increases the change in participation in WP by 2.4%. While by themselves increases in specific programs have no impact on the change in participation (results not reported) in WP, households that practice IBV are able to take advantage of these increases. Growth in village level programs under untied funds and WP (conditioned on IBV) lead to a 2.3% increase in the change in program participation, compared to those that did not do IBV. To the extent that this can be interpreted as an attempt to capture private benefits through a democratic process, it is a cause for concern since these programs are designed for all classes[16] of households and the benefits should not be derived through strategies like IBV.

*IBV vs. non-IBV impacts on program participation*

Using SUR analysis, we compare the impact of IBV on change in program participation through derived estimates. Households that used IBV participated 18% more in programs when compared with households that did not use IBV. This is in line with the idea of funneling

[16] We also find that poor households improve their access to WP by engaging in IBV, though the (statistically significant) effect is not large.

program benefits towards parochial groups. The significant difference in program participation (growth) between these two strategies adopted by households shows that households resorting to IBV take part 21% more (derived estimates) in WP than those households that did not.

A third result (though not directly related to policy) is that households are increasingly voting as a unit (pooling). While pooling strategies for IBV by themselves appear to have no direct impact, we find that households where all members did IBV had 16% more predicted program participation that those that did not (derived estimates).

*Determinants of Change in PCC*

If households continue to engage in IBV even after reservations lapse then benefits are perpetuated.[17] Nagarajan *et al.* (2014) show that IBV is a significant predictor of households escaping chronic poverty. In order to understand the pathway of these impacts, we posit that IBV leading to increased participation in WP raises expected consumption.

We find that participation in WP significantly raises PCC by 11.5%. This completes the link between change in IBV and changes in PCC via program participation: a household engaging in IBV participates in 21% more programs than those who did not do IBV, which in turn leads to approximately 6% growth in predicted consumption. To show that there are indirect effects of IBV driving changes in consumption, we see that a change in IBV lagged by two periods into the past leads to a 3.7% increase in PCC. Thus, persistent IBV is beneficial to households, and IBV has strong impacts on PCC via program participation.

The impact of increased participation in GS meetings on PCC growth is small but significant. This may be on account of greater GS participation leading to collective (rather than private) benefits that accrue to all members[18]. As noted, exit from poverty via GS participation is only

[17] We posit that if there are changes to the quality of governance after the period of reservations lapse then IBV can help households to overcome such adverse changes.
[18]The positive impact of GS meetings on incidence of non IBV suggests that GS meetings are not being used to capture private benefits.

possible if such participation leads to increases in expected consumption through improved access to information on and access to WP.

## 5. Conclusions

We have shown that households use IBV as a second best solution to overcome the pathologies associated with decentralized system of governance and align themselves with leaders who grant them preferential access to WP, and therefore obtain private benefits. IBV enables greater household participation in WP and ultimately get higher consumption. In many ways, this extends the findings of Munshi and Rosenzweig (2008) to show that households engage in IBV to bring about caste equilibrium and thus gain private and public benefits.

We also find several factors affecting the adoption of household using IBV: a regime change leading to Jati congruence, a candidate supported by a political party, and information gathered from existing Jati networks raised incidence of IBV among households. Thus, the current system of decentralization interacts with IBV to enable households to capture public and private benefits.

This paper suggests that the propensity to capture programs and gerrymander the mandates by the local governments is quite high. Enhanced access to WP need not be obtained via such second-best strategies, since there are several policies that can efficiently guarantee equitable access. The need to engage in parochial politics can be reduced by making Panchayats more accountable via a transparent process of governance (and provision of public goods). One example of raising accountability is creating a citizen's charter (or manual) that describes in detail the services offered by the Panchayat and their responsibilities in providing access to public services such as healthcare and schooling.

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**Table 1: Village and household characteristics: 1999-2006**

