DETERMINANTS OF REDISTRIBUTIVE POLITICS:

An Empirical Analysis of Land Reforms in West Bengal, India'[1]

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Abstract

We investigate political determinants of land reform implementation in the Indian state of West Bengal. Using a village panel spanning 1974–98, we do not find evidence supporting the hypothesis that these can be explained by differences in redistributive ideologies of the Left Front and the Congress party, i.e., their relative control of local governments. Instead, the evidence is consistent with the role of opportunism (re-election concerns) and electoral competition.

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1 Introduction

In this paper we investigate political determinants of land reform implementation in the eastern India state of West Bengal since the late 1970s. 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.[4] Despite this, the extent of land reforms enacted typically remains small in most developing countries 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)).[5] It can 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*. Accordingly there is an urgent need to understand better the determinants of political will of elected governments to implement land reforms.

Theoretical models of political economy are frequently classified (see, e.g., Roemer (2001)) according to the motivation of competing parties or candidates, as either

[4]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. Moreover, 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.

[5]The latter stem from poor state of land records, pervasiveness of legal loopholes and legal systems ill-equipped to deal with large volumes of litigation.

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) are based on the former assumption stress the role of *competition* and electoral opportunism.[6] 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 heterogenous policy preferences, rather than the intensity of political competition or preferences of median voters.

[6]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. In the presence of interest groups such convergence does not obtain. But as indicated later in the paper, the predictions of such an extension with interest groups is similar to the quasi-Downsian model developed in this paper: increased competition makes both parties more responsive to voter preferences.

Not much is known, however, about the relative importance of electoral competition and heterogenous policy preferences of elected officials, in determining redistributive effort of governments. This is important in terms of understanding the way that democracies promote responsiveness of government to voter needs and preferences. The nature of land reform and political competition in West Bengal over the past quarter century provides an opportunity to test the two competing theories in a simple and compelling way. 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 Trinamul Congress) that has traditionally represented interests of big landowners in rural areas. Given the nature of these traditional ideologies and key constituencies of the two parties, the ideology hypothesis predicts that the extent of land reform should rise as the composition of local governments (key implementing agencies in West Bengal villages) swings in favor of the Left Front coalition. In contrast, the Downsian theory predicts these should have no effect. If the latter approach is extended to incorporate policy-nonconvergence across competing parties owing to moral hazard (or special interest influence), we show in Section 3 of the paper that the resulting quasi-Downsian approach predicts an inverted-U relationship between Left control of local governments and land reform implementation.

Simple regressions or plots between land reform implementation and the Left share of local governments (shown in Section 2) fail to show any significant positive relationship, in either cross-village data or a village panel. Instead, the raw pattern in the data resembles an inverted-U, suggesting the role of political competition.

Section 3 presents a theoretical model which nests the principal hypotheses as special cases. The model is characterized by probabilistic voting, co-existence of heterogenous redistributive preferences of two competing parties, and a mixture of opportunism (i.e., re-election concerns) and (current) rent-seeking motives of their

candidates. In particular, elected officials may be 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).[7] Under specific parameter values (reflecting low heterogeneity of redistributive preferences, relative to opportunistic motives), interactions between moral hazard and electoral competition generate an inverted-U relationship: a more lop-sided electoral contest (arising from more skewed preferences amongst voters in favor of one party) translates into lower redistributive effort by the dominant party. With greater heterogeneity of policy preferences, there is a monotone relationship between redistributive effort and party composition, as predicted by a pure citizen-candidate model.

The probabilistic voting model is thereafter used to guide the empirical specification. The impact of rising Left share of local government seats on land reform reflects rising competitive strength of the Left Front coalition *vis-a-vis* the Congress, as represented by the realization of voter loyalty shocks. The latter can be proxied by differences in vote shares between the two parties in preceding elections to the state Assembly (rather than the local government elections), averaging across different constituencies in a district. In other words, the relative popularity of the two parties in the region in which the village happens to be located, is reflected in this difference in vote shares in Assembly elections (typically held two years prior to local government elections). The competition effect generated by the hybrid quasi-Downsian model is represented by a negative interaction effect between this measure of voter loyalty shocks and the Left share of local government seats, after controlling for the Left share *per se*, village demographic and land characteristics, village and year dummies. The direct effect of control is represented by the (possibly quadratic) effect of the

[7]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.

Left share alone, which the citizen candidate or 'ideology' model would predict to be positive, and the Downsian model predicts to be zero.

We apply this regression to yearly data for land reform implementation in a sample of 89 villages in West Bengal, spanning the period 1974–98. The econometric analysis additionally incorporates endogenous censoring (as many villages do not implement any reforms in various years), and potential endogeneity of the Left share. For the latter, we use a range of instruments pertaining to relative strength of the two parties based on events at the district, state and national levels, interacted with local incumbency patterns.

