

# IDEOLOGY VS. COMPETITION IN REDISTRIBUTIVE POLITICS:

An Analysis of Land Reforms in West Bengal<sup>1</sup>

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## Abstract

We investigate the roles of political ideology and electoral competition as determinants of land reform implementation in the eastern Indian state of West Bengal. Using a twenty five year panel dataset for a sample of 89 villages, we find evidence against the hypothesis that political ideology alone matters, and find evidence supporting the role of electoral competition. However, the pure Downsian model is rejected, against a hybrid competition-cum-moral hazard model in which more contested elections raise the incentive among elected officials to implement land reforms.

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# 1 Introduction

Theoretical models of political economy are frequently classified (see, e.g., Roemer (2001)) according to the motivation of competing parties or candidates, as either purely opportunistic (where they care only about the probability of winning elections), or where they have intrinsic policy preferences derived from their ideology (defined broadly to include interests of constituents they represent). Accordingly, these respective approaches differ in their emphasis on the importance of electoral competition relative to the political ideology of elected officials in explaining policy choices observed in democracies.

Models in the tradition of Downs (1957) which are based on the former assumption stress the role of *competition* and electoral opportunism. These include models of electoral competition extended to include probabilistic voting (Lindbeck-Weibull (1987)) and special interest groups (Baron (1994), Grossman-Helpman (1996)). Standard formulations of this model assume that candidates have no intrinsic policy preferences, and that they commit to policy platforms in advance of elections. In a two candidate setting the outcome is *policy convergence*: both candidates select the same policy owing to their common vote-maximization objective. The Downsian view emphasizes the role of competitive electoral incentives: that political will is driven ultimately by policy preferences of voters and special interest groups, not elected officials.

In contrast, ideology-based theories of politics which trace their origin to Lipset (1960) and Wittman (1973) have recently received prominence in citizen-candidate models of Osborne and Slivinski (1996) and Besley and Coate (1997). Combined with the assumption that candidates cannot commit to their policy platforms in advance of elections, and that they ignore implications of current policy choices for future re-election prospects, such a theory implies that policy choices of elected candidates are entirely ‘ideology’ determined. Accordingly predicting policy choices translates into predicting electoral success of parties or candidates with different ideologies.

These respective theories differ considerably in the explanations they provide for observed policy choices, as well as for reforms in electoral institutions to secure desired policy outcomes. For instance, the ideology-based model suggests the importance of reservations

of political positions for minorities in order to improve targeting of public expenditures to those minorities, whereas the Downsian model predicts these will have no impact on targeting. Models in the Downsian tradition would focus instead on electoral reforms that increase turnout and awareness of minority voters, reduce asymmetries in influence of special interest groups via campaign finance reforms, and reduce electoral advantage of incumbents.

A number of recent papers have provided empirical evidence in favor of each polar hypothesis in the context of developing countries. For instance Pande (2003) and Chattopadhyay and Duflo (2004) provide evidence in favor of the citizen-candidate models by showing that minority reservations for political office in selected Indian states significantly affected policies in directions favoring minority preferences. On the other hand Banerjee, Mookherjee, Munshi and Ray (2001) provide evidence that the distribution of voter preferences mattered, in the context of sugar cooperatives in the Indian state of Maharashtra. We are not familiar with any evidence concerning the relative significance of preferences of voters *vis-a-vis* elected officials in policy formation.

In this paper we investigate the respective roles of ideology and competition in the context of land reform implementation in the eastern India state of West Bengal. There is now considerable evidence that land reforms have significant potential for simultaneously reducing poverty and promoting agricultural growth in many developing countries, including India.<sup>4</sup> Despite this, the extent of land reforms enacted typically remains small relative to what could potentially be achieved. The causes are rooted mainly in lack of political will, the power of landed interests, and formidable legal and administrative barriers (see, for example, the review of the land reform experience of different Indian states by Appu (1996)).<sup>5</sup> It can

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<sup>4</sup>For instance, there is evidence that small farms are more productive than large farms (e.g., Bardhan (1973), Berry and Cline (1979), Binswanger and Rosenzweig (1986, 1993), Binswanger, Deininger and Feder (1993)), that owner-cultivated farms are more productive than tenant farms (Bell (1977), Sen (1981), Shaban (1987)), both of which imply agricultural output would rise following redistribution of land. Banerjee, Gertler and Ghatak (2002) argue that protection of sharecroppers against eviction and regulating sharecropping contracts in West Bengal during the period we study caused significant growth in agricultural yields. Besley and Burgess (2000) find that implementation of land reforms (particularly with respect to tenancy protection legislation) in Indian states between 1958 and 1992 led to significant reductions in rates of rural poverty.

<sup>5</sup>The latter stem from poor state of land records, pervasiveness of legal loopholes and legal systems

be argued, however, that persistence of legal and administrative barriers owe ultimately to lack of political will: when governments really do intend to carry out land reforms they can improve the land records, push through legislative reforms to close loopholes, and pursue necessary litigation. From this standpoint political will is the fundamental *sine qua non*.

The nature of land reform and political competition in West Bengal over the past quarter century provides an opportunity to test the two competing models in a simple and compelling way. Since 1978 the state has decentralized considerable responsibility for land reform to elected local governments. Data concerning the distribution of land provide information about the distribution of voter preferences for land reform in local elections (under the assumption that landless and marginal landowners prefer more land reform, and medium and big landowners resisting land reform).<sup>6</sup> At the same time data concerning party composition of local governments provide information about political ideology and competition. There have been two principal competing parties in West Bengal with distinct political ideologies and constituencies: a coalition of Leftist parties led by the Communist Party of India (Marxist) (CPIM) with a strong political commitment to land reform, and a centrist Indian National Congress (INC) (or offshoots such as the Trinamool Congress) that has traditionally represented interests of big landowners in rural areas. The electoral success of the two parties in local elections have fluctuated over time, reflecting swings in voter loyalties associated with various events at state and national levels unrelated to land reform. These constitute sources of independent temporal variation in electoral competition and party composition of local governments, allowing us to estimate their effect on land reform implementation. The two theories provide contrasting predictions that can be tested: the ideology hypothesis predicts that the extent of land reform should rise as voter loyalties swing in favor of the Left Front coalition, while the Downsian theory predicts that

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ill-equipped to deal with large volumes of litigation.

<sup>6</sup>As we explain in further detail below, the reforms consisted of distribution of land titles to the landless, and registration of sharecroppers. We have produced evidence elsewhere (e.g., Bardhan and Mookherjee (2004)) that the distribution of land has significant effects on the wages for agricultural labor. Hence the reforms would benefit mainly the landless and marginal landowners, since agricultural workers and tenants comprise mainly these two categories. Large and medium landowners would resist the reforms since they tend to employ agricultural workers and lease out lands to sharecroppers.

these should have no effect.

Simple correlations with the share of seats in local governments (*gram panchayats (GP)*) captured by the Left Front — either across villages across the period 1978–98, or within villages across successive elected local governments — show no support for the ideology hypothesis. The raw data shows no statistically significant relationship between Left share and land reform either across villages or over time. Controlling for village fixed effects, common year effects, changes in landownership distribution over time, and endogenous censoring, we find a statistically significant inverted-U relationship between sharecropper registration and the Left share, with the turning point around 50%. Since the Left Front commanded an absolute majority of most elected local governments, this implies a negative correlation of sharecropper registration with the observed Left share for most of the sample. For other measures of land reform, we continue to find absence of any statistically significant relationship.

More careful econometric analysis of the land reform-Left share relationship however needs to incorporate the possibility that both land reform and government composition may be jointly determined by preferences of local voters and party officials, besides shocks to voter loyalty to competing parties. Moreover, the inverted-U pattern is not consistent with a Downsian model nor with an ideology model. So we develop a theory of two party competition which can potentially explain this pattern. The model accommodates both electoral competition and differences in political ideology between competing parties. No assumption about precommitment to policy platforms during election campaigns is needed: instead elected officials choose policies knowing that these affect their re-election prospects (with voters predicting their future policy choices on the basis of current ones). Elected officials are subject to rent-seeking or other forms of political moral hazard (e.g., land reforms require costly administrative effort on the part of the officials).<sup>7</sup> Interactions between moral hazard and evenness of electoral competition provides an explanation for an inverted-U rela-

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<sup>7</sup>This model can be viewed as an extension of hybrid ideology-competition models of Lindbeck-Weibull (1993) and Dixit-Londregan (1998) to accommodate moral hazard. Similar predictions would also result from the special interest models of Baron (1994) and Grossman-Helpman (1996), as shown in an earlier version of this paper.

tionship: a more lop-sided electoral contest (arising from more skewed preferences amongst voters in favor of one party) translates into lower effort by the dominant party to secure favor from a majority of poor voters by carrying out land reform. The pure Downsian and ideology models turn out to be nested within this more general structure, thus permitting us to test them empirically against one another.

The key empirical prediction of the hybrid model is that the impact of rising Left share on land reform depends on relative voter loyalty towards the two parties. Hence the correct regression specification needed to test the competing theories should incorporate interaction effects between loyalty shocks and the Left share. Moreover, we need exogenous sources of variation in voter loyalties unrelated to local land reform issues. The main instrument we use for Left share is the proportion of seats in the national parliament secured by the Congress, interacted with incumbency (lagged Left share) in the concerned local government. The underlying identification assumption is that fluctuations in the fortunes of the Congress party in national politics were driven largely by events at the national level, such as the assassinations of Indira Gandhi and Rajiv Gandhi, the rise of the Bharatiya Janata Party and other regional parties in other parts of the country, and were uncorrelated with time-varying preferences of rural voters in West Bengal villages with regard to local land reform. We show that these fluctuations in national politics (interacted with local incumbency patterns) caused significant variations in local Left shares (while changes in the local land distribution or other demographic changes had no significant effect).

We subsequently find evidence that the effect of rising Left share declined significantly when voter loyalties swung in favor of the Left, particularly for the sharecropper registration program. We also find additional direct evidence for the importance of electoral competition: voter preferences and awareness mattered, and the timing of land reforms were concentrated in election or pre-election years.

Section 2 describes the institutional background, the data sources, and the raw correlations between Left share and land reform. Section 3 presents the theoretical model, and Section 4 the empirical tests. Details of the data sources are described in the Appendix.

## 2 Historical Background

Following Independence in 1947, land reforms were an important priority for newly elected governments at both the central and state levels in India. These included abolition of intermediary landlords (*zamindars*), redistribution of lands above mandated ceilings, and regulation of tenancy. Responsibility for agricultural policy was vested in state governments under the Indian Constitution. Respective states proceeded to enact suitable legislation in the early 1950s, with encouragement and assistance from the central government.

### 2.1 Programs

Legislation governing land reform in West Bengal for the period under study is defined by the second West Bengal Land Reforms Act, passed in 1971. This Act imposed a limit of 5 ‘standard’ hectares of irrigated land (equal to 7 hectares of unirrigated land) for a family of up to five members, plus  $\frac{1}{2}$  hectares per additional family member, up to a maximum of 7 hectares for each family.<sup>8</sup> Landowners were required to submit a return (Form 7A) providing details of the lands in their possession, their family size, and the surplus lands that they would consequently surrender. Problems of implementation of the new Act however soon became evident, arising out of the need to identify the genuine family members of any given landholder (Appu (1996, p.176)), and nonfiling of returns by an estimated one half of all landholders.

In 1977, the Left Front came into power in the state government with an absolute majority in the state legislature, displacing the Indian National Congress which had formed the government for all but three years since Independence. It thereafter set about implementing the 1971 West Bengal Land Reforms Act, which had been amended in 1972. The government did not succeed in appropriating (or *vesting*) significantly more land from large landholders owing to the legal problems described above. So the principal initiatives in which they did achieve considerable success involved (a) distribution of vested lands in the

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<sup>8</sup>One hectare equals two and a half acres. Orchards were allowed 2 standard hectares, and religious and charitable organizations up to 7 standard hectares (except in suitably deserving cases).

form of land titles or *pattas* to landless households, and (b) the tenancy registration program of *Operation Barga*. Registration made tenancy rights hereditary, rendered eviction by landlords a punishable offense, and shifted the onus of proof concerning identity of the actual tiller on the landlord. A massive mass-mobilization campaign involving party leaders, local activists and the administrators was mounted to identify surplus or *barga* land, and distribute (or register) them. Election to local governments (*panchayats*) were mandated from 1978 onwards, and the active cooperation of the newly elected bodies was sought in this process. Most commentators have reviewed the outcomes of this process favorably. P.S. Appu (1996, Appendix IV.3) estimated the extent of land distributed in West Bengal until 1992 at 6.72% of its operated area, against a national average of 1.34%; only one other state (Jammu and Kashmir) achieved a higher percentage, with the vast majority of states distributing less than 1.5% of operated area.