| Variables | 2006 (Current Panchayat) | 1999 (Previous Panchayat) | % change |
|---|---|---|---|
| **Household Characteristics** | | | |
| Household Size | 5.24 | 6.23 | -15.89 |
| Age of head | 51.16 | 49.42 | 3.52 |
| Years of Schooling of HH Head | 5.11 | 4.46 | 14.57 |
| Per capita consumption (Rs) | 6568.28 | 5857.37 | 12.14 |
| Poverty (Head Count) | 24.98 | 30.60 | -18.37 |
| Ultra-Poor: $pce < 1/2\,(pl)$ | 3.41 | 1.5 | 127.33 |
| Poor: $1/2\,(pl) < pce < pl$ | 21.57 | 29.1 | -25.88 |
| Non-Poor: $pl < pce < 2\,(pl)$ | 52.45 | 50.9 | 3.05 |
| Affluent: $pce > 2(pl)$ | 22.57 | 18.5 | 22.00 |
| Inherited wealth | 708874.5 | 559465.3 | 26.71 |
| Number of village shocks | 1.19 | 1.23 | -3.25 |
| Number of household shocks | 1.14 | 1.02 | 11.76 |
| %Members Voted in local election | 72.60 | 67.80 | 7.08 |
| % Members Voted in higher election | 90.47 | 83.14 | 8.82 |
| Prop. Of households where all members have voted based on identity (in local elections only) | 64.05 | 60.95 | |
| **Village Characteristics** | | | |
| Panchayat agriculture Expenditure (Per capita) | 74.64 | 145.22 | -48.60 |
| Panchayat public goods expenditure (Per capita) | 77.11 | 76.74 | 0.48 |
| Panchayat untied resources (Per capita) | 122.03 | 93.61 | 30.36 |
| Panchayat expenditures on welfare programs (Per capita) | 132.88 | 74.86 | 77.50 |
| Regime change (other Jati to own Jati, previous period) | 5.08 | - | - |
| Re-election of Pradhan | 19.74 | 13.73 | 43.77 |
| Outside support from political party | 83.26 | 77.68 | 7.18 |
| Outside support from political party in unreserved villages | 89.23 | 84.93 | |
| Outside support from political party in reserved villages | 92.57 | 87.36 | |
| % villages reserved for women | 30.47 | 26.18 | 16.39 |
| Average number of centrally sponsored schemes active in villages | 14.13 | 12.31 | 14.78 |
| Percentage of household members attending GS meetings | 88.28 | 75.69 | 16.63 |
| Number of GS meetings held in Panchayat period | 13.33 | 7.10 | 46.74 |

**Table 2: Basis of voting by households in different levels of elections**[19]

| Major Basis for vote | Current Panchayat | | Previous Panchayat | |
|---|---|---|---|---|
| | Ward Member | Gram Pradhan | Ward Member | Gram Pradhan |
| Vote based on Jati of the candidate | 29.45 | 36.84 | 23.04 | 25.6 |
| Technical qualifications of the candidate | 13.02 | 15.76 | 13.38 | 16.39 |
| Knowledge of local problems | 17.04 | 16.06 | 26.92 | 27.28 |
| Knowledge of National problems | 9.8 | 9.95 | 9.43 | 10.36 |
| Known for honesty and fairness | 12.42 | 11.91 | 22.33 | 23.01 |

[19] Source: household schedule

**Table 3: Change in per capita consumption with IBV**

| Variable | Coefficient | S.E. |
|---|---|---|
| **Change in IBV** | | |
| Cost index1 (social network) | 0.001*** | 0.0002 |
| Cost index2 (information network) | 0.0002*** | 0.00003 |
| Regime Change in previous period (Jati incongruent to Jati congruent) | 0.049* | 0.026 |
| Predicted Participation in GS meeting | -0.017*** | 0.003 |
| Candidate Supported by political party | 0.034*** | 0.016 |
| Re-elected Pradhan | 0.021 | 0.02 |
| Autonomy over use of untied grants | 0.03 | 0.04 |
| Autonomy over beneficiary selection (employment-generating grants) | -0.08 | 0.06 |
| Autonomy over beneficiary selection (social welfare grants) | 0.06 | 0.05 |
| Constant | 0.27*** | 0.05 |
| $Chi^2$ | 331.8*** | |
| **Change in participation in welfare programs** | | |
| Women reserved in current Panchayat | -0.024 | 0.017 |
| Women reserved in previous Panchayat | -0.007 | 0.015 |
| Women reserved in current Panchayat*Identity based voting | 0.0014*** | 0.0003 |
| Women reserved in previous Panchayat*Identity based voting | 0.0003 | 0.0003 |
| Change in proportion of households voting based on identity (current and previous) | 0.3*** | 0.053 |
| Change identity based voting (between previous and period before) | 0.044** | 0.02 |
| Dummy for households where all members voted based on identity (pooling) ($PI_{it}$) | 0.03 | 0.068 |
| Poor (2006)* Prop. of household who voted based identity | 0.0013*** | 0.0004 |
| Poor (1999)* Prop. of household who voted based identity | 0.0009*** | 0.0003 |
| Growth in untied resources * Change in prop. of household who voted based identity | 0.022* | 0.013 |
| Growth in welfare program* Change in prop. of household who voted based identity | 0.024* | 0.013 |
| Growth in number of village programs | 0.024** | 0.011 |
| Constant | 0.044*** | 0.011 |
| $Chi^2$ | 707.5*** | |
| **Change in per capita consumption** | | |
| Change in participation in welfare programs | 0.115** | 0.051 |
| Change identity based voting (between previous and period before) | 0.037** | 0.015 |
| Predicted change in wealth | 0.09*** | 0.008 |
| Number of village level shocks between 1999 and 2006 | -0.001*** | 0.0002 |
| Predicted Participation in GS meeting | 0.005** | 0.003 |
| Constant | -0.0477 | 0.045 |
| $Chi^2$ | 1917*** | |
| Hansen-Sargan over identification test (chi2) | 4015.07*** | |
| Number of observations | 5292 | |
| **Derived Estimates** | | |
| Predicted growth in program participation with IBV - $\theta_{IBV}$ | 0.22 | |
| Predicted growth in program participation without IBV - $\theta_{NOIBV}$ | 0.01 | |
| Predicted growth in program participation with pooling IBV ($P_{it} = 1$) | 0.26 | |
| Predicted growth in program participation without pooling IBV ($P_{it} = 0$) | 0.09 | |
| Predicted growth in consumption with IBV*Program participation - $\vartheta_{IBV}$ | 0.06 | |
| Predicted growth in consumption without IBV*Program participation - $\vartheta_{NOIBV}$ | 0.05 | |
| Predicted growth in consumption with pooling IBV ($P_{it} = 1$) | 0.1 | |
| Predicted growth in consumption without pooling IBV ($P_{it} = 0$) | 0.05 | |
| t-test for$\theta$ (program participation growth IBV vs. non-IBV) | 0.21*** | |
| t-test for program participation growth pooling IBV vs. non-pooling | 0.16*** | |
| t-test for $\vartheta$ (consumption growth Program participation*IBV vs. non-IBV) | 0.01 | |
| t-test for $\vartheta$ (consumption growth pooling IBV vs. non-pooling) | 0.05*** | |