The empirical results continue to find no evidence in favor of significant heterogeneity in policy preferences of elected officials from the two parties. The effect of Left share continues to follow an inverted-U, the statistical significance of which varies with the exact specification and time period used. In some versions we find evidence of the negative interaction predicted by the theory between voter loyalty swings in favor of the Left, and Left share. However, the latter results are not statistically robust. In other words, we cannot firmly discriminate between the quasi-Downsian theory (stressing the role of rent-seeking or moral hazard over and above concern for re-election) *vis-a-vis* the pure Downsian theory. In any case the evidence is more consistent with either of these theories, rather than heterogeneity of redistributive preferences.

We also find additional direct evidence for the importance of electoral competition: the timing of land reforms were concentrated in election or pre-election years, and voter preferences and awareness mattered in the way a competition-based model would predict.

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 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.[8] 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

[8] 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).

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*, as it is commonly referred to in West Bengal) 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 form of land titles or *pattas* to landless households, and (b) the tenancy registration program called *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. Shares accruing to landlords were capped (at 25%, or 50% if the landlord provided all material inputs).

In what follows we will refer to the issuing of *pattas* or land titles simply as the *titling program*. In the empirical analysis we will use the proportion of cultivable area or households receiving these as the key measures of implementation of the titling program, and refer to them simply as the percent area and percent households titled.[9] We shall refer to the other program as the tenancy registration program or Operation Barga. Corresponding measures of the implementation of this program will be the proportion of cultivable area or households registered.[10]

A massive mass-mobilization campaign involving party leaders, local activists and the administrators was mounted to identify landowners owning more land than the ceiling, or leasing to sharecroppers. 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

[9] Of course, other landowners will hold titles to land they have purchased or inherited. These will not be included in our measures of titling.

[10] We discuss further below the rationale for choice of these particular measures.

average of 1.34%.

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.[11] The selected villages are those for which we could obtain farm-level production records from cost of cultivation surveys carried out by the state's agriculture department using a stratified random sampling frame.[12]

For each of these villages, we visited the concerned local Block Land Records Office (BLRO) which vest land, issue land titles and register tenants. We collected data for all land titles 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.[13]

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 between 1978 and 1998.

[11] 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.

[12] Two blocks were randomly selected (from approximately twenty) within each district, and two villages within each chosen block.

[13] Since the unit of observation is the village in question, there are no problems of attrition.

We use this to compute the Left share of each GP in any given year.[14] 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. We subsequently interpolate these to form a yearly series. The rationale for this is that the distribution of voter characteristics serves as a control for the regressions, and no other comparable yearly series is available. Data on the distribution of land for individual villages in our sample is not available from any existing source. We made efforts to compile these from land records in the local Block Land Records Offices, but did not prove practical on account of the fact that the records are kept on a plot-by-plot basis, and in a way that makes it impossible to identify the aggregate landholdings of any given household. 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).

To overcome these problems, we conducted an indirect household survey, on the basis of voter lists for the 1998 and 1978 elections.[15] Detailed interviews with 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).[16]

[14]Prior to 1978, the chief implementing agency was the land reforms department of the state government, which was dominated by the Congress. In one version of the empirical analysis we include the period prior to 1978, and set the Left share to zero during that period.

[15]In about 20 GPs the 1978 voter lists were not available so we used the 1983 lists instead for those, and then interpolated (or extrapolated for years prior to 1983) on this basis.

[16]The information provided was cross-checked across different elders, and adjusted thereby until

This 'indirect' household survey procedure has the advantage of eliciting rich community information concerning the distribution of land, and avoiding problems stemming from reluctance of individual households from declaring their assets to outside surveyors.[17] 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 on the basis of the household survey, 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 land (excluding those distributed in the titling program). 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

a consensus was reached among them.

[17]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.

share of small holdings below 5 acres from 57% to 74%. Since these pertain to non-titled land, these reflect the effect of land market transactions and intra-household 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.

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 to the landless. Approximately 70–75% all land titles distributed until 1998 had been distributed after 1978. Most of the distributed land was cultivable (ranging between 70 and 90%). We shall therefore focus on land titling rather than vesting operations when examining the land redistribution program.

Distributed 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 land titles was 15%, higher than the proportion of operational land area distributed. Title holders constituted about 30% of all landless households, 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. One typically expects appro-

priation 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.[18] Irrespective of which is the correct story, it is evident that 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 a role.

Equally surprising is how small the titling 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-titled land (i.e., by which we mean 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-titled (i.e., non-*patta*) land

[18]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.

as an independent determinant of voter demand for land reform.

Turning now to the tenancy registration program, 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%.[19] Hence the tenancy registration program represented approximately the same land area, but one third the number of households benefiting from the titling program. The proportion of tenants 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 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

To obtain a preliminary feel for the relationship between land reform implementation and Left control of GPs, Table 6 presents simple regressions of different measures of

[19]The proportion of area or households reported under tenancy in the indirect survey is approximately 4%, less than the proportion registered. This indicates that the extent of tenancy was likely to have been under-reported in the household survey. We therefore report the proportion of total cultivated area and of total number of households that were registered in the program (as revealed by the local land records directly) as a more reliable indicator of the size of this program.