## 2.2 Data

Our sample consists of 89 villages covered by 57 different *gram panchayats* (*GPs*) or local governments located in fifteen districts of the state.<sup>9</sup> The selected villages are those for which we could obtain farm-level production records from cost of cultivation surveys carried out originally by the state’s agriculture department using a stratified random sampling frame.

For each of these villages, we visited the concerned local Block Land Records Office (BLRO) which vest land, issue land titles (*pattas*) and register tenants. We collected data for all *pattas* distributed and all tenants registered for these in each sample village for every year between 1971 and 1998. The records provide details of the number of these, as well as characteristics of the concerned plot (i.e., whether it is homestead land, and of the remainder the proportion that is cultivable). We therefore have precise estimates of annual land reform implementation.

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<sup>9</sup>Calcutta and Darjeeling were excluded owing to the paucity of agriculture in those districts: Calcutta is primarily urban while Darjeeling is a mountainous region dominated by tea plantations. District boundaries within Dinajpur have changed within the period being studied so we aggregate all the data for Dinajpur villages.



Inspection of records of the concerned local governments generated details of all elected officials in every GP between 1978 and 1998. Each GP administers ten to fifteen *mouzas* or villages, and elects ten to twenty officials from election constituencies defined by population size. Each GP is elected to a five year term, so we have data on reforms implemented by four successive GP administrations. We use this to compute the Left share of each GP in any given year. Additional data concerning vote shares in state assembly and national parliament elections were collected from official statistics of the government.

Data concerning relevant voter characteristics in each village was collected for two years, 1978 and 1998, based on an (indirect) household survey of land, occupation, literacy and caste. Data on the distribution of land for individual villages in our sample is not available from any existing source. The most disaggregated information available concerns the distribution of operational holdings at the district level from the state Agricultural Censuses (once every five years), and at the state level from the National Sample Survey (once every ten years, the most recent one available pertaining to 1991-92). The indirect household survey was therefore used, on the basis of voter lists for the 1998 and 1978 elections (in about 20 GPs the 1978 voter lists were not available so we used the 1983 lists instead for those). Three or four village elders in each village helped identify voters belonging to the same household, and provided details of each household's demographic, occupational and land status (the latter including landownership, tenancy, by area and irrigation status, mode of acquisition for owned land, *barga* registration status for tenants).<sup>10</sup> For years in-between 1978 and 1998, we estimate the landownership distribution by interpolating the distribution between the two end years.

This 'indirect' household survey procedure has the advantage of eliciting rich community information concerning the distribution of land, and avoiding problems stemming from

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<sup>10</sup>The information provided was cross-checked across different elders. In the case of villages for which separate voter lists were available for 1998 and either 1978 or 1983, this exercise was carried out separately for 1998 and 1978 based on the respective voter lists. For the others, it was carried out on the basis solely of the 1998 voter list (thereby creating the risk of some attrition in the sample whence households that resided at the beginning of the sample period may have left the village or died, who would remain unrepresented in the 1978/1983 distribution).

reluctance of individual households from declaring their assets to outside surveyors.<sup>11</sup> It could however suffer from lapses of knowledge or memory of third-party informers. We compared the size distribution of holdings compiled in this manner aggregated to the district level for 1978 and 1998 against the state Agricultural Censuses for 1980 and 1995, and the National Sample Survey for 1981-82 and 1991-92. These estimates are provided in Table 3, and show that the information from the three different sources for the state as a whole match quite closely.

### 2.3 Descriptive Statistics

Table 1 provides the district-wise breakdown of the sample, as well as the percent seats in the GPs secured by the Left front alliance party. The Left secured a majority in most districts. The mean proportion of GP seats secured by the Left was 69%, with the median slightly higher, and with the first quartile at approximately 50%. In three quarters of the GP administrations, thus, the Left obtained an absolute majority.

Table 2 provides economic and demographic characteristics of the sample villages and how these changed between 1978 and 1998. There was a sharp increase in the number of households within villages, owing to population growth, migration, and splits of joint households. Statistics concerning the land distribution pertain to ownership of cultivable non-*patta* land. The proportion of landless households rose from 47 to 52%, so landless households comprised a majority in the population by 1998. Among landowners the land distribution became more equal, with a significant rise in area share of small holdings below 5 acres from 57% to 74%. Since these pertain to non-*patta* land, these reflect the effect of land market transactions and intrahousehold transfers. Table 3 shows that our land distribution data aggregated for the state as a whole matches closely corresponding estimates of the distribution of operational holdings from the state Agricultural Censuses, as well as from the National Sample Survey.

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<sup>11</sup>Several land experts in West Bengal, including Debu Bandyopadhyay, the state Land Reform Commissioner during the late 1970s and the early 1980s, advised us to carry out an indirect rather than direct survey for this reason.

Tables 4 and 5 provide details of the land reform program. 16% of operational land area had been *vested*, or secured from surplus owners by 1998. This is consistent with the estimate reported by Appu (1992). However most of the vesting occurred *prior to* 1978, confirming accounts that the Left Front did not achieve much progress on this dimension since coming to power in 1977. Their achievement was much greater with regard to distribution of land titles or *pattas* to the landless. Approximately 70–75% all *patta* land in 1998 had been distributed after 1978. Most of the distributed land was cultivable (ranging between 70 and 90%). We shall therefore focus on *patta* distribution rather than vesting operations when examining the land redistribution program.

Distributed *patta* land in our sample constituted about 3.7% of operational land area in the Gangetic part of West Bengal, and 5.5% for the state as a whole, somewhat below the state government’s own statistics or the estimate of Appu already cited. The proportion of households receiving *pattas* was 15%, higher than the proportion of operational land area distributed. *Patta* holders constituted about 30% of all landless households, roughly consistent with the statistics quoted by Lieten (1992). The land distribution program was therefore far more significant in terms of the number of households that benefited from the program, rather than actual land area distributed. Most recipients received plots below 1 acre in size, substantially below average holding sizes in the village.

The fact that land area distributed (5%) was substantially less than the total amount of land vested (16%) is somewhat surprising. This divergence is considerably larger than for the entire state (where approximately 1 million acres have been distributed, whereas 1.3 million acres have been vested). One typically expects appropriation rather than distribution to be the difficult component of land reform implementation, from either political, legal or administrative standpoints. Why wasn’t the government distributing all the lands it had already vested? One can only surmise the reasons for this, based on anecdotes and opinions expressed by various people associated with the reforms. One possibility is that lands officially listed as vested were still under litigation, and the process of identifying suitable beneficiaries and granting them official land titles was lengthy and cumbersome. Another is that local landed elites exercise influence over local governments to prevent distribution of land titles to the poor, for fear that this will raise wage rates of hired labor, and reduce

dependence of the poor on them for credit and marketing facilities. The most common account is that elected officials have been exploiting undistributed vested lands for their personal benefit in various ways.<sup>12</sup> Irrespective of which is the correct story, it is evident that the the availability of vested land did not constrain the distribution of land titles; instead political will did. In particular, personal rent-seeking motives appear to have played some role.

Equally surprising is how small the *patta* program was in comparison to the changes in land distribution occurring through market sales and/or household subdivision. Recall from Table 2 that the proportion of non-*patta* land in medium and big holdings declined by about 20%, through land sales or subdivision, and fragmentation of landholdings resulting from splitting of households. This ‘market’ process was thus almost four to six times as large as the redistribution achieved by the *patta* program, and thus unlikely to have been ‘caused’ by the latter. Accordingly we use the distribution of non-*patta* land as an independent determinant of voter demand for land reform.

Turning now to the sharecropper registration process, Table 4 shows that the proportion of cultivable land affected was of the order of 6%, and the proportion of households registered was approximately 5%. Hence the *barga* program represented approximately the same land area, but one third the number of households benefiting from the *patta* program. The proportion of sharecroppers registered was of the order of 50%, slightly below the state-wide registration rates of 65% reported by the government for the state as a whole during the early 1990s.

Regarding timing of the reforms, the bulk occurred in the first two local government administrations spanning the ten year period between 1978 and 1988. This is shown in Table 5. It also shows that more than half the villages experienced no land reforms at all in

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<sup>12</sup>For instance, informal accounts allege that undistributed vested lands are used by GP officials to allocate to select beneficiaries to cultivate on a temporary basis, as instruments of extending their political patronage. There may also be outright corruption whereby GP officials extract rents from the assigned cultivators. We have been informed of this by Debu Bandyopadhyaya, the Land Reforms Commissioner during the late 1970s and early 1980s. We have also recently heard such accounts in the course of our currently ongoing surveys of these villages.

any given GP administration. This indicates the need to incorporate endogenous censoring in the empirical analysis.

## 2.4 Preliminary Regressions of Land Reform on Left Share

Table 6 presents regressions of different measures of land reforms implemented with respect to the Left share of GP seats. The different measures are *pattaland*: proportion of cultivable land in the village distributed in the form of *pattas*; *pattadar*: proportion of households who received *pattas*; *bargaland*: proportion of cultivable land registered under the *barga* program; and *bargadar*: proportion of households registered in this program.<sup>13</sup> Owing to the significant censoring in the data, we report results of tobit regressions. The cross-section tobits aggregate across the entire twenty year period 1978–98, while the panel tobits aggregate within each five year period spanning a single GP administration<sup>14</sup>, and use dummies for districts as well as for the four time blocks. We do not use village fixed effects because of the well known inconsistency of tobit estimators with village fixed effects. The number of fixed effects to be estimated declines substantially when they are at the level of the district: consistency of the estimator refers to limiting properties as the number of villages per district grows large, assuming that all the unobserved heterogeneity arises at the district rather than village level. The cross-section *patta* tobits controls for the proportion of land vested by 1978 which represented the land available for distribution, and the population density in 1978 which represents a measure of the demographic pressure for land distribution. The cross-section *barga* regressions control for the extent of unregistered *barga* land or households in 1978, which represented the potential for registration.

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<sup>13</sup>We do not use the *barga* registration rate owing to the significant underreporting of tenancy in the household survey, which artificially inflates the registration rate. For almost forty villages no land was reported as under tenancy in 1978, while significant numbers of bargadars were recorded in the 1970s in those villages. The registration rate cannot be computed for these villages. We therefore express the scale of the *barga* program relative to the total cultivable area and number of households in the village instead.

<sup>14</sup>Election years are treated as part of the time block of the outgoing administration, given the existence of lags arising from legal delays and the fact that a new administration usually assumes office in the second half of the year.

In no case do we see evidence of a statistically significant relationship of land reforms implemented with Left control of the local GP. The signs and magnitudes of the estimated coefficients imply that the nature of this relationship follows an inverted-U, with a turning point at or below the mean and median Left share. This implies that for the majority of the sample, higher Left control was associated, if at all, with *less* land reform. This is clearly contrary to the pure ideology model. The absence of a statistically significant relationship may be viewed as consistent with the predictions of the Downsian model.

Tables 7 and 8 present results for regressions which control for village (or district) fixed effects, and time-varying village characteristics representing the distribution of local voter preferences over land reform, such as demographic weight of different landowning size classes, land shares, proportion of households belonging to scheduled castes or tribes, and illiteracy rates of non-big (which aggregates landless, marginal and small landowners) and big landowners. Land size classes are defined by ownership of cultivable non-*patta* land, with marginal, small, medium and large categories defined by 0-2.5, 2.5-5, 5-12.5 and 12.5+ acres respectively. Village demographics, land distribution and illiteracy rates are interpolated for different time blocks based on their respective rates of growth between the two survey years.

The first and fifth columns of Tables 7 and 8 show OLS estimates with village fixed effects. The second and sixth columns show tobit estimates with district fixed effects. The remaining columns show results for the semiparametric trimmed LAD estimator with village fixed effects proposed by Honore (1992). Besides controlling for inter-village heterogeneity and censoring, the latter estimator avoids the normality assumption on residuals, replacing it with only a symmetry (i.i.d.) restriction on the distribution of time-varying residuals.