**Table 4: Seemingly unrelated regression (SUR) analysis of IBV and non-IBV impacts on program participation**

| | | |
|---|---|---|
| **Change in IBV** | | |
| Cost index1 (social network) | 0.001*** | 0.0002 |
| Cost index2 (information network) | 0.0002*** | 0.00003 |
| Regime Change (Jati incongruent to Jati congruent) ($RC_3^{IBV}$) | 0.043* | 0.026 |
| Predicted Participation in GS meeting | -0.017*** | 0.003 |
| Candidate Supported by political party | 0.04*** | 0.016 |
| Re-elected Pradhan | 0.023 | 0.02 |
| Autonomy over use of untied grants | 0.066* | 0.04 |
| Autonomy over beneficiary selection (employment-generating grants) | -0.11* | 0.06 |
| Autonomy over beneficiary selection (social welfare grants) | 0.73 | 0.05 |
| Constant | 0.25*** | 0.05 |
| Chi$^2$ | 337.92*** | |
| **Change in non-IBV** | | |
| Cost index1 (social network) | -0.0001 | 0.0002 |
| Cost index2 (information network) | 0.00002 | 0.00003 |
| Regime Change (Male to Female) | -0.01 | 0.01 |
| Regime Change (Female to male) | -0.005 | 0.017 |
| Regime Change (Jati incongruent to Jati congruent) ($RC_3^{NOIBV}$) | -0.1*** | 0.025 |
| Predicted Participation in GS meeting | 0.015*** | 0.003 |
| Candidate Supported by political party | 0.035** | 0.016 |
| Re-elected Pradhan | -0.03 | 0.02 |
| Autonomy over use of untied grants | 0.13*** | 0.04 |
| Autonomy over beneficiary selection (employment-generating grants) | -0.2*** | 0.06 |
| Autonomy over beneficiary selection (social welfare grants) | 0.12** | 0.05 |
| Constant | -0.011*** | 0.05 |
| Chi$^2$ | 50.57*** | |
| **Change in participation in welfare programs** | | |
| Women reserved in current Panchayat | -0.033** | 0.015 |
| Women reserved in previous Panchayat | -0.009 | 0.015 |
| Women reserved in current Panchayat*Identity based voting | 0.0015*** | 0.0003 |
| Women reserved in previous Panchayat*Identity based voting | 0.0004 | 0.0003 |
| Change in proportion of households voting based on identity | 0.13*** | 0.011 |
| Change in proportion of households not voting based on identity | -0.049*** | 0.01 |
| Dummy for households where all members voted based on identity (pooling)[20] | 0.005 | 0.067 |
| Dummy for pooling IBV*Autonomy over use of grants | 0.044 | 0.078 |
| Poor (2006)* Prop. of household who voted based identity | 0.0015*** | 0.0003 |
| Poor (1999)* Prop. of household who voted based identity | 0.0009*** | 0.0003 |
| Growth in untied resources * Change in prop. of household who voted based identity | 0.031*** | 0.01 |
| Growth in welfare program* Change in prop. of household who voted based identity | 0.031*** | 0.011 |
| Growth in number of village programs | 0.03*** | 0.011 |
| Constant | 0.063*** | 0.01 |
| Chi$^2$ | 632.3*** | |
| Hansen-Sargan over identification test (chi2) | 15980.5*** | |
| Number of observations | 5327 | |
| **Derived estimates** | | |
| Impact of Regime Change leading to Jati congruence ($RC_3^{IBV} - RC_3^{NOIBV}$) | 0.14*** | |
| Change in program participation with IBV vs. non-IBV | 0.18*** | |
| Chi$^2$ test for change in program participation (IBV vs. non-IBV) | 147.78*** | |

Significance levels: *** p<0.01, ** p<0.05, * p<0.1

[20] Growth in the proportion of households where all members have voted based on identity

Figure 1: Game Tree for Model