For West Bengal as a whole, the Operational Holdings survey of the National Sample Survey (NSS) for the year 1991-92 indicates that 14% of all operational holdings (and 10.4% of the area) was leased in. Of these 3.7% were fixed rent tenants, while 8.8% were sharecroppers. Of the total area leased in, about 48% was on sharecropped contracts, and 19% on fixed rent contracts. Hence on the basis of the NSS estimates the extent of sharecropping tenancy in the state seems to have been of the order of 5% of operational area. In light of this, our estimates of the coverage of the tenancy registration program do not seem unreasonably low.

land reforms implemented with respect to the Left share of GP seats. The different measures include proportion of non-titled (i.e., non-*patta*) cultivable land and proportion of households covered by either titling and tenancy registration programs. We do not use the proportion of tenants registered 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 tenants were recorded in the 1970s in those villages. The proportion of tenants registered cannot be computed for these villages. We therefore express the scale of the programs relative to the total cultivable area and number of households in the village instead.[20]

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[21], and use dummies for districts as well as for the four time blocks.[22] The cross-section titling 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

[20]This does have the shortcoming that the effect of a given level of effort by elected officials to implement tenancy reforms on proportion of areas or households covered would be proportional to the pre-existing level of tenancy. The unreliability of the tenancy reports in the indirect household survey leave us with no practical alternative. Note also that the proportion of tenants registered is not a perfect measure either, as it ignores the scale of effort involved for elected officials.

[21]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.

[22]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.

cross-section tenancy registration regressions control for the extent of unregistered land or households in 1978, which represented the potential for registration.

In no case do we see evidence of a statistically significant relationship of land reforms implemented with Left control of the local GP. The point estimates of the regression coefficients imply that this relationship takes the form of 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 contrary to both the pure 'ideology' model and the pure Downsian model. Of course, the absence of a statistically significant relationship may be viewed as consistent with the Downsian model. But one cannot rely entirely on these simple regressions: a more careful empirical analysis is needed to assess the relationship between party composition and policy outcomes, involving appropriate specification of the regressions, choice of controls, treatment for endogenous censoring and possible endogeneity of the Left share. For this one needs a theoretical framework first, a task we turn to next.

3 Theoretical Model

In this section we develop a model which generalizes the Downsian theory of two-party competition to accommodate heterogenous policy preferences of candidates, and moral hazard or rent-seeking among elected officials. The model nests Downsian and 'ideology' theories as special cases, and is shown to be consistent with an inverted-U relationship suggested by the preliminary regressions above. We use this model thereafter to formulate the regression specifications in the following Section.

We extend the Grossman-Helpman (1996) model of two party electoral competition with probabilistic voting to accommodate differing policy preferences across the two parties, as well as rent-seeking or moral hazard among elected officials. 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 α_c. Elected governments select a policy π 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 π_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 τ_c of class c voters turn out to vote in the election. Of these, a further fraction β_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.[23]

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 ϵ^d_{ct}. An aware voter in class c with loyalty ϵ 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

[23]Grossman and Helpman refer to them as 'informed' and 'uninformed' in their 1996 article, and as 'strategic' and 'impressionable' in their 2001 book.

parties, an impressionable voter with relative loyalty ϵ 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

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

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

$$V_L = \frac{1}{2} + \frac{1}{\sum_c \alpha_c \tau_c}[\sum_c \frac{\tau_c}{f_c}\epsilon^d_{ct} + \sum_c \alpha_c \frac{\tau_c \beta_c}{f_c}\{U_c(\pi_L) - U_c(\pi_R)\} + \chi(M_L - M_R)]. \tag{2}$$

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 ϕ_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 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^i_c 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 π^*_i maximizes $\sum_c \alpha_c w^i_c U_c(\pi)$.

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 arises 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 $E_i - e_i(\pi)$.

Finally, the two parties may differ with respect to their respective costs of election campaigns: we assume a campaign of size M_i costs party i an amount $\theta_i M_i$, where θ_i is a given parameter representing the party's skill (or lack thereof) in raising funds and organizing campaigns. 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

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

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 δ_i the discount factor of a party i incumbent. Then this incumbent will select π_i, M_i to maximize

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

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 ($e_i(\pi_i) \equiv 0$).[24] 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 party-specific policy preferences. 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.[25] 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 cam-*

[24]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 π_i chosen by i must maximize the probability of winning ϕ_i. Expression (2) shows that both parties will select the same policy π^* which maximizes $\sum_c \alpha_c \gamma_c U_c(\pi)$, where $\gamma_c \equiv \tau_c \beta_c f_c$.

[25]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'.

paign levels, voter utilities are differentiable, and the policy space is an open interval of a Euclidean space. The policy choice π_i^* of party i will maximize

$$\sum_c \alpha_c \mu_c^i U_c(\pi) - e_i(\pi) \tag{5}$$

where the welfare weights are given by

$$\mu_c^i = w_c^i + \frac{\theta_i}{\chi . \phi_i^*} \frac{\tau_c \beta_c}{f_c} \tag{6}$$

and ϕ_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

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

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

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

from which the result follows.