All regressions pertain to annual data, allowing us to include election and pre-election year dummies. This provides an additional opportunity to discriminate between hypotheses of electoral opportunism and ideology. The former model would predict higher land reforms immediately before an election, when voters are more likely to project current policies to the future, and elected officials pay more attention to their re-election prospects. Such election year effects are harder to reconcile with a pure ideology model.

The use of yearly data also permits the coefficients to be more precisely estimated owing to an expansion in sample size, compared with data aggregated into five year timeblocks corresponding to the tenure of each elected GP. On the other hand, standard errors may be underestimated with yearly data if residuals are highly correlated across different years within a given GP administration in a given village. In that case observing reforms implemented in different years within the tenure of a given GP does not really constitute more information than is contained in the aggregate for the entire five year block. However, this is a problem which tends to be significant only if the number of ‘groups’ is small (Donald and Lang (2004)): in our context a ‘group’ corresponds to a village-timeblock combination, and our dataset contains over 300 village-timeblocks. So this problem should not be particularly significant. Nevertheless the presence of serial correlation may imply that the standard formulae for standard errors are subject to bias, if the nature of this serial correlation cannot be represented by a fixed shock for each village-timeblock combination, as pointed out by Bertrand, Duflo and Mullainathan (2004). In subsequent sections we shall examine the robustness of the TLAD regression estimates with respect to this potential problem, by reporting standard errors obtained from bootstrapping the estimator.

We see that virtually the same patterns as in Table 6 are repeated in Tables 7 and 8 — absence of a monotone increasing relationship with Left share of GP seats. The *bargadar* TLAD regression shows a statistically significant inverted-U pattern. There is also a significant positive spike in number of *bargadars* registered during election years. So the evidence continues to be inconsistent with the ideology hypothesis.

Additional evidence against the ideology hypothesis is provided in the fourth and eighth columns, which include interactions between Left share and measures of land inequality in 1978: the proportion of households that were landless, and the proportion of land in big holdings. If ideological differences are represented by different welfare weights assigned to different landowning classes (as explained below in the next Section), the ideology hypothesis predicts the differences in land reform implemented by Left and Congress officials would be more pronounced in villages with a more unequal land distribution. In contrast, we find that these differences were substantially *less* pronounced for both *patta* and *barga* activity.

The inconsistency with the Downsian hypothesis is substantially less, but the problem of explaining a significant inverted-U in the *barga* activity remains. In the next section we propose a theoretical model which generalizes both hypotheses which can account for the observed patterns.

### 3 Theoretical Model

Our theory relies on a model of two party electoral competition with probabilistic voting that extends Grossman and Helpman (1996) to accommodate differing policy preferences across the two parties, as well as rent-seeking or moral hazard among elected officials with respect to land reform effort. Consider any village  $v$  with total voter population normalized to unity, where voters belong to different landowning classes  $c = l, g, s, m, b$  consisting respectively of the landless, marginal, small, medium and big landowners. The last category consists of those holding land above the legislated ceiling, from whom the government may seek to vest lands and distribute to the landless. The demographic weight of class  $c$  is  $\alpha_c$ . Elected governments select a policy  $\pi$  from some policy space  $P$ . Preferences of a voter in class  $c$  are represented by utility  $U_c(\pi)$ . It will be convenient to represent the policy space by some one-dimensional measure of the extent of land reform, though most of the theory applies to higher dimensional policy spaces as well.

There are two parties denoted L and R. Let the policy of a party  $p$  candidate or elected official be denoted  $\pi_p$ . These represent either the policy platform of the candidate prior to the election, which the candidate is committed to in the event of being elected. Or it represents the policy actually carried out by the candidate while currently in office. In this case, we shall assume that voters project the current policies into their future expectations, so voting behavior in the next election is determined by these policies.

A fraction  $\tau_c$  of class  $c$  voters turn out to vote in the election. Of these, a further fraction  $\beta_c$  are *aware* voters, who vote partly on the basis of personal policy preferences over policy platforms (or current policies pursued), and partly according to predetermined party loyalties. The remaining voters vote purely on the basis of party loyalties, which



are influenced by election campaign mobilization efforts of the two parties: we call them *impressionable* voters.<sup>15</sup>

Within village  $v$ , predetermined voter loyalty to the party L candidate is assumed to be distributed uniformly with density  $f_c$  (which may be specific to the class  $c$  the voter belongs to) and mean  $\epsilon_{ct}^d$ . An aware voter in class  $c$  with loyalty  $\epsilon$  votes for the L party candidate if  $U_c(\pi_L) + \epsilon > U_c(\pi_R)$ . Given campaign sizes  $M_L, M_R$  of the two parties, an impressionable voter with relative loyalty  $\epsilon$  to the Left party votes for that party as long as  $\epsilon + h[M_L - M_R] > 0$ , where  $h > 0$  is a given parameter.

The resulting vote share of the Left party is then

$$\begin{aligned} \frac{1}{2} &+ \frac{1}{\sum_c \alpha_c \tau_c} \left[ \sum_c \alpha_c \frac{\tau_c}{f_c} \epsilon_{ct}^d + \sum_c \alpha_c \frac{\tau_c \beta_c}{f_c} \{U_c(\pi_L) - U_c(\pi_R)\} \right. \\ &\left. + h \sum_c \alpha_c \frac{\tau_c (1 - \beta_c)}{f_c} (M_L - M_R) \right]. \end{aligned} \quad (1)$$

Denote by  $\chi \equiv h \sum_{c'} \alpha_{c'} \tau_{c'} (1 - \beta_{c'}) f_{c'}$  a parameter which represents the value of electoral campaigns in mobilizing voters, which is proportional to the fraction of impressionable voters. Then the vote share expression can be simplified to

$$V_L = \frac{1}{2} + \frac{1}{\sum_c \alpha_c \tau_c} \left[ \sum_c \frac{\tau_c}{f_c} \epsilon_{ct}^d + \sum_c \alpha_c \frac{\tau_c \beta_c}{f_c} \{U_c(\pi_L) - U_c(\pi_R)\} + \chi (M_L - M_R) \right]. \quad (2)$$

In contrast to the Grossman-Helpman (1996) theory, we assume that campaigns are financed by parties themselves, rather than from contributions raised from special interest groups. It can, however, be shown that similar results obtain in the presence of campaigns financed by special interests, as shown in an earlier version of this paper.

Vote shares determine the probability  $\phi_L$  of the Left party winning the election, according to  $\phi_L = \phi(V_L)$ , a strictly increasing, continuously differentiable function. The presence of randomness in election turnout, and errors in vote counting cause this function to be smooth rather than a 0 – 1 discontinuous function.

Turn now to the objectives of parties. In the pure Downsian model, each party has no intrinsic policy preferences, seeking only to maximize the probability of being elected. In

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<sup>15</sup>Grossman and Helpman refer to them as ‘informed’ and ‘uninformed’ in their 1996 article, and as ‘strategic’ and ‘impressionable’ in their 2001 book.

the ideology model, parties have intrinsic preferences over policy choices. For expositional convenience, however, we shall refer to these as ‘ideology’, and represent it by a set of welfare weights  $w_c^i$  assigned by party  $i$  to the interests of class  $c$ . It is natural to suppose that the Left party assigns greater weight to classes owning less land, with the opposite true for the Right party, so the ideologically desired policies by the two parties are ordered, with the Left party desiring greater land reform:  $\pi_L^* > \pi_R^*$  where  $\pi_i^*$  maximizes  $\sum_c \alpha_c w_c^i U_c(\pi)$ .

Besides ideology, elected officials are also subject to moral hazard, arising from private costs to elected officials (either effort or foregone rents) that depend upon the extent of land reform:  $e = e(\pi)$ . Party objectives thus represent a mixture of opportunism, ideology and moral hazard. The opportunistic component stems from the opportunity to earn rents while in office. Part of these rents are exogenously fixed, and denoted  $E_i$  for party  $i$ . These could represent ‘ego-rents’, or pecuniary rents arising from the power of officials over other areas of policy apart from land reform. The remaining variable rent component is represented by  $-e_i(\pi)$ , and hence the total rent is  $E_i - e_i(\pi)$ .

The *ex ante* payoff of party  $i$  (with  $j \neq i$ ) denoting the other party, and  $\phi_i, \phi_j \equiv 1 - \phi_i$  their respective win probabilities is then

$$\begin{aligned} O_i(\pi_i, M_i; \pi_j, M_j) &= \phi_i \left[ \sum_c \alpha_c w_c^i U_c(\pi_i) - e_i(\pi_i) + E_i \right] \\ &\quad + (1 - \phi_i) \sum_c \alpha_c w_c^i U_c(\pi_j) - \theta_i M_i. \end{aligned} \quad (3)$$

This formulation presumes that parties commit to policy platforms in advance of the election. The same characterization of equilibrium policy choices holds when such commitment is not possible, but with voters forecasting future policies from current ones, so the vote shares in the *next* election are given by the same function (2) of current policy choices. Let  $D_i$  denote the expected rents from future office, and  $\delta_i$  the discount factor of a party  $i$  incumbent. Then this incumbent will select  $\pi_i, M_i$  to maximize

$$\sum_c \alpha_c w_c^i U_c(\pi_i) - e_i(\pi_i) + E_i - \theta_i M_i + \delta_i \phi_i (V_i) D_i. \quad (4)$$

This model nests different polar theories of political competition. The Downsian model obtains when we assume that candidates have no ideological preferences ( $w_c^i \equiv 0$ ), nor any

policy-related sources of personal rents ( $e_i(\pi_i) \equiv 0$ ).<sup>16</sup> The pure ideology model obtains when incumbents cannot commit to their future policies, earn no rents ( $E_i = e_i \equiv 0$ ), and discount the future at a high enough rate that they ignore implications of current policy choices on future re-election prospects ( $\delta_i \equiv 0$ ).

The more general version presented here admits a hybrid of electoral opportunism, rent-seeking, and ideology. The ingredients we add to the model can all be justified by an appeal to the reality of the West Bengal political context, besides the need to accommodate the facts. It is well known that the Left parties have been subject to internal debate concerning the need to strike a balance between its traditional ideology and opportunism.<sup>17</sup> As a reading of Lindbeck-Weibull (1993) and Dixit-Londregan (1998) indicates, such a model is quite complex, and it is not evident from their results whether such a model can account for the empirical findings reported in the previous Section. That is the question we now pose. The following proposition represents the main prediction of the hybrid model concerning equilibrium policy choices.

**Proposition 1** *Consider any equilibrium of the hybrid ideology-competition model (either with or without policy commitment) in which both parties select positive campaign levels, voter utilities are differentiable, and the policy space is an open interval of a Euclidean space. The policy choice  $\pi_i^*$  of party  $i$  will maximize*

$$\sum_c \alpha_c \mu_c^i U_c(\pi) - e_i(\pi) \quad (5)$$

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<sup>16</sup>Then with commitment the payoff of  $i$  reduces to maximization of  $\phi_i E_i - \theta_i M_i$ , and with no commitment reduces to maximization of  $\delta_i \phi_i E_i - \theta_i M_i$ . Hence the policy  $\pi_i$  chosen by  $i$  must maximize the probability of winning  $\phi_i$ . Expression (2) shows that both parties will select the same policy  $\pi^*$  which maximizes  $\sum_c \alpha_c \gamma_c U_c(\pi)$ , where  $\gamma_c \equiv \tau_c \beta_c f_c$ .

<sup>17</sup>See, e.g., Franda (1971), Chatterjee (1984), Nossiter (1988), Lieten (1992, pp.128-133) and Bhattacharya (1999). The transition of the CPI(M) from a revolutionary party in the 1940s to subsequent capture and consolidation of the state government is generally attributed to the pragmatism of its leaders Jyoti Basu and Promode Dasgupta who consciously chose an approach that would secure widespread political support with voters, at the cost of disenchantment of some of the party's ideologues. Lieten provides some of the internal critiques of the Left Front government's performance from those disillusioned with its compromise with traditional ideology. Bhattacharya describes the political transition of the CPI(M) in West Bengal as pursuing the 'politics of middleness'.

where the welfare weights are given by

$$\mu_c^i = w_c^i + \frac{\theta_i}{\chi \cdot \phi_i^*} \frac{\tau_c \beta_c}{f_c} \quad (6)$$

and  $\phi_i^*$  denotes the equilibrium probability of party  $i$  winning.

