Agricultural Support and Political Mobilization: Evidence from Andhra Pradesh*

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ABSTRACT

This article empirically investigates whether agricultural support responds to electoral outcomes in the Indian state of Andhra Pradesh using a novel data source reporting government expenditures disaggregated by region. Utilizing randomness introduced by close election outcomes, I find evidence of a causal relationship. In particular, the government provided more agricultural support to regions where opposition parties were more successful, but other forms of government spending were not similarly related to electoral outcomes. These results are consistent with a model where it is optimal for a centralized government to catch up in elections it trails as opposed to bolstering existing leads, and suggest that agricultural producers are important to the political process and are targeted during times of political competition.

Keywords: Voting, Electoral Uncertainty, Agricultural Support, India

JEL classification: D72, H21, H22, H25, H71, O13, O21, Q18

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A large body of literature has thoroughly documented the political determinants of agricultural support across both developing and developed countries.[1] In particular, the literature has found a robust positive correlation between a country's income level and the amount of support provided to agricultural producers (e.g., Krueger, Schiff, and Valdes 1988; Bates 1989). This pattern is at odds with models of optimal agricultural support, such as correcting credit market failures, but is consistent with a number of political economy models (e.g., Bates and Rogerson 1980; Anderson 1995; Swinnen, Banerjee, and de Gorter 2001, etc.). More recently, the model of "Protection for Sale" described in Grossman and Helpman (1994), has been adapted to explain the influence of agricultural lobbies and the observed empirical patterns (e.g., Gawande and Hoekman 2006; Lopez 2008).

On the other hand, a separate but growing body of literature has begun to thoroughly document the influence of politicians and political parties on the provision of government resources and the determination of agricultural support. Citizen-candidate models generally posit that politicians have both a desire to be re-elected and policy preferences apart from how they are directly affected, and therefore their identity might affect government policies through both motives (e.g., Dixit and Londregan 1998; Chattopadhyay and Duflo 2004; Kartik and McAfee 2007). Consistent with this model, recent empirical studies have found evidence of political competition affecting agricultural policy choices, where politicians funnel a larger amount of agricultural support into regions involved in close elections (e.g., Cole 2009; Bardhan and Mookherjee 2010;).

This article focuses on regional differences in observed agricultural support based on political support for the centralized state government. Although a growing body of literature suggests that state governments focus more agricultural support on regions involved in close elections (e.g., Cole 2009; Bardhan and Mookherjee 2010), there are potential asymmetries in that support between seats the state government had previously won and lost. Many political science models of clientelism suggest that politicians should reward their supporters (e.g., Weingrod 1968; Scott 1972), and conversely, Hsieh et al. (2011) have presented evidence that politicians might punish dissenters. However, this need not be the optimal strategy. This article develops a simple model of policy choice which can result in the exact opposite prediction. In response to electoral uncertainty, it could be optimal for a centralized government to try and catch up in elections it is trailing as opposed to bolstering existing leads. Thus, the government might try to mobilize voters from less supportive regions.

Given this ambiguity, this article utilizes a novel data source reporting government expenditures and revenue of the Indian state of Andhra Pradesh between 1977 and 2005 and empirically analyzes how regional agricultural support responds to electoral outcomes. Statistical Abstracts published annually by the state of Andhra Pradesh report the regional provision of a number of measures of agricultural support- including the collection of land taxes and the provision of agricultural credit by the state development bank. Each policy is disaggregated at the district level, which is an administrative boundary that contains multiple state government seats.

In addition to reporting these forms of agricultural support, the abstracts also provide a much more complete snapshot of the state's finances and expenditures, which allow this article to compare the political determinants of agricultural support to other policies. The collection of sales and excise taxes, which along with land taxes account for over 90 percent of total revenue collected by the state government, are also disaggregated by district. The sources also detail the provision of a number of important government services, including the provision of electricity, the services provided by state-owned medical facilities, the amount of land redistributed, etc.[2]

Using these sources, this article analyzes whether there is an asymmetry in agricultural support distributed to less and more supportive districts, as measured by the share of government seats lost by the incoming state government in the district.[3] However, simple estimations of this relationship are difficult to interpret given that regional shocks might jointly affect both electoral success of the state government and agricultural support. To overcome endogeneity concerns, I utilize the state government's performance in close elections, which critically depend on shocks to voter turnout (e.g., Lee, Moretti, and Butler 2004; Lee 2008; Rehavi 2008; Eggers and Hainmueller 2009; Gerber and Hopkins 2010, Clots-Figueras 2012, etc.). These shocks are likely uncorrelated with other determinants of agricultural support and randomly drive the electoral support for the incumbent party above and below the threshold of victory. Consistent with this hypothesis, I demonstrate that despite a large amount of variability in the share of close elections lost by the incoming state government, on average the party lost approximately half of the close elections in a district. Thus, I compare changes in agricultural support in regions where the state government was lucky and won a larger share of close elections to regions where it was unlucky and lost a larger share of close elections.