Equilibrium winning probabilities ϕ_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 π_i^* have the property that they maximize

$$\sum_c \alpha_c \mu_c^i U_c(\pi_i) - e_i(\pi_i), \tag{9}$$

a mixture of ideological, opportunistic and rent-seeking motives. Expression (6) shows the implicit welfare weight μ_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 ϕ_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 π^* in the GP is given by

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

Let π_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 π^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 π 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 π^D strictly exceeds the ideal policy π_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 π_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.[26]

INSERT FIGURES 1,2 HERE

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:

[26] 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 π_L^I while the Right party will approach the Downsian policy π^D. Hence there will exist some value of ϕ_L^* where their respective policies will cross.

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. The absence of a positive observed relation of land reform with Left share would be consistent with the pure ideology hypothesis only if unobserved preferences for land reform were negatively correlated with the success of the Left Front. This seems rather 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.

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 were the principal

adversaries in the state assembly elections, as well as elections for seats representing West Bengal constituencies in the national Parliament (*Lok Sabha*) .

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. Conversely, 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 7 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 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 (AVSD, hereafter) 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. State assembly elections are also held every five years but interspersed with elections to local governments. There is typically a two or three year period separating Assemble elections and GP elections. The AVSD from the last state Assembly election usually provides a signal of the competitive strength of the two parties in the nearest Assembly constituency. To remove the influence of issues concerning the local area in which a GP is located, we average the AVSD across all constituencies in the district.[27]

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 dominates 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 7 shows results of the GP Left share regression applied to five successive GP elections (1978, 1983, 1988, 1993 and 1998). The regressions control for village land distribution, illiteracy rate among landless, marginal and small landowners,

[27]There are approximately twenty assembly constituencies per district.

and proportion of households in scheduled castes and tribes. The first column shows cross-section least squares results, while the remaining three show the panel estimates (which include village and year dummies). In the panel we use the Arellano-Bond (1991) estimator to avoid the bias that arises from a lagged dependent variable (incumbency, i.e., Left share in the previous GP election) 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 regression shows that the assembly vote share difference at the district level was a strong predictor of local GP outcomes. The second and third columns of Table 7 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.[28] 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 probably reflects ability of the Left to gain mileage with voters by blaming a Congress-dominated national government for local problems. The last column of Table 7 shows that even after controlling for these fac-

[28]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.

tors, the district level vote share difference in the previous Assembly elections remains significant as a determinant of Left share in the GP election.

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

The preceding results suggest that external and historical factors driving the fluctuations in Left control of local GPs could be used as suitable instruments to correct for potential endogeneity of the Left share variable in the land reform regression. This requires the assumption that these factors were unrelated to village-specific time-varying factors affecting land reforms, after controlling for their effects on GP election outcomes. This assumption seems particularly credible for the presence of Congress in the national Parliament. This variable principally reflects the growing importance of coalition politics at the national level, and other events in the rest of the country.[29] Moreover, Table 7 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 third column of Table 7 to predict the Left share in each GP, and then use these to generate instrumental variable estimates of the land reform-Left share regressions.[30]

[29] These include seccessionist 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.

[30] The correlation between the predicted and observed changes was .32.

4.3 Regression Specification

We now describe the regression specification implied by the theory. 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:

$$\pi_{vt} = q(LS_{vt})(\pi^L_{vt} - \pi^R_{vt}) + \pi^R_{vt} \tag{11}$$

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

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. Recall that policies are chosen by elected officials in a given administration partly with an eye to their re-election prospects in the *next* election. Hence the implicit welfare weights in (6) are based on the best estimate available to the officials of their win probability in the next election. Let LD_{vt} denote a signal available to parties concerning voter loyalty to the Left relative to the Congress. Also let S_{vt} denote a vector of distributional characteristics pertaining to land, literacy and caste in village v in year t. The policy of the Right party can then be represented by

$$\pi^R_{vt} = \lambda_0 + \lambda_1 LD_{vt} + \lambda_2 S_{vt} + \eta^R_{vt} \tag{12}$$

and the divergence in policies between the two parties by

$$\pi^L_{vt} - \pi^R_{vt} = \mu_0 + \mu_1 LD_{vt} + \mu_2 S_{vt} + \eta^d_{vt}, \tag{13}$$

where η^R_{vt}, η^d_{vt} denote regression residuals.

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

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

The coefficient μ_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 μ_0.

4.4 Empirical Results

To operationalize this approach, we need a variable representing LD_{vt}, a signal of relative voter loyalties to the Left available to elected officials prior to the election. One possible signal is $AVSD_{vt}$, the average vote share difference between the two parties in the preceding state Assembly elections in the local area. Another is LS_{vt}, the proportion of seats secured by the Left in the local GP in the preceding panchayat election. Either or both of these could be used. We prefer to use the former, the Assembly vote share difference, for a number of reasons. First, with state Assembly elections held halfway between panchayat elections, the most recent Assembly results provide a more up-to-date signal of voter loyalties for at least the second half of the current GP administration. In addition, the interaction term can be simply interpreted: as the extent to which rising competitive strength within a broader area

and context (the district assembly elections) motivates a slackening of land reform effort. Second, using LS_{vt} would imply that the key interaction between $q(LS_{vt})$ would reduce to a higher-order term involving LS_{vt}. This interaction would then be difficult to distinguish from (a higher-order term in a polynomial approximation to) the effect of Left control of the local GP represented by $q(LS_{vt})$.[31]

One useful indication of pressures of electoral competition is the presence of spikes of reform effort in periods immediately preceding elections. Such spikes are difficult to reconcile with the intrinsic policy preferences or ideological concerns. We shall therefore run the regression on data at the village-year level, adding dummies for election and pre-election years.