**Proof of Proposition 1:** Consider the version with policy commitment, where the payoffs are given by (3); an analogous argument applies in the no-commitment case (with payoffs (4)). Note that the payoff of party  $i$  can be written as  $\phi(V_i)D_i + \sum_c \alpha_c w_c^i U_c(\pi_j) - \theta_i M_i$ , where  $D_i \equiv \sum_c \alpha_c w_c^i \{U_c(\pi_i^*) - U_c(\pi_j^*)\} - e_i(\pi_i^*) + E_i$  denotes the winning stakes for party  $i$ . The first order condition with respect to choice of campaign level  $M_i$  yields  $\phi_i' D_i \chi = \theta_i$ . The first order condition for policy choice yields

$$\begin{aligned} & \frac{\phi_i' D_i}{\sum_c \alpha_c \tau_c} \sum_c \alpha_c \frac{\tau_c \beta_c}{f_c} \frac{\partial U_c}{\partial \pi_i} \\ & + \phi_i^* [\sum_c \alpha_c w_c^i \frac{\partial U_c}{\partial \pi_i} - e_i'(\pi_i)] = 0 \end{aligned} \quad (7)$$

Using the property that  $\phi_i' D_i = \frac{\theta_i}{\chi}$ , the first order condition for the policy choice can be written as

$$\sum_c \alpha_c [w_c^i \phi_i^* + \frac{\theta_i}{\chi} \frac{\tau_c \beta_c}{f_c}] \frac{\partial U_c}{\partial \pi_i} = \phi_i^* e_i'(\pi_i) \quad (8)$$

from which the result follows.

Equilibrium winning probabilities  $\phi_i^*$  will depend in turn on chosen policies, election campaigns and patterns of voter loyalties, as represented by the expression for vote shares (2). These are jointly determined along with equilibrium policies and campaign sizes. Nevertheless, equilibrium policy choices  $\pi_i^*$  have the property that they maximize

$$\sum_c \alpha_c \mu_c^i U_c(\pi_i) - e_i(\pi_i), \quad (9)$$

a mixture of ideological, opportunistic and rent-seeking motives. Expression (6) shows the implicit welfare weight  $\mu_c^i$  on interests of class  $c$  voters equals the sum of an ideological component  $w_c^i$  and an opportunistic component  $\frac{\tau_c \beta_c}{f_c}$  representing voter awareness, turnout

and swing factors. The opportunistic component is weighted relative to the ideology or rent-seeking components by the factor  $\frac{\theta_i}{\chi\phi_i^*}$ , which declines as the probability of winning  $\phi_i^*$  rises. A *ceteris paribus* shift in voter loyalty to party  $i$  will raise its equilibrium win probability, inducing a lower weight on the opportunistic component. This will result in greater focus on ideology and rent-seeking.

What are the implications for observed land reform outcomes? It is reasonable to assume that the actual policy pursued by a GP is a compromise between the policies pursued by candidates of the two respective parties, with weights that reflect the strengths of the two parties in the GP. Let the weight on party  $i$ 's policy choice be denoted by  $q_i = q(\phi_i^*)$ , an increasing function of party  $i$ 's share of GP seats, lying between 0 and 1, and with the property that  $q(0) = 0, q(1) = 1$ . The observed land reform outcome  $\pi^*$  in the GP is given by

$$\pi^* = q(\phi_i^*)\pi_i^* + [1 - q(\phi_i^*)]\pi_j^*. \quad (10)$$

Let  $\pi_i^I$  denote the ideal policy for party  $i$  which it would pursue in the absence of any opportunistic motive, i.e., which maximizes  $\sum_c \alpha_c w_c^i U_c(\pi) - e(\pi)$ . And let  $\pi^D$  denote the Downsian equilibrium policy outcome, which maximizes  $\sum_c \alpha_c \frac{\tau_c}{f_c} U_c(\pi)$ . Note that the Downsian policy does not incorporate the personal rents of elected officials. If the extent of land reform  $\pi$  is a one dimensional variable then for reasons explained above one would expect  $e(\pi)$  to be an increasing function. Then the extent of land reform will tend to be underprovided as a result of the political moral hazard problem. This will be mitigated only if party  $i$  has a sufficient ideological preference for the reform.

Consider the case where the political moral hazard problem dominates ideological considerations, in the sense that the Downsian policy  $\pi^D$  strictly exceeds the ideal policy  $\pi_i^I$  of both parties  $i = L, R$ . This is illustrated in Figure 1. Call this Case 1 from now on. Here *a rise in its win probability causes the equilibrium policy of the Left to move closer to its own desired policy  $\pi_L^I$ , i.e., it carries out less land reform*. At the same time the Right party will implement *more* land reform in order to recover ground with voters. If the Left party was carrying out more land reform initially, the gap between the two parties will narrow. As voters continue to shift loyalty to the Left party, eventually the gap will vanish and then

get reversed, with the Right party carrying out more land reform than the Left.<sup>18</sup>

The comparative static effect is different in the other case (referred to as Case 2) where the moral hazard effect is weaker than the ideological effect so that the Left party intrinsically desires more redistribution than the Downsian mean voter ( $\pi_L^I > \pi^D$ ). Suppose that the Right party still desires less redistribution than the Downsian outcome. Then an increase in its win probability motivates the Left party to carry out *more* redistribution. The Right party also wishes to carry out more redistribution. In this case both parties carry out more land reform with a shift in voter loyalty to the Left, as illustrated in Figure 2. Moreover here the Left party will always carry out more redistribution than the Right party (since the Left will always want to carry out more than the Downsian policy, and the Right party less than the Downsian policy). In this case the results will be akin to the pure ideology model: there will be a monotone, increasing relationship between Left share of GP seats and the extent of land reform.

## 4 Testing the Model

The first step in empirical testing is to incorporate possible endogeneity of the Left share. Unobserved determinants of citizen preferences for land reform could be correlated with loyalties to the Left Front alliance. Normally one would expect that these would be positively correlated, in which case the bias in estimating the coefficient is positive, and the true correlation is even more negative than has been estimated. The results would be consistent with the ideology hypothesis only if unobserved preferences for land reform were negatively correlated with the success of the Left Front, which appears somewhat far-fetched, given the stated ideology and constituencies represented by the two parties. Nevertheless, just to be sure, we need to obtain instruments for the Left share.

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<sup>18</sup>The reason is that (by virtue of Proposition 1) as the win probability of the Left party approaches one, the equilibrium policy of the Left party will approach its own desired level  $\pi_L^I$  while the Right party will approach the Downsian policy  $\pi^D$ . Hence there will exist some value of  $\phi_L^*$  where their respective policies will cross.

## 4.1 Predicting Success of the Left in Local Elections

Probabilistic voting models allow voting behavior to reflect both loyalties of voters to different parties for various exogenous reasons (such as historical factors, incumbency, the specific characteristics of candidates etc.), as well as their policy preferences. We can therefore search for determinants of voter loyalty to the Left that reflect factors external to the village, or historical circumstances orthogonal to issues affecting the current election. The Left and Congress contest elections at different levels, such as the state and federal legislatures (which we shall henceforth refer to as the Assembly and Parliament). These elections are staggered across different years: the Assembly elections are typically held one or two years before the GP elections (they were held in 1977, 1982, 1987, 1991 and 1996). The Left and the Congress are the principal adversaries in the state assembly elections, as well as elections for seats representing West Bengal constituencies in Parliament.

Given that local government elections were introduced for the first time in 1978, and that most voters in India tend to view politics in terms of state or national rather than local issues, it is plausible to suppose that voter loyalties in local elections were determined to some extent by regional or national issues. These are proxied by the relative strength of the two parties in the national Parliament. The Congress formed the national government between 1980 and 1984, and reinforced its position between 1984 and 1989 following the assassination of Indira Gandhi in 1984. Between 1989 and 1991 a non-Congress government prevailed at the national level, representing a coalition of different regional parties supported by the West Bengal Left Front. Then again from 1991 until 1996 the Congress formed a government at the national level, with the Left in the opposition.

The fluctuating strength of the two parties in Parliament had considerable implications for relations between the central and the state government over fiscal transfers, execution of central government projects in the state, and other matters likely to have significant spillovers into inflation, employment and public services in rural areas. For instance, a Congress party member elected to a Parliamentary seat from a specific West Bengal constituency would be in a position to direct public projects in railways and irrigation to his constituency, boosting loyalties of voters towards the Congress in local GP elections. Con-

versely, Left candidates can blame a Congress-inclusive coalition central government for starving the state of fiscal transfers or public investments, and use this in their election rhetoric in order to mobilize voters against the Congress party.

Table 9 presents regressions predicting Left control of local GPs, on the basis of a variety of factors both external and internal to the villages in question. The external factors include the proportion of seats secured by the Congress in the currently elected Parliament, the rate of inflation over the past five years in price index for agricultural workers in the nearest regional center (among four centers in the state for which this index is constructed by the government: Calcutta, Jalpaiguri, Ranigunj and Asansol), and the growth in factory employment in the district over the last five years. The inflation and employment variables are constructed at a much higher level of aggregation than a single GP: there were approximately 200 GPs in each district, and between three and five districts in each region. So these variables reflect economic changes covering a much larger area than the jurisdiction of a single GP. We also include the average vote share difference between Left and Congress candidates in the immediately preceding state Assembly elections, averaged at the district level, as a proxy for prevailing voter loyalty to the two parties on the basis of district, state or national issues.

The local factors that may affect electoral success of the Left in GP elections include incumbency patterns in the GP, besides land distribution, literacy and caste in the village. The regressions interact local incumbency with external factors, since voters reaction to changes in inflation and employment may depend on which party has been dominating in the local area. For instance, voters tend to blame incumbents for rising inflation, which is thus likely to strengthen the position of the opposition party.

Table 9 shows results of the GP Left share regression applied to five successive GP elections (1978, 1983, 1988, 1993 and 1998). The first two columns show cross-section least squares results, while the remaining three show the panel estimates. In the panel we use the Arellano-Bond (1991) estimator to avoid the bias that arises from a lagged dependent variable (incumbency) as a regressor. The hypothesis of lack of first-order serial correlation in the time-varying errors (equivalently lack of second-order correlation in the differenced



residuals) is not rejected at 20% significance. Hence, controlling for village fixed effects, lagged Left share is also a valid instrument for Left share in the land reform regression.

The cross-section results show that the assembly vote share difference at the district level was a strong predictor of local GP outcomes. Of remaining village characteristics, only the proportion of low caste groups was a statistically significant influence. Higher land inequality was correlated positively with Left share, but was not statistically significant. In the panel, even the low caste proportion becomes unimportant, while the role of voter loyalty at the district level remains robust (last column of Table 9). Voter loyalties at the district level, in turn, are shown in Table 10 to be related to Congress presence in Parliament, lagged loyalty, and the regional inflation rate.

The third and fourth columns of Table 9 replace the district voter loyalty variable by its underlying determinants directly. These show that changing fortunes of the Left in GP elections (conditional on incumbency patterns) were driven mainly by changes in factors external to specific villages — presence of Congress in national Parliament, and the regional inflation rate — rather than changes in village characteristics.<sup>19</sup> The nature of these effects are intuitively plausible: rising inflation hurt the local incumbent, while rising Congress fortunes at the national level helped the Congress in GP elections in constituencies where they were already strong. This reflects the tendency for Congress ministers in the national government to favor their own constituencies in the location of central investment programs. Interestingly, a rise in the presence of the Congress at the national level also benefited the Left party in areas where the Left was traditionally powerful. This could reflect ability of the Left to gain mileage with voters by blaming a Congress-dominated national government for local problems.

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<sup>19</sup>Inclusion of lagged land reform in the village concerned on the right hand side did not yield a significant coefficient either, irrespective of whether it was included by itself or in interaction with incumbency.