Based on this approach, I find that electoral incentives did affect the distribution of agricultural support. Consistent with a model in which it is optimal for the government to catch up in elections it trails as opposed to bolstering existing leads, I find that the state government provided more agricultural support to regions it had just lost. In particular, the government collected a lower share of land taxes and provided a higher share of agricultural credit to less supportive regions. Losing all close elections in a district- which amounts to a 14 percent decrease in the total share of seats won on average- decreased the share of land taxes collected by 1.9 percent and increased the share of agricultural credit by 1.4 percent. However, I find no evidence that any other forms of government spending or taxation were manipulated in similar ways.

These results are robust to a number of important concerns. First, the timing of this change in agricultural support is very important to the interpretation. Prior to the election, politicians might have predicted a close election and the results above were detecting a return to the status quo following an alternate electoral strategy. However, there were no changes in the land taxes and agricultural credit preceding the current election, suggesting that politicians were indeed targeting regions just lost in the last election. Lastly, I perform a falsification test in which election outcomes four and five years in the future had no effect on current levels of agricultural support. Thus, it is unlikely the instrument is detecting an unobserved relationship between success in close elections and omitted variables.

Estimates in this article are broadly consistent with citizen-candidate models and demonstrate that agricultural support responds to electoral pressures (e.g., Dixit and Londregan 1998; Kartik and McAffee 2007). These results are most closely related to Cole (2009) and Bardhan and Mookherjee (2010), which both demonstrate that a larger amount of agricultural support is funneled into regions involved in close elections. However, this article corroborates the sensitivity of agricultural support to political pressures, and further demonstrates that there are significant asymmetries in that support between regions based on whether the political seats were won or lost. Additionally, the sensitivity of only agricultural policies to political pressures suggests that agricultural producers and the rural poor are particularly important to the political process and are targeted during times of political competition. This finding has potentially important implications for agricultural productivity and poverty.

The article first presents a simple model of policy choice which nests a number of empirical predictions regarding political manipulation of agricultural support. A background of both the Indian government and recent electoral issues in Andhra Pradesh is then presented, followed by the empirical strategy and results. Lastly, further issues are discussed in the concluding section.

A Simple Model of Policy Choice

I discuss a very simple model of policy choice to illustrate the possible optimality of targeting more agricultural support at less supportive regions. This framework develops a relationship between the level of agricultural support in a region, denoted by π_r, and the underlying regional support for the party controlling the centralized government, as measured by the share of seats the state government expects to win in the next election. I assume some portion of the electorate will change their voting preference based on the provision of agricultural support, denoted by α. The remaining portion determine their voting preference independent of π. Voter i will vote for the party if the following decision rule D_i is positive:

$$D_i = u(s\pi) + \theta_i \tag{1}$$

where u(.) denotes a concave utility function, s denotes the share of the mobilization policy π evenly divided amongst the electorate, and θ_i represents individual i's underlying political preference for the party's candidate. This preference is drawn from a common distribution function F_θ that is symmetric about zero, and is derived from the provision of public goods since the last election, likeability relative to other candidates, etc.[4]

Using the probability that the benefits from the agricultural support π overwhelm the political preferences of individuals who would have voted against the party, we can solve for the expected vote change from implementing π as follows:

$$\Delta M = \alpha * Total * \{F_\theta(0) - F_\theta[-u(s\pi)]\} \tag{2}$$

where $Total$ denotes the total number of voters, and α is the share of voters whose voting preference is affected by the agricultural support. In this formulation, ΔM is increasing and concave in the agricultural support π.[5]