This compounds the problem of censoring in the data. Table 5 indicated that in most five-year timeblocks, upwards of two-thirds of all villages did not carry out any titling or tenancy registration at all. The extent of censoring is even higher when the data is organized at the yearly level: upwards of 1500 village years out of a total of 1740 witnessed no *patta* distribution or tenancy registration. Accordingly, the regression ought to incorporate endogenous censoring, which is challenging in the context of panel data (since the resulting nonlinearity of the model implies that village dummies cannot be 'washed out' by taking inter-year deviations for any given village).

In what follows we deal with the censoring problem as follows. First we estimate the tobit version of the regression, using 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

[31] It is difficult to know for sure the exact nature of non-linearity of $q(.)$, i.e., the way that the control of the GP varies with the Left share of seats. Moreover, if $q(.)$ is represented by a quadratic, the interaction term would reduce to a cubic term in LS_{vt}, which would also raise multicollinearity problems and reduce statistical precision.

the distribution of time-varying residuals. These are reported in Tables 8 through 11 below, along with corresponding OLS panel regressions that do not adjust for censoring.

Later we shall estimate the probability that a village in any given year carried out some *patta* distribution or tenancy registration, with either a linear probability model, or a conditional logit, both with village fixed effects. These are reported in Table 12.

Tables 7 and 8 present the OLS and TLAD land reform regressions corresponding to the time period 1978–98. The TLAD specification takes the form [32]

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

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 η_{vt} is an i.i.d. error term. Both versions with observed and predicted (i.e., instrumented) Left shares are shown for the TLAD estimates. As explained previously, the instruments include apart from local incumbency (lagged Left share of GP seats), the presence of Congress in the national Parliament, the regional inflation rate and growth in small factory employment in the district, as well as interactions between these and the incumbency variable. The first-stage regression has already been shown in Table 7.

Standard errors are clustered at the district level, and in the IV regressions are reported both with and without bootstrapping. To correct for possible 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).[33] Variables included in S_{vt} include area and population shares in different

[32] For the sake of parsimony, henceforth we drop interactions between $q(LS_{vt})$ and S_{vt}.

[33] All the data for a given village is kept as a single block, and 200 samples are generated by sam-

landownership size-classes, illiteracy rates among households owning less than 5 acres of non-*patta* land, the proportion of households belonging to scheduled castes and tribes. In addition the regression includes dummies for different timeblocks, villages and election/pre-election years.[34]

In all the regressions for the land titling (*patta*) program reported in Table 7, we continue to find an inverted-U with respect to Left share itself. In addition we find a negative interaction between Left share and relative voter loyalty in preceding state Assembly elections (AVSD). The point estimates are consistent with the predictions of the model for Case 1, where the competition-moral hazard interaction effect outweighs the idelology effect. Implied turning points for the quadratic in the Left-share itself and implicit in the interaction of this with average voter loyalty are reported at the bottom of each column. The theory predicts these two turning points will be the same, which is approximately valid (except for the TLAD-IV regressions).

However, many of the coefficients are imprecisely estimated, as the standard errors are large. In the case of the noncensored-IV, however, the coefficient estimates are statistically significant at either 5 or 1% level. Adjustments for censoring cause many of the relevant coefficients to lose statistical significance, especially when we look at the TLAD-IV regressions and additionally adjust standard errors for serial correlation by bootstrapping. The TLAD-nonIV regression for proportion of households receiving *pattas*, however, shows most of the coefficients to be significant even after standard

pling 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.

[34]It could be argued that the regression should additionally include measures of land reform implemented in the past, as this affects the residual capacity for further reform. We avoid this owing to the well-known econometric problems associated with lagged dependent variables, apart from the fact that in the case of the titling program there seems to continue to be a large surplus of vested land that still remains to be distributed (which implies that 'capacity constraints' ought not to matter).

errors are bootstrapped.

Table 8 shows corresponding regressions for the tenancy registration program. The point estimates for the TLAD regressions again indicate an inverted-U relationship. The coefficients of the Left share variables in the percent land registered under the tenancy program are significant in both TLAD regressions, except when standard errors are adjusted for serial correlation by bootstrapping. All these regressions display significant election-year spikes, which indicate the presence of electoral competition as an important motive.

The preceding results did not make full use of the land reform data available, covering 1971–98. 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, the principal reason for excluding them in the previous regressions. The responsibility for implementing land reform remained in the hands of the state bureaucracy during this period. Since the Congress had an absolute majority in the state Assembly in the five years preceding 1977, they effectively controlled land reform implementation in the entire state during this time.

Accordingly we can explore the robustness of the preceding findings, and examine whether statistical precision can be increased, by extending the sample period to the pre-1978 period, and assigning zero Left share to the implementing agency. Tables 10 and 11 extend the TLAD results reported above to including the preceding five year period 1974–78 (with Left share set equal to zero for that period). However, we have not adjusted the standard errors by bootstrapping for these regressions.