## 4.2 Instrumental Variable Estimates of the Land Reform-Left GP share relationship

The preceding results imply that external and historical factors driving the fluctuations in Left control of local GPs are suitable instruments which can be used to correct for potential endogeneity of the Left share variable in the land reform regression. The presence of Congress in the national Parliament seems particularly suitable as an instrument, as this principally reflects the growing importance of coalition politics at the national level, and other events in the rest of the country (secessionist movements in Punjab and Kashmir, the assassinations of Indira Gandhi and Rajiv Gandhi which subsequently created a pro-Congress wave, rising power of regional parties and the Bharatiya Janata Party in other parts of India, and border tensions with Pakistan). These factors are likely to be uncorrelated with time-varying village specific voter preferences for land reform. Moreover, Table 9 shows we cannot reject the hypothesis of absence of serial correlation in the Left share regression after controlling for village fixed effects, which implies that incumbency (lagged Left share) is also a valid instrument.

Accordingly, we use the fourth column of Table 9 to predict the Left share in each GP, and then use these to generate instrumental variable estimates of the land reform-Left share regressions.<sup>20</sup>

## 4.3 Regression Specification

We now describe the regression specification implied by the theoretical model. Recall equation (10) which generates the land reform outcome in any village as a function of the Left share of the GP, and the policies pursued by the two parties. For village  $v$  in year  $t$ :

$$\pi_{vt} = q(LS_{vt})(\pi_{vt}^L - \pi_{vt}^R) + \pi_{vt}^R \quad (11)$$

where we use a quadratic formulation  $q(l) \equiv al + bl^2, l \in [0, 1]$  for Left control.

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<sup>20</sup>The correlation between the predicted and observed changes was .32, so the IV estimates are unlikely to suffer from a weak instrument problem.

The Left share of GP seats is jointly determined along with the policies chosen by the two parties, besides determinants of voter loyalties. Shifting voter loyalties also affect equilibrium policy choices in the model, by affecting relative competitive strength of the two parties. Equilibrium policies also depend on village characteristics affecting the demand for land reform from voters, besides the ideologically desired reforms by each party. Let  $LD_{vt}$  denote voter loyalty to the Left relative to the Congress, and  $S_{vt}$  a vector of distributional characteristics pertaining to land, literacy and caste in village  $v$  in year  $t$ . The policy of the Right party is then given by

$$\pi_{vt}^R = \lambda_0 + \lambda_1 LD_{vt} + \lambda_2 S_{vt} + \eta_{vt}^R \quad (12)$$

and the divergence in policies between the two parties by

$$\pi_{vt}^L - \pi_{vt}^R = \mu_0 + \mu_1 LD_{vt} + \mu_2 S_{vt} + \eta_{vt}^d, \quad (13)$$

where  $\eta_{vt}^R, \eta_{vt}^d$  denote regression residuals.

Combining the policy equations with (11), we obtain the following prediction for land reform:

$$\begin{aligned} \pi_{vt} = \lambda_0 &+ \lambda_1 LD_{vt} + \lambda_2 S_{vt} + \\ &+ \mu_0 q(LS_{vt}) + \mu_1 LD_{vt} * q(LS_{vt}) + \mu_2 S_{vt} * q(LS_{vt}) + \eta_{vt} \end{aligned} \quad (14)$$

The coefficient  $\mu_1$  represents the interaction between moral hazard and competition missing in the pure Downsian and ideology models. The Downsian model predicts no policy divergence ( $\mu_0 = \mu_1 = \mu_2 = 0$ ) and irrelevance of voter loyalties ( $\lambda_1 = 0$ ). The pure ideology model also implies irrelevance of voter loyalties ( $\mu_1 = \lambda_1 = 0$ ), while policy divergence is predicted ( $\mu_0 \neq 0, \mu_2 \neq 0$ ). The hybrid model predicts that voter loyalties matter for policy. If political moral hazard is severe enough in the sense explained in the previous section,  $\lambda_1 > 0, \mu_1 < 0$ .

Note that in the presence of significant interactions between moral hazard and competition, the land reform regression estimated previously was misspecified. The interaction effects are correlated with the Left share variable, causing the estimated coefficient of  $q(LS_{vt})$  to be biased. The sign of this bias depends on the sign of the interaction effect. If Case 1

applies, the moral hazard-competition interaction causes policy divergence to narrow and get reversed when voters shift loyalty to the Left, causing a downward bias in the estimated coefficient  $\mu_0$ .

#### 4.4 Empirical Results

Tables 11 and 12 present estimates of OLS and TLAD land reform regressions corresponding to (14) with village fixed effects. The TLAD specification takes the form

$$\pi_{vt} = \max[0, \lambda_v + \delta_{T(t)} + \theta_1 D_{Pt} + \theta_2 D_{Et} + \lambda_1 LD_{vt} + \lambda_2 S_{vt} + \mu_0 q(LS_{vt}) + \mu_1 LD_{vt} * q(LS_{vt}) + \mu_2 S_{vt} * q(LS_{vt}) + \eta_{vt}] \quad (15)$$

with the OLS specification being the corresponding uncensored version, where  $D_{Pt}$ ,  $D_{Et}$  denote pre-election and election year dummies,  $T(t)$  denotes the time-block corresponding to a given GP administration, and  $\eta_{vt}$  is an i.i.d. error term. Both versions with observed and predicted Left shares are shown for the TLAD estimates. Standard errors are clustered at the district level, and in the IV regressions are reported both with and without bootstrapping.<sup>21</sup> As before, the regressions control for land distribution, literacy and low caste proportions, besides dummies for different timeblocks, villages and election/pre-election year.

In the *patta* regressions reported in Table 11, we find a significant inverted-U with respect to Left share itself, and a negative, significant interaction between Left share and relative voter loyalty in the OLS-IV and TLAD-nonIV estimates. Table 12 shows the same for both versions of the TLAD *bargaland* regression, though these tend to become statistically insignificant based on the bootstrapped standard error estimates. The *bargadar* regression shows a statistically significant inverse-U with respect to Left share alone, but the interaction effects are not significant.

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<sup>21</sup>To guard against the possibility of serial correlation in the residuals for any given village not captured by village fixed effects, we use a block bootstrap as recommended by Bertrand, Duflo and Mullainathan (2004). All the data for a given village is kept as a single block, and 200 samples are generated by sampling with replacement from the observed data blocks. Both first stage and second stage regressions are run for each sample, so that the bootstrapped standard errors incorporate first stage prediction errors as well as serially correlated residuals.

Recall also that the model imposed the restriction that the same quadratic in  $LS_{vt}$  applies in levels and in the interaction with voter loyalty, i.e., the associated turning points of the level and interaction effects are the same. In all cases (except the *pattadar* TLAD IV regression where none of the effects are statistically significant) this prediction is generally borne out. Finally, the election year effect continues to be significant in the *bargadar* TLAD regressions.

The preceding results did not make full use of the land reform data available to us, which covers 1971–98. It turns out that a significant amount of land reform was carried out even preceding the advent of the Left Front government in 1977, comparable in magnitude to the reforms enacted in the years following 1978. This was a period of rising competitive pressure on the Congress administration at the level of the state government arising from the increasing political strength of the Left parties during the 1970s. However the pre-1978 period did not have any elected local governments, one reason that it was excluded in the previous regressions. The responsibility for implementing land reform still remained in the hands of the state bureaucracy during this period.

Another reason is that the quality of the pre-1978 land reform data is not as reliable as the post-1978 data. We have been informed by concerned land reform officials as well as the state government that many *pattas* handed out by the pre-1978 government were not genuine, as the records had been artificially inflated to show progress by the state in meeting targets of the ‘Twenty Point’ program of Prime Minister Indira Gandhi. Beginning in 1978, subsequent land records in local offices were cleaned as many fictitious *pattas* came to light, but it is still possible that some fictitious pre-1978 records may not have been identified by this scrutiny.

Nevertheless it could be argued that some competitive pressure on the pre-1978 Congress state government to implement land reform arose in a manner similar to the post-1978 period. The Congress was aware of the rising political aspirations of the Left Front, following the participation of the latter in the 1969-71 United Front ministry in the state. It was also concerned to restrict the influence of the ultra-left Naxalite party which had incited a violent conflict in the state in the late 60s. Since the Left did not have any elected

political position in the state during 1974–78, it corresponds to a post-1978 context where the Congress retained all the political power, i.e., a GP with a zero Left share.

Tables 13 and 14 extend the TLAD results reported above to including the preceding five year period 1974–78 (with GP Left share set equal to zero for that period). The *patta* regressions now present sharp evidence in favor of the hybrid model: statistically significant inverted-U with respect to Left share, significant negative interaction effects with loyalty swings, with the corresponding turning points almost exactly the same. The coefficient of the voter loyalty variable by itself is now also significant: the Congress enacted more land reform during 1974–78 in places where its popularity was declining faster (between 1972 and 1977). In addition, there is a significant pre-election year spike in *patta* activity. The evidence is therefore consistent with the view that the 1974–78 Congress administration in charge of implementing land reforms at that time, was influenced by competition from the rising popularity of the Left.

The results are similar for the *bargaland* regression in Table 14. In the case of the *bargadar* regression, we continue to find a significant inverted-U with respect to the Left share variables, a positive election-year spike, and a positive effect of the voter loyalty variable. The interaction effect continues to be imprecisely estimated, though its sign is consistently negative.

We therefore find some evidence consistent with the moral hazard-competition interaction hypothesis: shifts in voter loyalty in favor of the Left were associated with a reduction in the gap between the land reform efforts of the Left and the Congress. This provides part of the explanation for the inverted-U pattern of land reform with respect to Left share. Since there continues to be an inverted-U with respect to Left share despite controlling for this interaction effect, this is only part of the explanation. According to the theory the relation with respect to Left share ought to have been monotone, representing the effect of greater Left control *per se* over GP decisions (the function  $q$ ). The fact that we continue to find a non-monotone relation indicates that there are still unobserved components of voter loyalty not captured by our AVSD measure, which continues to bias downward the estimated slope with respect to Left share. An alternative explanation is that the distribution

of voter loyalty is thin towards the tails (rather than uniform as supposed in the model), in which case the proportion of marginal ‘swing’ voters declines when voter loyalties become more lopsided to favor the Left, causing a decline in land reform implemented by the Left.

The corresponding coefficients of other village characteristics in the *patta* and *barga* regressions for the 1978-98 period are shown in Table 15. The proportion of households receiving land titles was significantly higher when there were more marginal landowning households, fewer medium landowners, a smaller fraction of non-*patta* land was in small holdings below 5 acres, the poor (landless or marginal landowners) were less illiterate, and there were fewer low caste households in the village (who tend to be predominantly poor). This is consistent with the notion that the *patta* program was responsive to voter preferences and awareness: non-low-caste marginal and medium landowners are likely to have been the most politically active groups on either side of the land reform issue within villages.<sup>22</sup>

## 5 Concluding Comments

In summary, land reform implementation in West Bengal cannot be simply explained by the redistributive ideology of the Left Front *vis-a-vis* the Congress, combined with shifting voter loyalties that favored the Left. Electoral opportunism did matter: land reform effort of either party increased when electoral contests became less one-sided, and became higher during election years. We do not have any way to test for the existence of ideological differences *per se*, but the results are consistent with a model where the Left and the Congress are purely opportunistic and trade off rent-seeking or administrative slack while in power, with implications for the likelihood of winning future elections. The results provide support for the view that political institutions that increase political contestability

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<sup>22</sup>In the Left Front dominated regime, big landowners who used to be traditionally allied with the Congress, and identified as the ‘class enemy’ of the Left, have lost considerable political power. Medium landowners have correspondingly gained considerable power, as stressed by Bhattacharya (1999). Moreover, political ethnographies reported in Rogaly *et al* (1999) indicate that only a few selected low caste groups have been co-opted by the Left in village politics, while the remaining low caste and tribal groups continuing to be excluded.

(e.g., by limiting the scope for manipulation of electoral outcomes by incumbents to limit competition) can have important economic effects on growth and poverty reduction.

Other results of our analysis include the fact that electoral success of the Left in local government elections was driven primarily by factors exogenous to the villages concerned, pertaining to voter loyalties at the district level, based on economic and political events at the regional, state and national levels. This permitted us to isolate effects of a variety of exogenous events on the extent of land reform implemented. In turn it provides a way to identify the effect of these land reforms on various aspects of farm productivity and quality of governance within these villages, a task we are currently undertaking in related research on the effects of these land reforms.