I decompose the actual vote share for the politician and the expected margin of margin of victory respectively as:

$$V_t = V_{t-1} + \Delta M + \psi + \epsilon \tag{3}$$

$$Marg = E(V_t) - \frac{1}{2}Total \tag{4}$$

where V_{t-1} represents the number of votes for the party's candidate in the previous election; ΔM is the expected change in votes arising from agricultural support π; ψ captures any expected change in votes unrelated to π; and ϵ denotes the unexpected change in votes arising from uncertainty in voter turnout and is governed by some distribution function G. I further assume that G is symmetric about zero, and that larger uncertain swings are less likely than smaller ones.[6] However, I also assume that relying on support from agricultural support adds additional noise to the electoral outcome, and thus results in a larger variance of ϵ, denoted by σ_ϵ. For simplicity, I assume an increase in agricultural support by one unit increases the variance of ϵ by a constant amount denoted by k.

Solving for the probability that the uncertain vote swing will overwhelm the expected margin of victory, we obtain the following probability of winning the next election:

$$\phi_r = 1 - G(-Marg_r) \tag{5}$$

Given this framework, the probability of winning the next election is an increasing function of agricultural support. Additionally, for a number of distribution functions G, including the distribution function of the Normal distribution, the increase in electoral noise that is associated with an increase in the mobilization policy π has an asymmetric effect on politicians expecting to win and lose. Politicians expecting to win [i.e., $E(Marg) > 0$] dislike electoral noise because it increases the chances that the uncertain swing in votes will overwhelm an expected victory. On the other hand, politicians expecting to lose [i.e., $E(Marg) < 0$] like electoral noise since it increases the chance that the noise will overwhelm the expected margin of the loss.

This point is illustrated in Figure 1, which graphs two probability functions using the Normal Distribution to construct ϕ. The functions are identical aside from one assuming a smaller variance for the electoral uncertainty. For expected losers, the probability of winning is larger for any expected margin of defeat using the probability function with a *higher* variance. For expected winners, the exact opposite is true, and the probability of winning is larger using the function with the *lower* variance.

Using this probability function ϕ, I assume the risk-neutral centralized government chooses π for each of N regions to maximize the aggregate expected rent. Denoting the set of regional levels of agricultural support as Π, the government allocates support across each region as follows:

$$\Pi^* = argmax_{\ \Pi} \quad \sum_{r=1}^{N}[\phi_r(\pi_r)R] - C(\pi_1, ..., \pi_N) \tag{6}$$

where R represents the economic rent derived from having one of their candidates winning an additional election, and $C(\Pi)$ is a function governing the cost of implementing the set of policies Π.

The choice of π is determined by the following set of first order conditions:

$$[\frac{\partial\phi}{\partial \text{Marg}}\frac{\partial \text{Marg}}{\partial \pi_{\text{r}}} + \frac{\partial \phi}{\partial \sigma_{\epsilon}} * \text{k}] * R = \frac{\partial C(\Pi)}{\partial \pi_r} \qquad \text{for each r} \tag{7}$$

Given these conditions, it is important to note that we cannot analyze spending for a region in isolation given possible linkages through the marginal costs. Thus I assume that the marginal costs are constant and independent of spending in all other regions.[7]

The optimal mobilization policy depends both on the specific distribution of the electoral noise and the values of exogenous vote swings that affect the expected margin of victory. However, without specifying the specific distribution, one can note the possible optimality of targeting a larger share of mobilization policies at seats the government expects to lose as opposed to win. Since expected winners dislike more electoral noise and expected losers like the added variability, the second term in the LHS of (3) is positive for expected losers and negative for expected winners.

The size of the asymmetry in agricultural support between regions the state government expects to win and lose is determined by the size of the noise added to the election outcome (k) relative to the expected number of votes added from the extra unit of the mobilization policy ($\frac{\partial Marg}{\partial \pi_r}$). In the limiting case of a sufficiently large k, the second term in the LHS of (3) will dominate the expression and determine the sign of the marginal benefit. In such a scenario, politicians would choose a positive level of agricultural support in regions it expects to lose, and would not allocate any agricultural support to mobilize voters in regions it expects to win. Using the most recent election as a noisy signal for the expected vote share immediately after the election, this limiting case would result in the state government distributing more support to regions that were lost than won immediately after an election.

In summary, this framework illustrates how a centralized government might provide more agricultural support in regions it expects to lose than in regions it expects to win. This prediction is a formalization of the possible optimality of a centralized government trying to catch up in elections it trails as opposed to bolstering existing leads. Furthermore, this prediction contradicts models of clientelism, which suggest a government should reward its supporters and therefore target more supportive regions for an increase in government resources (e.g., Weingrod 1968; Scott 1972).