The regressions for the titling program in Table 10 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 results are similar though less sharp for the tenancy program regression in Table 11. In the case of the percent households registered, 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.

Table 12 examines the determinants of whether a village in any given year experienced some activity under either program, using either a linear probability model or a conditional logit. These incorporate village fixed effects and timeblock dummies, but we do not instrument for Left share. The sign patterns of the coefficients are again consistent with the theory, but many of the reevant coefficients are not statistically significant. The exception is the titling program, where the second order term of Left share is significant at either 5 or 10%.

The corresponding coefficients of other village characteristics in the regressions in Tables 7-8 for the 1978-98 period are shown in Table 13. The proportion of households receiving land titles was significantly higher when there were more marginal landowners, 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.[35]

5 Concluding Comments

In summary, we find no evidence supporting the hypothesis that land reform implementation in West Bengal since the 1970s can be explained by differences in redistributive ideology of the Left Front *vis-a-vis* the Congress, and the rising control of the Left of local governments and related land reform process. Instead it is consistent with Downsian or quasi-Downsian theories which stress the importance of electoral opportunism and competition. The point estimates are consistent with the quasi-Downsian theory predicting an inverted-U pattern between land reform and Left share of seats in the local government. However, the statistical precision of these estimates are unreliable and depend on the exact specification and time-period studied. If one believes therefore that the evidence for the inverted-U pattern is not robust, one would infer absence of any significant relationship between land reform implementation and composition of local governments, which is exactly the prediction of the pure Downsian theory. The role of electoral competition is further indicated by the significant spikes observed in election years in the tenancy registration program.

A number of caveats are in order. The Left Front may have played a significant role at the level of the state government by putting land reform on the forefront of their agenda for agrarian reform in the state. There is no doubt West Bengal achieved significantly more compared with most other Indian states with regard to

[35] 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.

implementing land reforms. Our results pertain only to the role of officials elected to local governments, and may therefore reflect problems of agency between the Left Front and the candidates they nominated to elections to local governments.

Alternative explanations to moral hazard or rent-seeking on the part of elected officials may be provided for their reluctance to implement much land reform when they are in a strong competitive position.[36] For instance, it is possible that they perceive a given stock of land reform that can be implemented between the current and future, defined by the amount of vested land or the extent of land under tenancy yet to be registered. They may want to hold back on the amount currently implemented, so as to leave more available for the future when they are in a weaker competitive position compared to the current period. We have no way of discriminating empirically between this theory and the one we have offered in the paper.

The results of this paper indicate the relative importance of electoral competition and ideology or policy preferences of elected officials. We hope more work can be done in future addressing this issue, so as to throw more light on the political motives for redistribution in democracies.

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[36]We thank Saumitra Jha for this observation.

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TABLE 1: DISTRICT-WISE ALLOCATION OF SAMPLE VILLAGES

DISTRICT	NUMBER OF VILLAGES IN SAMPLE	LEFT FRONT PERCENT OF SEATS 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-*patta* 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 % land	2.5–5 acres % land	5 acres and more % 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
% cultivated land vested (cumulative)	16.4*	15.3
% cultivated land distributed as *pattas*	1.4	5.4
% hh's receiving land titles	4.9	14.9
% cultivated land leased	2.7	4.2
% cultivated land with registered tenants	2.4	6.1
% hh's registered	3.1	4.4
% tenants registered	43.4	51.2
*Only available for 34 villages		
Source: Block Land Records Offices, combined with Indirect Survey		

TABLE 5: TIME PROFILE OF LAND REFORM						
Time Block	# Villages distributing pattas	% households receiving pattas	% cult. area distributing	# Villages registering	% hhs registered	% cult. area registered
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
Source: Block Land Records Offices, combined with Indirect Survey						

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

	% Land Titled		% Households Titled		% Land Registered		% Households Registered	
	Cross Section	Tobit Dist FE	Cross Section	Tobit Dist FE	Cross Section	Tobit Dist FE	Cross Section	Tobit Dist FE
% Left	1.08	0.02	1.64	0.23	2.43	0.06	-0.18	0.08
	(0.95)	(0.12)	(1.20)	(0.26)	(3.24)	(0.14)	(0.44)	(0.11)
% Left Sq.	-0.87	-0.03	-1.22	-0.26	-1.70	-0.10	0.22	-0.11
	(0.80)	(0.10)	(1.01)	(0.22)	(2.71)	(0.12)	(0.37)	(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

Data aggregated into five year timeblocks representing successive GPs

Tobit estimates, with district fixed effects and time dummies included in panel, not reported here

Titling cross-sections control for percent land vested and population density in 1978