The main shortcoming of our study pertains to the potential measurement error and endogeneity bias in with respect to controls for village characteristics such as equality in land distribution, population pressure, literacy and caste. It is possible that these were themselves affected by the land reform program, and there is clearly greater need to measure these more precisely. We are currently carrying out direct household surveys in order to better measure these and understand patterns of household fragmentation and migration, which should help to control for these factors better.

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| TABLE 1: DISTRICT-WISE ALLOCATION OF SAMPLE VILLAGES |                                 |                                                           |
|------------------------------------------------------|---------------------------------|-----------------------------------------------------------|
| DISTRICT                                             | NUMBER OF VILLAGES<br>IN SAMPLE | LEFT FRONT<br>PERCENT OF SEATS<br>IN GP (average 1978-98) |
| 24 Parganas (N)                                      | 6                               | 56                                                        |
| 24 Parganas (S)                                      | 8                               | 54                                                        |
| Bankura                                              | 5                               | 87                                                        |
| Birbhum                                              | 6                               | 56                                                        |
| Bardhaman                                            | 8                               | 84                                                        |
| Cooch-Behar                                          | 8                               | 85                                                        |
| Hooghly                                              | 6                               | 70                                                        |
| Howrah                                               | 4                               | 79                                                        |
| Jalpaiguri                                           | 5                               | 74                                                        |
| Malda                                                | 2                               | 60                                                        |
| Midnapur                                             | 8                               | 78                                                        |
| Murshidabad                                          | 6                               | 46                                                        |
| Nadia                                                | 5                               | 79                                                        |
| Dinajpur                                             | 4                               | 51                                                        |
| Purulia                                              | 8                               | 62                                                        |
| WEST BENGAL                                          | 89                              | 69                                                        |

**TABLE 2: VILLAGE CHARACTERISTICS  
IN SAMPLE VILLAGES, 1978 AND 1998**

|                                                                                                                                                                                                                                                              | 1978    | 1998    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|
| Number of households                                                                                                                                                                                                                                         | 228     | 398     |
| Operational land-household ratio (acre/hh)                                                                                                                                                                                                                   | 1.54    | 0.87    |
| % households landless                                                                                                                                                                                                                                        | 47.3    | 52.3    |
| % households marginal (0–2.5 acres)                                                                                                                                                                                                                          | 35.2    | 39.1    |
| % households small (2.5–5 acres)                                                                                                                                                                                                                             | 11.2    | 6.4     |
| % households medium (5–12.5 acres)                                                                                                                                                                                                                           | 4.7     | 2.0     |
| % households big (12.5– acres)                                                                                                                                                                                                                               | 1.6     | 0.3     |
| % land small                                                                                                                                                                                                                                                 | 56.7    | 73.9    |
| % land medium                                                                                                                                                                                                                                                | 23.9    | 18.5    |
| % land big                                                                                                                                                                                                                                                   | 19.5    | 7.6     |
| % poor households low caste                                                                                                                                                                                                                                  | 38.3    | 39.8    |
| % upto small households illiterate                                                                                                                                                                                                                           | 44.1    | 31.9    |
| % big households illiterate                                                                                                                                                                                                                                  | 4.4     | 3.2     |
| % households in nonagricultural occupation                                                                                                                                                                                                                   | 41.1    | 51.4    |
| Population-Bank ratio                                                                                                                                                                                                                                        | 41.6    | 23.1    |
|                                                                                                                                                                                                                                                              | 1981    | 1995    |
| Farm yield (value added Rs./acre)                                                                                                                                                                                                                            | 1009.22 | 5345.86 |
| Nominal hourly farm wage (Rs./hour)                                                                                                                                                                                                                          | 1.17    | 4.21    |
| Rice price, Rs./Kg (aus,lcl)                                                                                                                                                                                                                                 | 1.00    | 5.46    |
| Rice price, Rs./Kg (aman,lcl)                                                                                                                                                                                                                                | 1.19    | 4.35    |
| Cost of living index (1974=100)                                                                                                                                                                                                                              | 136.81  | 411.67  |
| Farm yield (in 1974 Rs./acre)                                                                                                                                                                                                                                | 737.69  | 1298.59 |
| Hourly farm wage (in 1974 Rs./hour)                                                                                                                                                                                                                          | 0.85    | 1.02    |
| ‘Poor’ household is either landless or marginal landowner                                                                                                                                                                                                    |         |         |
| ‘Upto small’ household is either landless, marginal or small landowner                                                                                                                                                                                       |         |         |
| All land information pertains to distribution of cultivable non- <i>patta</i> land owned                                                                                                                                                                     |         |         |
| Source: indirect household survey, except data on farm yield, rice prices and wages based on cost of cultivation farm surveys; and cost of living index (for agricultural workers) and population-bank ratio from West Bengal Economic Review, various years |         |         |

**TABLE 3: LAND DISTRIBUTION DATA FROM DIFFERENT SOURCES**

| SOURCE                                                                                          | YEAR | 0–2.5 acres<br>% land | 2.5–5 acres<br>% land | 5 acres and more<br>% land |
|-------------------------------------------------------------------------------------------------|------|-----------------------|-----------------------|----------------------------|
| Agricultural Census                                                                             | 1980 | 28                    | 32                    | 39                         |
|                                                                                                 | 1995 | 43                    | 29                    | 27                         |
| NSS                                                                                             | 1981 | 29                    | 29                    | 42                         |
|                                                                                                 | 1991 | 40                    | 31                    | 29                         |
| Indirect Survey                                                                                 | 1978 | 28                    | 28                    | 43                         |
|                                                                                                 | 1998 | 46                    | 28                    | 26                         |
| Source: West Bengal Agricultural Censuses, NSS Operational Land Survey 1991-92, Indirect Survey |      |                       |                       |                            |
| Census, NSS data pertain to operational holdings                                                |      |                       |                       |                            |
| Indirect Survey pertain to cultivable non-patta land owned                                      |      |                       |                       |                            |

**TABLE 4: LAND REFORMS**

|                                                 | 1978 Average | 1998 Average |
|-------------------------------------------------|--------------|--------------|
| % operational land vested (cumulative)          | 16.4*        | 15.3         |
| % operational land distributed                  | 1.4          | 5.4          |
| % hh's receiving <i>pattas</i>                  | 4.9          | 14.9         |
| % operational land leased                       | 2.7          | 4.2          |
| % operational land with registered <i>barga</i> | 2.4          | 6.1          |
| % hh's registered <i>bargadar</i>               | 3.1          | 4.4          |
| % tenants registered                            | 43.4         | 51.2         |
| *Only available for 34 villages                 |              |              |

**TABLE 5: TIME PROFILE OF LAND REFORM**

| Time<br>Block | # Villages<br>distr. pattas | % households<br>rcving pattas | % cult. area<br>distr. | # Villages<br>rgstrng | % hhs<br>rgstered | % cult. area<br>rgstered |
|---------------|-----------------------------|-------------------------------|------------------------|-----------------------|-------------------|--------------------------|
| 1978-83       | 34                          | 10.63                         | 3.46                   | 51                    | 3.28              | 3.75                     |
| 1983-88       | 38                          | 4.97                          | 1.34                   | 35                    | 1.13              | 0.95                     |
| 1988-93       | 37                          | 3.33                          | 0.55                   | 21                    | 0.48              | 0.25                     |
| 1993-98       | 20                          | 1.38                          | 0.19                   | 10                    | 0.13              | 0.08                     |

TABLE 6: SIMPLE TOBIT REGRESSIONS OF LAND REFORM  
ON LEFT SHARE OF GP SEATS: TIMEBLOCKS

|                                                                                                                   | PATTALAND        |                  | PATTADAR         |                  | BARGALAND        |                  | BARGADAR         |                  |
|-------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                                                                                                                   | Cross<br>Section | Tobit<br>Dist FE | Cross<br>Section | Tobit<br>Dist FE | Cross<br>Section | Tobit<br>Dist FE | Cross<br>Section | Tobit<br>Dist FE |
| % Left                                                                                                            | 1.08<br>(0.95)   | 0.02<br>(0.12)   | 1.64<br>(1.20)   | 0.23<br>(0.26)   | 2.43<br>(3.24)   | 0.06<br>(0.14)   | -0.18<br>(0.44)  | 0.08<br>(0.11)   |
| % Left Sq.                                                                                                        | -0.87<br>(0.80)  | -0.03<br>(0.10)  | -1.22<br>(1.01)  | -0.26<br>(0.22)  | -1.70<br>(2.71)  | -0.10<br>(0.12)  | 0.22<br>(0.37)   | -0.11<br>(0.09)  |
| Total Obs.                                                                                                        | 89               | 351              | 89               | 351              | 89               | 351              | 89               | 351              |
| Censored Obs.                                                                                                     | 13               | 225              | 13               | 225              | 19               | 239              | 19               | 239              |
| Turning Point                                                                                                     | 62               | 39               | 67               | 45               | 72               | 30               | 40               | 33               |
| pattaland/bargaland: percent cultivable land distributed in pattas/registered                                     |                  |                  |                  |                  |                  |                  |                  |                  |
| pattadar/bargadar: percent households receiving pattas/registered bargadars                                       |                  |                  |                  |                  |                  |                  |                  |                  |
| Data aggregated into five year timeblocks representing successive GPs                                             |                  |                  |                  |                  |                  |                  |                  |                  |
| Tobit estimates, with district fixed effects and time dummies<br>included in panel, not reported here.            |                  |                  |                  |                  |                  |                  |                  |                  |
| Patta cross-sections control for percent land vested in 1978<br>and population density in 1978                    |                  |                  |                  |                  |                  |                  |                  |                  |
| Cross-sections control for percent unregistered bargaland per household in 1978<br>and population density in 1978 |                  |                  |                  |                  |                  |                  |                  |                  |
| standard errors in parentheses; ***: significant at 1%, ** at 5%, * at 10%                                        |                  |                  |                  |                  |                  |                  |                  |                  |





TABLE 8: BARGA REGRESSIONS, YEARLY DATA 1978-98

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VILL. CHARACT. CONTROLS, DISTRICT/VILLAGE FIXED EFFECTS

|                                                                                                                                                                | BARGALAND             |                       |                 |                    | BARGADAR             |                       |                    |                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------|--------------------|----------------------|-----------------------|--------------------|--------------------|
|                                                                                                                                                                | OLS<br>VFE            | Tobit<br>DFE          | TLAD<br>VFE     | TLAD<br>VFE        | OLS<br>VFE           | Tobit<br>DFE          | TLAD<br>VFE        | TLAD<br>VFE        |
| 42 % Left                                                                                                                                                      | 0.01<br>(0.01)        | 0.13<br>(0.09)        | 0.43<br>(0.94)  | 1.10<br>(0.71)     | 0.02<br>(0.02)       | 0.08<br>(0.06)        | 0.51**<br>(0.20)   | 0.90***<br>(0.23)  |
| % Left Sq.                                                                                                                                                     | -0.01<br>(0.01)       | -0.17**<br>(0.08)     | -1.03<br>(0.97) | -0.66<br>(0.56)    | -0.02<br>(0.01)      | -0.11**<br>(0.05)     | -0.51***<br>(0.19) | -0.59***<br>(0.22) |
| % Left*% 1978 HH's<br>Landless                                                                                                                                 |                       |                       |                 | -0.82<br>(0.88)    |                      |                       |                    | -0.38<br>(0.47)    |
| % Left*% 1978 land<br>big                                                                                                                                      |                       |                       |                 | -2.88***<br>(1.08) |                      |                       |                    | -0.47*<br>(0.25)   |
| % Election year<br>Dummy                                                                                                                                       | 6.17e-3<br>(5.06e-3)  | 6.04e-3<br>(1.34e-2)  | 0.35<br>(0.26)  | -0.04<br>(0.03)    | 4.05e-3<br>(2.5e-3)  | 2.71e-3<br>(8.59e-3)  | 0.16***<br>(0.05)  | 0.00<br>(0.01)     |
| % Pre-election year<br>Dummy                                                                                                                                   | -3.55e-4<br>(1.74e-4) | -1.77e-2<br>(1.40e-2) | -0.04<br>(0.04) | 0.36<br>(0.31)     | 2.41e-5<br>(3.46e-4) | -1.08e-2<br>(8.99e-3) | 0.001<br>(0.011)   | 0.16***<br>(0.05)  |
| Total Obs.                                                                                                                                                     | 1755                  | 1755                  | 1755            | 1755               | 1755                 | 1755                  | 1755               | 1755               |
| Censored Obs.                                                                                                                                                  | 1588                  | 1588                  | 1588            | 1588               | 1588                 | 1588                  | 1588               | 1588               |
| No. Groups                                                                                                                                                     | 89                    | 89                    | 89              | 89                 | 89                   | 89                    | 89                 | 89                 |
| * Village controls include land distribution, illiteracy rates, proportion low caste.<br>Also included: timeblock dummies, and district/village fixed effects. |                       |                       |                 |                    |                      |                       |                    |                    |
| Standard errors in parentheses, clustered at district level for OLS;<br>***:significant at 1%, ** at 5%, * at 10%                                              |                       |                       |                 |                    |                      |                       |                    |                    |