Powers of State Governments in India

The Indian government is a parliamentary democracy composed of the central, state, and local governments. Both the central and state governments are responsible for legislation that significantly affect the day-to-day lives of voters, whereas, there is much less consensus regarding the powers of local governments (e.g., Vyasulu 2004). Among other things, the Seventh Schedule of the Constitution of India divides power between the central government, the states, and areas where the two share responsibility. All powers not mentioned are ascribed to the central government. Generally speaking, issues affecting all states are ascribed to the central government, such as macroeconomic stability, international trade, etc. This division leaves many vital areas to state governments, such as public order, agriculture, irrigation, and land rights.

Given that agriculture is primarily an issue left to the state governments, this article focuses on the electoral determinants of agricultural support at the state level. Part VI of the Constitution creates two major groups affecting the provision of state government resources: individual politicians elected to the Legislative Assembly (MLAs) and the executive branch. The structure of state governments generally follows the framework of the central government. MLAs serve both a legislative capacity, and are integral in the choice of the Chief Minister, who leads the executive branch. As indicated in the brief model presented above, this article focuses on the executive branch's allocation of agricultural support based on the preference for the party to retain their power.

In analyzing the political determinants of agricultural support in Indian states, it is important to note that state governments have repeatedly demonstrated a willingness to politically manipulate its other responsibilities by targeting government resources at specific regions, groups, firms, and even individuals. Sinha (1998) presents an entire volume describing the arbitrary powers available to state governments and provides exhaustive examples of how states use these powers differently. Furthermore, studies have presented suggestive evidence that state governments have differentially priced electricity based on political concerns (Reddy and Sumithra 1997; Dubash and Rajan 2002), and oftentimes politicians campaign on a wide array of targeted welfare programs (e.g., Suri 2004a).

Political Background of Andhra Pradesh

Given data constraints, I restrict my empirical analysis of agricultural support to the state of Andhra Pradesh.[8] India's historically dominant political party, the Indian National Congress (Congress), had dominated Andhra Pradesh politics for decades after independence. However, many were very upset with perceived Congress misrule and corruption by the late 1970's, and the Telugu Desam Party (TDP) came to power in the 1983 elections behind this distrust of Congress and the popularity of its leader (Suri 2004b). Elections have become a back-and-forth race between these two parties ever since, where each party generally campaigns for the support of the rural poor. Congress decisively won the elections in 1978, 1989, and 2004; and the TDP decisively won the elections in 1983, 1985, 1994, and 1999. Both political parties contest nearly every Assembly Constituency (AC) and, combined, they win the vast majority of them.

Furthermore, the interplay between national and state politics is likely important to the provision of government resources, which could affect the provision of agricultural support. Regional parties have become increasingly important in national elections beginning in the late eighties. Parliamentary elections have transformed into a contest to form the most formidable pre-election coalition, where no single party could expect to win the elections outright (Suri 2004b). The TDP has become very important to these coalitions given the sizable number of national seats they generally win in Andhra Pradesh, and thus the party's relationship with the central government is likely to affect both electoral swings for the incumbent party and the transfers the state receives from the central government.

Given this stage, I analyze the regional targeting of agricultural support. Annually published Statistical Abstracts are available continuously from 1977-2005, and report revenue collected from land taxes and the amount of agricultural credit disbursed by the state development bank disaggregated at the district level. Within the state, the legislation authorizing various state taxes allow the government to target these taxes in a highly arbitrary manner, which make them possible instruments of political manipulation. For example, the government can for any reason "make an exemption or reduction in the (sales tax) rate...(that) may extend to the whole of the state or to any specified area or areas therein"(Andhra Pradesh General Sales Tax Act, 1957).

However, agriculture has always been a particularly important election issue in Andhra Pradesh, where campaigns have often focused on subsidies for all agricultural producers (Suri 2004a). Thus there are reasons to expect agricultural policies to be particularly important to woo voters, and they might be targeted in more specific manners than these simple blanket policies. In terms of taxation, the land tax can easily be manipulated to benefit individual agricultural producers. Land taxes in Andhra Pradesh are fixed upon assessment of the land for ten years, and thus should not vary much from year to year. The assessment is based on factors such as the use of the land and soil quality. However, agricultural producers are allowed to apply for a remission in the case of "extensive crop damage" or "for any other reason"(Andhra Pradesh Land Revenue Remission and Suspension Rules, 1968).