Cross-sections control for percent unregistered land per household and population density in 1978

standard errors in parentheses; ***: significant at 1%, ** at 5%, * at 10%

TABLE 7: LEFT SHARE REGRESSIONS				
	Cross-Section (OLS)	Panel (Ar-Bond)	Panel (Ar-Bond)	Panel (Ar-Bond)
No. obs. (GPs)	57	221 (56)	221 (56)	221 (56)
F-st(d.f.)	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 Difference, District	1.32*** (0.40)			0.61** (0.25)
% Cong Seats in Parliament		-0.59*** (0.21)	-0.64*** (0.23)	-0.60*** (0.23)
% Cong Seats Parlmt* Lagged GP LeftShare		1.26*** (0.35)	1.32*** (0.38)	1.33*** (0.36)
Growth Small Fact. Empl., District		0.01 (0.02)	0.01 (0.02)	0.01 0.03
Lagged Left Share in GP		-0.43** (0.20)	-0.50** (0.22)	-0.44** (0.22)
Inflation Rate		2.85*** (0.71)	2.75*** (0.70)	3.30*** 0.73)
Inflation Rate*Lagged GP Left Share		-5.70*** (0.90)	-5.48*** (0.90)	-5.96*** (0.91)
Controls include interpolated land, household shares, % illiterate in each land class, % low caste				
robust standard errors in parentheses; ***: significant at 1%, ** at 5%, * at 10%				

TABLE 8: LINEAR & TLAD TOBIT REGRESSIONS FOR TITLING PROGRAM INCL. INTERACTIONS, YEARLY DATA 1978-98+

	% Land Titled			% Households Titled		
	linear IV	TLAD Non-IV	TLAD IV	linear 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*%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)
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)
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: AVSD*% LF	46	42		44	40	04

IV: instrumental variable regression;Instruments for Left share, its square, its interactions with AVSD, are based on Table 7

Linear regression makes no adjustment for censoring

Controls include village dummies, characteristics and timeblock dummies

Coefficients of village characteristics in IV regressions are reported in Table 13.

se: standard errors, clustered at district level for OLS; bse: Block-bootstrapped standard errors
***: significant at 1%;**:significant at 5%;* at 10%

TABLE 9: LINEAR & TLAD TOBIT REGRESSIONS FOR TENANCY REGISTRATION PROGRAM INCL. INTERACTIONS, YEARLY DATA 1978-98+

	% Land registered			% Households registered		
	Linear IV	TLAD Non-IV	TLAD IV	Linear 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*%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)
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)
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: AVSD*% LF	25	57	70	52	42	81

IV: instrumental variable regression;Instruments for Left share, its square, its interactions with AVSD, are based on Table 7

Linear regression makes no adjustment for censoring

Controls include village dummies, characteristics and timeblock dummies

Coefficients of village characteristics in IV regressions are reported in Table 13.

se: standard errors, clustered at district level for OLS; bse: Block-bootstrapped standard errors
***: significant at 1%;**:significant at 5%;* at 10%

TABLE 10: TLAD TOBIT REGRESSIONS FOR TITLING PROGRAM INCL. INTERACTION EFFECTS, YEARLY DATA 1974–98

	% Land Titled		% Households Titled	
	non-IV TLAD	IV TLAD	non-IV TLAD	IV TLAD
% LF in GP	1.60***	2.23**	1.94**	2.09**
	(0.57)	(0.97)	(0.83)	(0.94)
% LF sq.	-1.85***	-1.94**	-2.32***	-2.37***
	(0.65)	(0.97)	(0.86)	(0.91)
AVSD*% LF	-9.68***	-10.60**	-13.36***	-14.78***
	(3.10)	(4.97)	(4.35)	(3.75)
AVSD*% LF sq.	11.01***	11.34**	13.58***	15.14***
	(3.84)	(5.05)	(4.59)	(3.52)
AVSD	1.78***	1.65***	1.96***	1.58**
	(0.54)	(0.60)	(0.62)	(0.73)
Election year	0.003	-0.002	-0.06	-0.05
Dummy	(0.04)	(0.04)	(0.05)	(0.06)
Pre-election	0.23*	0.23*	0.11**	0.11*
year Dummy	(0.13)	(0.12)	(0.05)	(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: AVSD*% LF	44	47	49	49

Village characteristics, dummies and timeblock dummies included

Standard errors in parentheses

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

TABLE 11: TLAD TOBIT REGRESSIONS FOR TENANCY PROGRAM INCL. INTERACTION EFFECTS, YEARLY DATA 1974–98				
	% Land Registered		% Households Registered	
	non-IV TLAD	IV TLAD	non-IV TLAD	IV TLAD
% LF in GP	3.66**	4.97**	0.94*	1.05
	(1.79)	(2.06)	(0.54)	(0.73)
% LF sq.	-3.88**	-3.57**	-1.03**	-0.82
	(1.79)	(1.53)	(0.51)	(0.60)
AVSD*%LF	-15.14*	-9.98*	-2.32	-0.19
	(8.58)	(6.06)	(1.92)	(1.64)
AVSD*%LF sq.	14.74*	7.83	2.54	0.48
	(8.30)	(5.45)	(2.15)	(1.73)
AVSD	0.95*	-1.44	0.42*	0.59***
	(0.53)	(0.89)	(0.22)	(0.22)
Election year	0.48	0.43	0.17***	0.17***
Dummy	(0.30)	(0.34)	(0.05)	(0.04)
Pre-election	-0.14**	-0.19**	-0.02	-0.04
year Dummy	(0.07)	(0.08)	(0.02)	(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: AVSD*% LF	51	64	46	