**TABLE 9: LEFT SHARE REGRESSIONS**

|                                                                                   | Cross-Section<br>(OLS) | Cross-Section<br>(OLS) | Panel<br>(Ar-Bond) | Panel<br>(Ar-Bond) | Panel<br>(Ar-Bond) |
|-----------------------------------------------------------------------------------|------------------------|------------------------|--------------------|--------------------|--------------------|
| No. obs. (GPs)                                                                    | 57                     | 57                     | 221 (56)           | 221 (56)           | 221 (56)           |
| F-st(d.f.)                                                                        | 1.72(8,48)             | 3.05(9,47)             | 25.81(6,214)       | 13.90(14,206)      | 14.24(15,205)      |
| p-value, 2nd order                                                                |                        |                        |                    |                    |                    |
| ser. corr. diff. res.                                                             |                        |                        | .40                | .16                | .16                |
| Assembly Vote Share                                                               |                        | 1.32***                |                    |                    | 0.61**             |
| Difference, District                                                              |                        | (0.40)                 |                    |                    | (0.25)             |
| % Cong Seats                                                                      |                        |                        | -0.59***           | -0.64***           | -0.60***           |
| in Parliament                                                                     |                        |                        | (0.21)             | (0.23)             | (0.23)             |
| % Cong Seats Parlmt*                                                              |                        |                        | 1.26***            | 1.32***            | 1.33***            |
| Lagged GP LeftShare                                                               |                        |                        | (0.35)             | (0.38)             | (0.36)             |
| Growth Small                                                                      |                        |                        | 0.01               | 0.01               | 0.01               |
| Fact. Empl., District                                                             |                        |                        | (0.02)             | (0.02)             | 0.03               |
| Lagged Left Share                                                                 |                        |                        | -0.43**            | -0.50**            | -0.44**            |
| in GP                                                                             |                        |                        | (0.20)             | (0.22)             | (0.22)             |
| Inflation Rate                                                                    |                        |                        | 2.85***            | 2.75***            | 3.30***            |
|                                                                                   |                        |                        | (0.71)             | (0.70)             | 0.73               |
| Inflation Rate*Lagged                                                             |                        |                        | -5.70***           | -5.48***           | -5.96***           |
| GP Left Share                                                                     |                        |                        | (0.90)             | (0.90)             | (0.91)             |
| % HH Landless                                                                     | 0.28                   | 0.28                   |                    | 0.04               | 0.07               |
|                                                                                   | (0.44)                 | (0.40)                 |                    | (0.51)             | (0.50)             |
| % HH Marginal                                                                     | 0.15                   | 0.21                   |                    | 0.22               | 0.14               |
|                                                                                   | (0.49)                 | (0.45)                 |                    | (0.80)             | (0.73)             |
| % HH Small                                                                        | 0.01                   | -0.17                  |                    | -0.15              | -0.40              |
|                                                                                   | (0.48)                 | (0.44)                 |                    | (0.88)             | (0.80)             |
| % HH Medium                                                                       | 0.48                   | 0.43                   |                    | -4.13              | -3.32              |
|                                                                                   | (0.96)                 | (0.88)                 |                    | (2.56)             | (2.26)             |
| % Land Small                                                                      | 0.05                   | 0.06                   |                    | -0.19              | -0.10              |
|                                                                                   | (0.23)                 | (0.21)                 |                    | (0.40)             | (0.39)             |
| % Land Big                                                                        | 0.14                   | 0.04                   |                    | 0.07               | 0.05               |
|                                                                                   | (0.18)                 | (0.17)                 |                    | (0.21)             | (0.21)             |
| % Poor Illit.                                                                     | -0.14                  | -0.15                  |                    | 0.50               | 0.67               |
|                                                                                   | (0.12)                 | (0.11)                 |                    | (0.43)             | (0.48)             |
| % HH SC/ST                                                                        | 0.33***                | 0.25***                |                    | -0.21              | -0.37              |
|                                                                                   | (0.10)                 | (0.09)                 |                    | (0.50)             | (0.47)             |
| robust standard errors in parentheses; ***: significant at 1%, ** at 5%, * at 10% |                        |                        |                    |                    |                    |

| TABLE 10: AVSD (ASSEMBLY VOTE SHARE<br>DIFFERENCE) REGRESSIONS                    |                    |                    |
|-----------------------------------------------------------------------------------|--------------------|--------------------|
| No. ob s. (districts)                                                             | 75 (15)            | 75 (15)            |
| F-st (d.f.)                                                                       | 24.26 (7,67)       | 43.65 (8,66)       |
| p-value, test of 2nd order<br>serial correlation of<br>differenced residuals      | 0.11               | 0.10               |
| AVSD Lagged                                                                       | 0.36***<br>(0.12)  | 0.35***<br>(0.12)  |
| AVSD second lag                                                                   |                    | 0.21***<br>(0.06)  |
| Inflation Rate                                                                    | -0.90***<br>(0.12) | -0.78***<br>(0.14) |
| % Congress Seats<br>in Parliament                                                 | -0.12*<br>(0.06)   | -0.16**<br>(0.06)  |
| Growth in Small<br>Factory Employment                                             | -0.01*<br>(0.01)   | -0.01*<br>(0.01)   |
| Growth in Registered<br>Factories                                                 | 0.08<br>(0.07)     | 0.03<br>(0.08)     |
| Growth in Small Factories                                                         | 0.01<br>(0.01)     | 0.01<br>(0.01)     |
| Lagged % Left Front seats<br>in Assembly                                          | -0.01<br>(0.00)    | -0.01<br>(0.01)    |
| Arellano-Bond regressions, with district fixed effects                            |                    |                    |
| robust standard errors in parentheses; ***: significant at 1%, ** at 5%, * at 10% |                    |                    |

**TABLE 11: OLS & TLAD REGRESSIONS FOR PATTA ACTIVITY**  
**INCL. AVSD AND INTERACTIONS, YEARLY DATA 1978-98+**

|                        | PATTALAND |             |         | PATTADAR  |             |         |
|------------------------|-----------|-------------|---------|-----------|-------------|---------|
|                        | OLS-IV    | TLAD Non-IV | TLAD IV | OLS-IV    | TLAD Non-IV | TLAD IV |
| % LF in GP             | 0.05      | 1.43        | -0.19   | 0.14      | 1.73        | 0.92    |
| se                     | (0.03)*   | (0.90)      | (1.80)  | (0.14)    | (1.06)      | (1.54)  |
| bse                    | (0.01)*** | (1.91)      | (2.64)  | (0.07)**  | (1.57)      | (2.08)  |
| % LF sq.               | -0.06     | -2.30       | -0.52   | -0.15     | -2.52       | -1.67   |
| se                     | (0.02)**  | (1.01)**    | (1.41)  | (0.11)    | (1.08)**    | (1.28)  |
| bse                    | (0.01)*** | (1.72)      | (1.91)  | (0.05)*** | (1.33)*     | (1.60)  |
| AVSD                   | 0.001     | -0.51       | -5.03   | -0.06     | -1.48       | -5.62   |
| se                     | (0.04)    | (3.66)      | (8.24)  | (0.19)    | (1.36)      | (4.24)  |
| bse                    | (0.02)    | (4.82)      | (5.64)  | (0.10)    | (3.24)      | (4.43)  |
| AVSD*LF                | -0.25     | -13.44      | -0.59   | -0.71     | -12.67      | -0.51   |
| se                     | (0.14)*   | (11.30)     | (23.22) | (0.72)    | (6.23)**    | (11.02) |
| bse                    | (0.06)*** | (15.14)     | (15.85) | (0.36)**  | (9.77)      | (12.05) |
| AVSD*LF sq.            | 0.28      | 16.14       | 5.21    | 0.81      | 15.91       | 6.60    |
| se                     | (0.14)**  | (8.59)*     | (14.72) | (0.60)    | (6.53)**    | (7.44)  |
| bse                    | (0.06)*** | (12.30)     | (11.26) | (0.28)*** | (8.14)*     | (8.82)  |
| Election year Dummy    | -0.001    | -0.06       | -0.06   | -0.004    | -0.06       | -0.07   |
| se                     | (0.001)   | (0.08)      | (0.09)  | (0.004)   | (0.06)      | (0.06)  |
| bse                    | (0.001)** | (0.10)      | (0.11)  | (0.002)** | (0.06)      | (0.07)  |
| Pre-election yr. Dummy | 0.002     | 0.16        | 0.15    | -0.001    | -0.002      | -0.02   |
| se                     | (0.003)   | (0.16)      | (0.16)  | (0.005)   | (0.06)      | (0.06)  |
| bse                    | (0.002)   | (0.19)      | (0.18)  | (0.002)   | (0.07)      | (0.06)  |
| Total Obs.             | 1740      | 1755        | 1740    | 1740      | 1755        | 1740    |
| Censored Obs.          | 1558      | 1570        | 1558    | 1558      | 1570        | 1558    |
| No. Groups             | 88        | 89          | 88      | 88        | 89          | 88      |
| Turn Pt: % LF          | 46        | 31          |         | 48        | 34          | 27      |
| Turn Pt:<br>AVSD*% LF  | 46        | 42          |         | 44        | 40          | 04      |

+ For coefficients of village characteristics in IV regressions see Table 13.

se: standard errors, clustered at district level for OLS; bse: Block-bootstrapped standard errors

Village characteristics and timeblock dummies included, not reported here

\*\*\*: significant at 1%; \*\*:significant at 5%; \* at 10%

**TABLE 12: OLS & TLAD REGRESSIONS FOR BARGA ACTIVITY****INCL. AVSD AND INTERACTIONS, YEARLY DATA 1978-98+**

|                        | BARGALAND |             |           | BARGADAR   |             |           |
|------------------------|-----------|-------------|-----------|------------|-------------|-----------|
|                        | OLS-IV    | TLAD Non-IV | TLAD IV   | OLS-IV     | TLAD Non-IV | TLAD IV   |
| % LF in GP             | 0.01      | 4.62        | 8.62      | 0.03       | 0.93        | 2.56      |
| se                     | (0.02)    | (2.12)**    | (4.23)**  | (0.02)     | (0.69)      | (1.41)*   |
| bse                    | (0.01)    | (2.78)*     | (6.89)    | (0.01)***  | (0.91)      | (1.39)*   |
| % LF sq.               | 0.01      | -4.77       | -5.45     | -0.02      | -0.98       | -1.49     |
| se                     | (0.03)    | (1.82)***   | (2.63)*   | (0.02)     | (0.53)*     | (1.02)    |
| bse                    | (0.02)    | (2.39)**    | (4.87)    | (0.01)**   | (0.76)      | (1.01)    |
| AVSD                   | 0.02      | 3.84        | 10.12     | -0.001     | 0.03        | 1.16      |
| se                     | (0.03)    | (5.87)      | (5.57)*   | (0.03)     | (1.78)      | (2.59)    |
| bse                    | (0.03)    | (6.32)      | (10.14)   | (0.02)     | (1.56)      | (2.30)    |
| AVSD*LF                | 0.06      | -30.87      | -40.87    | 0.03       | -2.41       | -3.88     |
| se                     | (0.09)    | (18.03)*    | (50.02)** | (0.10)     | (5.47)      | (6.70)    |
| bse                    | (0.07)    | (22.11)     | (34.07)   | (0.05)     | (5.47)      | (6.79)    |
| AVSD*LF sq.            | -0.11     | 26.88       | 29.13     | -0.03      | 2.83        | 2.40      |
| se                     | (0.13)    | (13.33)**   | (14.00)** | (0.07)     | (3.96)      | (4.33)    |
| bse                    | (0.09)    | (17.11)     | (24.52)   | (0.04)     | (4.38)      | (5.11)    |
| Election year Dummy    | 0.006     | 0.30        | 0.26      | 0.004      | 0.16        | 0.14      |
| se                     | (0.005)   | (0.15)*     | (0.14)*   | (0.003)    | (0.05)***   | (0.05)*** |
| bse                    | (0.003)** | (0.16)*     | (0.13)**  | (0.001)*** | (0.06)**    | (0.05)*** |
| Pre-election yr. Dummy | -0.001    | -0.13       | -0.16     | 0.0001     | 0.0005      | -0.01     |
| se                     | (0.001)*  | (0.08)*     | (0.06)*** | (0.0004)   | (0.01)      | (0.02)    |
| bse                    | (0.001)   | (0.08)*     | (0.12)    | (0.0002)   | (0.02)      | (0.02)    |
| Total Obs.             | 1740      | 1755        | 1740      | 1740       | 1755        | 1740      |
| Censored Obs.          | 1573      | 1588        | 1573      | 1573       | 1588        | 1573      |
| No. Groups             | 88        | 89          | 88        | 88         | 89          | 88        |
| Turn Pt: % LF          |           | 49          | 79        | 97         | 47          | 86        |
| Turn Pt:<br>AVSD*% LF  | 25        | 57          | 70        | 52         | 42          | 81        |