Electoral Determinants of Public Spending in Andhra Pradesh

Based on predictions from models of patronage and the simple model of policy choice above, I attempt to empirically analyze whether agricultural support increased or decreased in regions won by the incoming state government. Attempting to estimate the relationship, I would ideally like to regress changes in agricultural support in a constituency on an indicator for whether the party of the incoming state government lost the previous election. However, this sort of estimation is difficult to interpret due to omitted variables. For example, we do not know if there is some sort of crisis causing both the change in the agricultural support and the state government's defeat in the previous election.

Thus, I attempt to estimate a slightly different specification exploiting the state government's performance in close elections. Contingent on being in a close election, the outcome has consistently been shown to be quasi-random (e.g., Lee

2008). As mentioned in the introduction, these outcomes critically depend on voter turnout on election day, where by chance the electoral support for a particular candidate is driven higher or lower by shocks to turnout that differentially affect supporters and non-supporters. Furthermore, these sorts of shocks are likely uncorrelated with determinants of agricultural support, and can be used to consistently estimate the average change in support targeted at regions that were lost in the last election.

To take advantage of these types of shocks, I first aggregate the electoral boundaries to the district- which is an administrative boundary containing many state government seats. I then calculate the share of close elections won by the party of the incoming state government in each district:

$$ShareCloseLost_{rt} = \begin{cases} \frac{CloseLost_{rt}}{CloseWon_{rt}+CloseLost_{rt}} & \text{if } CloseWon_{rt} + CloseLost_{rt} > 0 \\ 0 & \text{otherwise} \end{cases}$$

where $CloseLost$ denotes the number of close elections lost by the state government in district r at time t; and $CloseWon$ denotes the number of close elections won by the state Government. I generally report estimates using 1.5 percent of the vote share as the cut-off for close elections.[9] This measure identifies regions where the incoming state government was randomly unlucky and lost a higher share of close seats for reasons likely uncorrelated to other factors that affect the provision of agricultural support.[10]

Given that agricultural support provided to individual electoral boundaries is not available, it is important to note that this article cannot exploit a regression discontinuity design used in a number of other studies (e.g., Lee, Moretti, and Butler 2004; Lee 2008; Eggers and Hainmueller 2009; Gerber and Hopkins 2010, etc.). However, using slightly more aggregated regions, this article exploits the randomness introduced by close election outcomes and creates a measure of state government success that is arguably uncorrelated with other determinants of agricultural support. Other political economy studies in India and elsewhere have relied on similar aggregated regions (e.g., Rehavi 2008; Clots-Figueras 2012, etc.).

Estimating whether state governments targeted less or more agricultural support at regions where they had randomly lost a larger number of seats, I regress the change in the share of agricultural support provided to a district after an election on the share of close elections lost:

$$(8) \quad Support_{r,t+1} - Support_{r,t-1} = \beta ShareCloseLost_{r,t} + \alpha X_{rt} + \tau_r + \kappa_t + \epsilon_{rt}$$

where r refers to the 20 districts in the state; t refers to the seven elections during the time period; *Support* denotes either the share of the total land taxes collected from or the share of total agricultural support distributed to district r in time t; X denotes regional controls; and τ_r and κ_t respectively denote regional and time fixed effects.[11,12] Models of clientelism might predict more agricultural support provided to more supportive regions, which would correspond to $\beta < 0$. On the other hand, if state governments tried to catch up in elections which they trailed instead of bolstering existing leads, we might expect the exact opposite and $\beta > 0$. Identification of β relies on the assumption of $E(ShareCloseLost_{rt}\epsilon_{rt}) = 0$.[13]

There are a number of things to note about this estimation. First, timing is very important to the interpretation of the results, and thus I estimate a number of different specifications. Baseline estimates use the change in taxes between the years immediately following and before the election. I also estimate changes leading up to elections, and a falsification test regressing current changes in tax burdens on elections four and five years in the future. Additionally, I also estimate specifications in which I use the share of close elections lost as an instrument for total elections lost.

Second, there are instances where there are no close elections in a district-election observation. The number of occurrences is increasing as the cut-off point for close elections becomes smaller and smaller. Although the outcome of close elections is likely random, not being involved in a close election certainly is not random. Thus, I estimate specifications in which I include an indicator equaling one when there are no close elections in a district, and also estimate specifications where I restrict the sample to observations in which there was at least one close election.[14] The results are identical in either case.