Village dummies, characteristics and timeblock dummies included

Standard errors in parentheses

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

TABLE 12: LINEAR PROBABILITY & LOGIT REGRESSIONS INCL. INTERACTIONS, YEARLY DATA 1978-98+				
	Titling Program		Tenancy Registration Program	
	Linear Probability	Conditional Logit	Linear Probability	Conditional Logit
% Left	0.43	4.13	0.43	3.11
	(.48)	(4.74)	(.34)	(6.26)
% Left Sq.	-0.68*	-8.28**	-0.51*	-5.83
	(.37)	(3.98)	(.30)	(5.48)
AVSD*% Left	-3.48	-8.69	-1.29	6.62
	(3.39)	(14.46)	(2.77)	(49.91)
AVSD*% Left	4.88*	58.16*	1.80	6.22
	(2.59)	(31.50)	(2.49)	(40.72)
Election Yr.	-0.00	-0.08	-0.02	-0.34
	(.01)	(.22)	(.02)	(.34)
Pre-Election Yr.	-0.01	-0.19	-0.02	-0.32
	(.02)	(.24)	(.01)	(.23)
No. obs, villages	1755,89	1335,68	1755,89	1255,64
w-R sq./p-value	.03	.003	.05	.0008

Dependent Variable: 1 if program was active in given year, 0 otherwise

Robust standard errors clustered at GP level for Linear Probability regressions

Bootstrapped standard errors for conditional logits

Within-R sq. for Linear Probability; p-value of Wald chi-sq. test for Logit

Controls include village, year dummies and all controls in previous tables

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

TABLE 13: VILLAGE CHARACTERISTICS, IV TLAD REGRESSIONS INCL. INTERACTIONS, YEARLY DATA 1978-98+				
	% Land Titled	% Households Titled	% Land Registered	% Households Registered
% 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 TLAD-IV regressions in Tables 8 and 9.

se: standard errors; bse: Block-bootstrapped standard errors

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

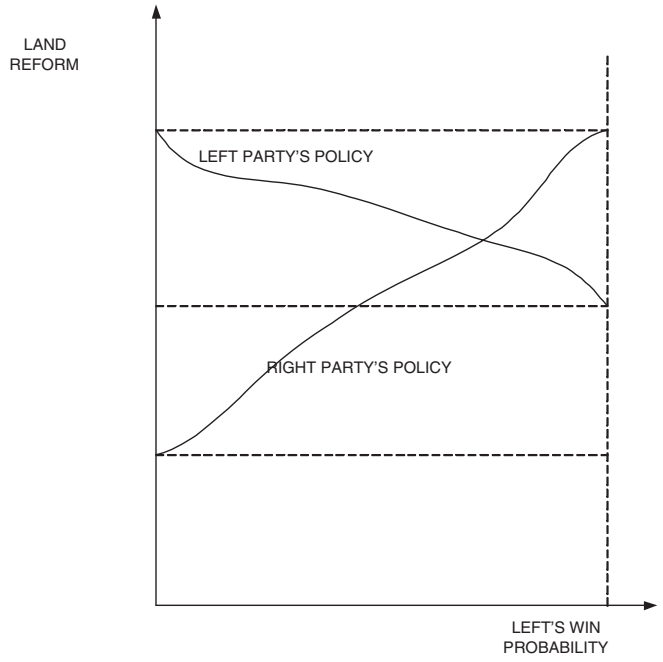

Figure 1: Case 1: Political Moral Hazard Effect Dominates

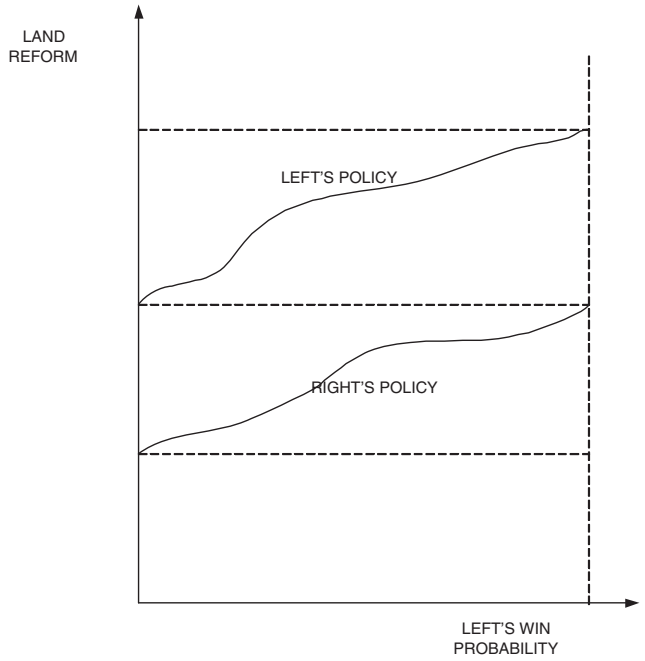

Figure 2: Case 2: Ideology Dominates