+ For coefficients of village characteristics in IV regressions see Table 13.

se: standard errors, clustered at district level for OLS; bse: Block-bootstrapped standard errors

Village characteristics and timeblock dummies included, not reported here

\*\*\*: significant at 1%; \*\*:significant at 5%; \* at 10%

| <b>TABLE 13: TLAD REGRESSIONS FOR PATTA ACTIVITY</b>                                   |                        |                        |                        |                        |
|----------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|
| <b>INCL. INTERACTION EFFECTS, YEARLY DATA 1974–98</b>                                  |                        |                        |                        |                        |
|                                                                                        | PATTALAND              |                        | PATTADAR               |                        |
|                                                                                        | Obs. % LF<br>T-LAD VFE | Inst.% LF<br>T-LAD VFE | Obs. % LF<br>T-LAD VFE | Inst.% LF<br>T-LAD VFE |
| % LF in GP                                                                             | 1.60***<br>(0.57)      | 2.23**<br>(0.97)       | 1.94**<br>(0.83)       | 2.09**<br>(0.94)       |
| % LF sq.                                                                               | -1.85***<br>(0.65)     | -1.94**<br>(0.97)      | -2.32***<br>(0.86)     | -2.37***<br>(0.91)     |
| AVSD                                                                                   | 1.78***<br>(0.54)      | 1.65***<br>(0.60)      | 1.96***<br>(0.62)      | 1.58**<br>(0.73)       |
| AVSD*LF                                                                                | -9.68***<br>(3.10)     | -10.60**<br>(4.97)     | -13.36***<br>(4.35)    | -14.78***<br>(3.75)    |
| AVSD*LF sq.                                                                            | 11.01***<br>(3.84)     | 11.34**<br>(5.05)      | 13.58***<br>(4.59)     | 15.14***<br>(3.52)     |
| Election year<br>Dummy                                                                 | 0.003<br>(0.04)        | -0.002<br>(0.04)       | -0.06<br>(0.05)        | -0.05<br>(0.06)        |
| Pre-election<br>year Dummy                                                             | 0.23*<br>(0.13)        | 0.23*<br>(0.12)        | 0.11**<br>(0.05)       | 0.11*<br>(0.05)        |
| Total Obs.                                                                             | 2200                   | 2185                   | 2200                   | 2185                   |
| Censored Obs.                                                                          | 1972                   | 1960                   | 1972                   | 1960                   |
| No. Groups                                                                             | 89                     | 89                     | 89                     | 89                     |
| Turn Pt: % LF                                                                          | 43                     | 57                     | 42                     | 44                     |
| Turn Pt:<br>AVSD*% LF                                                                  | 44                     | 47                     | 49                     | 49                     |
| Village characteristics and timeblock dummies included, not reported here              |                        |                        |                        |                        |
| Standard errors in parentheses. ***: significant at 1%; **:significant at 5%; * at 10% |                        |                        |                        |                        |

**TABLE 14: TLAD REGRESSIONS FOR BARGA ACTIVITY****INCL. INTERACTION EFFECTS, YEARLY DATA 1974–98**

|                            | BARGALAND              |                        | BARGADAR               |                         |
|----------------------------|------------------------|------------------------|------------------------|-------------------------|
|                            | Obs. % LF<br>T-LAD VFE | Inst.% LF<br>T-LAD VFE | Obs. % LF<br>T-LAD VFE | Inst. % LF<br>T-LAD VFE |
| % LF in GP                 | 3.66**<br>(1.79)       | 4.97**<br>(2.06)       | 0.94*<br>(0.54)        | 1.05<br>(0.73)          |
| % LF sq.                   | -3.88**<br>(1.79)      | -3.57**<br>(1.53)      | -1.03**<br>(0.51)      | -0.82<br>(0.60)         |
| AVSD                       | 0.95*<br>(0.53)        | -1.44<br>(0.89)        | 0.42*<br>(0.22)        | 0.59***<br>(0.22)       |
| AVSD*LF                    | -15.14*<br>(8.58)      | -9.98*<br>(6.06)       | -2.32<br>(1.92)        | -0.19<br>(1.64)         |
| AVSD*LF sq.                | 14.74*<br>(8.30)       | 7.83<br>(5.45)         | 2.54<br>(2.15)         | 0.48<br>(1.73)          |
| Election year<br>Dummy     | 0.48<br>(0.30)         | 0.43<br>(0.34)         | 0.17***<br>(0.05)      | 0.17***<br>(0.04)       |
| Pre-election<br>year Dummy | -0.14**<br>(0.07)      | -0.19**<br>(0.08)      | -0.02<br>(0.02)        | -0.04<br>(0.02)         |
| Total Obs.                 | 2200                   | 2185                   | 2200                   | 2185                    |
| Censored Obs.              | 1987                   | 1972                   | 1987                   | 1972                    |
| No. Groups                 | 89                     | 89                     | 89                     | 89                      |
| Turn Pt: % LF              | 47                     | 70                     | 46                     | 64                      |
| Turn Pt:<br>AVSD*% LF      | 51                     | 64                     | 46                     |                         |

Village characteristics included, not reported here

Standard errors in parentheses. \*\*\*: significant at 1%; \*\*:significant at 5%; \* at 10%

| TABLE 15: VILLAGE CHARACTERISTICS, IV TLAD REGRESSIONS                           |           |           |           |           |
|----------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|
| INCL. AVSD AND INTERACTIONS, YEARLY DATA 1978-98+                                |           |           |           |           |
|                                                                                  | PATTALAND | PATTADAR  | BARGALAND | BARGADAR  |
| % HH Landless                                                                    | -3.65     | 0.32      | 0.67      | -2.85     |
| se                                                                               | (3.96)    | (1.07)    | (3.83)    | (1.33)**  |
| bse                                                                              | (5.13)    | (2.34)    | (4.34)    | (1.90)    |
| % HH Marginal                                                                    | -2.92     | 3.35      | -2.38     | -1.90     |
| se                                                                               | (2.86)    | (1.15)*** | (3.16)    | (1.22)    |
| bse                                                                              | (5.46)    | (2.89)    | (4.22)    | (1.76)    |
| % HH Small                                                                       | -5.20     | 1.52      | 3.83      | -0.23     |
| se                                                                               | (3.10)*   | (1.52)    | (5.06)    | (0.96)    |
| bse                                                                              | (6.41)    | (2.58)    | (4.60)    | (1.48)    |
| % HH Medium                                                                      | -13.12    | -8.66     | -1.94     | -1.60     |
| se                                                                               | (7.93)*   | (2.39)*** | (2.08)    | (1.13)    |
| bse                                                                              | (10.58)   | (4.09)**  | (4.55)    | (1.42)    |
| % Land Small                                                                     | -1.57     | -2.88     | 0.96      | -0.25     |
| se                                                                               | (2.30)    | (1.05)*** | (1.30)    | (0.19)    |
| bse                                                                              | (2.88)    | (1.30)**  | (1.66)    | (0.36)    |
| % Land Big                                                                       | 0.19      | 0.21      | -0.05     | -0.10     |
| se                                                                               | (0.28)    | (0.32)    | (0.32)    | (0.19)    |
| bse                                                                              | (1.01)    | (0.59)    | (0.50)    | (0.15)    |
| % Poor Illiterate                                                                | -2.13     | -1.21     | -0.24     | 0.66      |
| se                                                                               | (1.13)*   | (0.63)*   | (0.70)    | (0.14)*** |
| bse                                                                              | (1.73)    | (0.85)    | (1.15)    | (0.33)**  |
| % HH SC/ST                                                                       | -7.35     | -0.08     | -4.70     | -0.62     |
| se                                                                               | (1.65)*** | (0.94)    | (1.13)*** | (1.40)    |
| bse                                                                              | (4.23)*   | (1.10)    | (4.41)    | (0.96)    |
| + Coefficients of village characteristics in IV regressions in Tables 11 and 12. |           |           |           |           |
| se: standard errors; bse: Block-bootstrapped standard errors                     |           |           |           |           |
| ***: significant at 1%; **:significant at 5%; * at 10%                           |           |           |           |           |



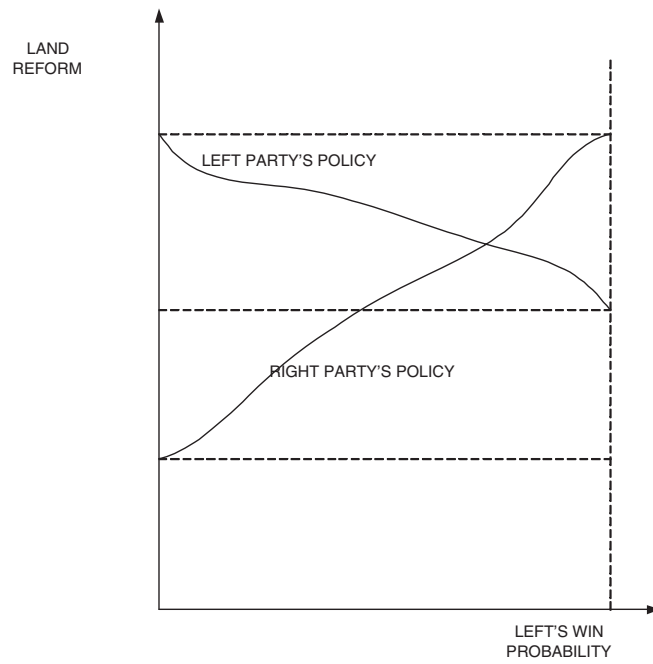


Figure 1: CASE 1: POLITICAL MORAL HAZARD EFFECT DOMINATES

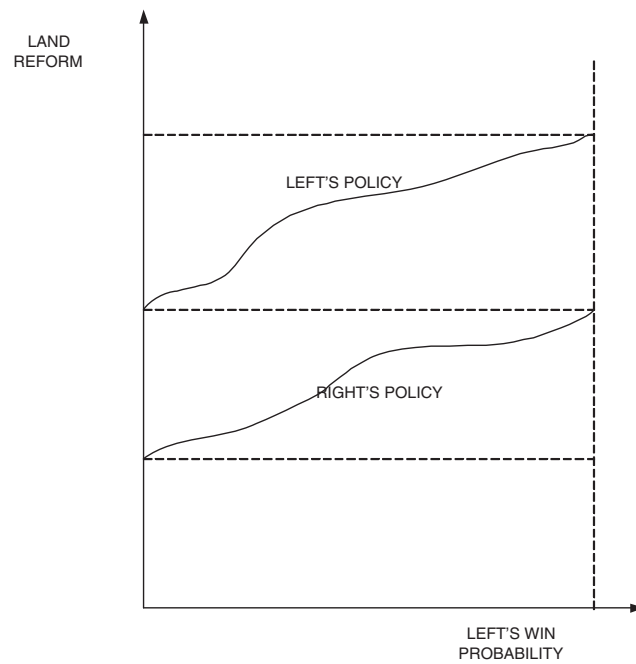


Figure 2: CASE 2: IDEOLOGY DOMINATES