Given this limitation, one will not be able to make strong inferences about elections that were clearly won or lost based on these results. These are limitations of all studies utilizing the randomness of close election outcomes (e.g., Lee, Moretti, and Butler 2004; Lee 2008; Rehavi 2008; Eggers and Hainmueller 2009; Gerber and Hopkins 2010; Clots-Figueras 2012; etc.), and similar to many other studies utilizing instrumental variables (e.g., Angrist and Evans 1998). However, a number of models, including the simple model of policy choice presented earlier, predict that government spending will likely be highest in close elections and will account for the majority of politically-motivated agricultural support (e.g. Bardhan and Mookherjee 2010). Thus, the case of close elections is likely a particularly interesting special case.

Lastly, in estimating the standard errors of specification (8), I report typical standard errors clustered by the 20 districts throughout. The simple standard errors should be roughly different by a factor of $[\frac{1}{1+\rho_\epsilon(e-1)\rho_{L\hat{o}st}}]^{\frac{1}{2}}$, where ρ_ϵ and $\rho_{L\hat{o}st}$ denote intraclass correlation coefficients of the second stage residuals and the first-stage fitted values respectively, and e denotes the total number of elections (Moulton 1986; Shore-Sheppard 1996). However, if the identification strategy is valid, $ShareCloseLost_{rt}$ should be uncorrelated over time within a district, which would imply $\rho_{L\hat{o}st} = 0$ and that simple standard errors should be roughly unbiased aside from the possibility of heteroskedasticity.

Although this is corroborated by the estimate of $\rho_{L\hat{o}st}$ and the very small differences between the clustered and Eicker-White robust standard errors, both approaches generally suffer from downward biased standard errors when dealing with too few clusters (Angrist and Lavy 2009). Thus in the baseline specifications, I additionally report p-values using slightly inflated standard errors estimated following the Bias-Reduced Linearlization (BRL) suggested by Bell and McCaffrey

(2002) and a degrees-of-freedom adjustment to account for the small number of clusters.[15,16] Simulations suggest that such a rejection rule works well with an identical number of clusters (Bell and McCaffrey 2002; Cameron, Gelbach, and Miller 2008). Consistent with the identification strategy, the standard error adjustment is small and the interpretation is nearly identical to using typical standard errors clustered by district.[17]

Data and First Stage Results

To estimate specification (8), I need data on both voting and agricultural support disaggregated by region. I obtain voting data for election outcomes after 1977 from the Election Commission of India. For each government seat, this includes information on each candidate contesting the election, the final vote count, political party, gender, etc. As mentioned above, regional allocation of agricultural support is obtained from the annual Statistical Abstract, published continuously from 1977-2005 for the state of Andhra Pradesh. There were seven elections in Andhra Pradesh during this time period, yielding a total of 140 observations.

The baseline identification strategy is illustrated in the summary statistics presented in the top panel of table 1. Here I present the means of variables used in the estimation of specification (8) by group, where I divide the sample in two parts based on whether the party of the state government lost at least half of the close elections in a district.[18] The bottom row presents the difference between regions based on the incoming state government's success in close elections.

Column (1) demonstrates that districts losing a higher share of close elections did indeed lose a higher total share of seats. Consistent with the model presented in Section 2 where it is optimal for governments to catch up in elections as opposed to bolster existing leads, columns (2) and (3) demonstrate that the state government increased agricultural support to regions it had lost a higher proportion of close elections. Specifically, column (2) demonstrates that the government decreased the share of land taxes collected in regions narrowly lost relative to those narrowly won;

and column (3) demonstrates that the government increased the share of state-sponsored agricultural credit to regions where the state government lost more close elections.

Given the importance of the incoming government's success in close elections, I describe the number of close elections and the government's performance in these contests in table 2. The table uses cut-offs in the margin of victory identifying close elections between 1.5 percent and 2.5 percent. Consistent with the identification strategy, column (1) presents the sample mean of $ShareCloseLost$, and demonstrates that the incoming state government wins approximately half of the close elections in a district on average. Column (2) presents the standard deviation and demonstrates that despite winning approximately half of all close elections, there is a large amount of variation in that performance. Column (3) presents the 95 percent confidence interval for the sample mean of $ShareCloseLost$, and demonstrates that we cannot reject the hypothesis that the party controlling the government won half of the close elections in a district on average. Lastly columns (4) and (5) present the average number of close elections in each district and the maximum number of close elections in a district.

Furthermore, the relationship between success in close elections and success in all elections is estimated in table 3, using margins of victory between 1.5 percent and 2.5 percent of the vote share to define close elections. All specifications demonstrate that the state government did in fact lose a larger number of seats in regions where the party lost a larger share of close elections. The results suggest that losing all close elections in a district resulted in an average increase in the share of total seats lost in a district between 11.8 and 14.6 percent. Furthermore, the F-statistic of each specification is above 10.

However, the identification strategy assumes that the outcomes of close elections are determined by exogenous shocks to voter turnout. I indirectly examine the validity of this assumption using data on rainfall disaggregated by district in table 4. Given the economy's large dependence on agriculture, both droughts and excessive rainfall might cause significant income shocks, which have been shown to affect voting regardless of politicians' involvement in the shock (e.g., Wolfers 2006). Additionally, this changes the responsibilities and incentives of the incumbent government (e.g., Cole, Healy, and Werker 2012). Thus, we might expect each instance to have a large effect on both electoral success of the state government and the provision of agricultural support.

Table 4 presents estimates from the following specification:

$$(9) \qquad ShareCloseLost_{rt} = \beta_0 + \beta_1 Excess_{rt} + \beta_2 Drought_{rt} + \beta_3 X_{rt} + \epsilon_{rt}$$

where *Excess* is an indicator equaling one if rainfall in the year preceding the election was 25 percent higher than the historical district average from 1950-1996; *Drought* is an indicator equaling one if rainfall was 25 percent lower than the historical average; X represents controls; and τ_t and κ_r refer to time and regional fixed effects respectively.[19,20] The rainfall data spans 1950-1996, which limits the estimation to elections between 1978 and 1994 (100 observations). If the identification strategy is valid, we would expect none of the coefficients on the rain indicators or the control variables to be different from zero.

Column (1) estimates a sparse specification, while column (2) adds district fixed effects and time dummies. Consistent with the identification strategy, none of the variables in either specification are individually statistically significant. Furthermore, joint tests of all coefficients equal to zero are also insignificant- p-values of .878 and .521 in columns (1) and (2) respectively. However, in column (3) I estimate the same specification but use the total share of seats lost by the incoming state government. Both the rain indicators were individually statistically significant, and we can reject the hypothesis that all coefficients are different from zero at the 5 percent significance level.[21]

Results and Discussion

Consistent with the model of policy choice in which the government finds it optimal to catch up in close elections, I find robust evidence that immediately after the election, the state government increased agricultural support to regions it had lost a larger share of close elections. Table 5 estimates the baseline specification using the change in the share of the total land taxes collected from a district as the dependent variable. Columns (1)-(4) estimate the simple OLS relationship between the change in the land tax burden and the incoming state government's success in close elections; columns (5)-7 estimate an IV specification using the share of close elections won by the incoming state government as an instrument for success in all elections.

In all the specifications, the incoming state government decreased the share of land taxes collected from regions where the party had lost a larger share of close elections. Column (1) demonstrates the relationship in a sparse specification with no control variables; columns (2) and (3) demonstrate this result is robust to the addition time-varying control variables; and column (4) demonstrates the pattern continues to hold when restricting the sample to only those observations in which the state government was involved in a close election. Using the most complete specification in column (3), losing all close elections in a district- which amounts to a 14 percent decrease in the share of seats won on average- suggests a decrease in the share of land taxes collected by 1.9 percent. Furthermore, the relationship continues to hold in the IV specifications in columns (5)-(7). The government collected a lower share of total land taxes from districts it had lost a larger share of total elections.

Table 6 demonstrates that the state government increased the share of total agricultural credit disbursed by the state development bank to regions where the state government had lost a larger share of close elections. Although the estimates are slightly less precise than those presented in table 5, the most complete specification in column (3) demonstrates that losing all close elections in a district suggests an increase in the share of agricultural credit of 1.4 percent. This relationship continues to hold when using the share of close elections won as an instrument for the state government's success in all elections, where the government distributed more agricultural credit to regions it had lost a larger share of total elections.

However, the statistical abstracts reported a number of different sources of government expenditure and revenue aside from forms of agricultural support. In particular, it was possible to find excise taxes and sales taxes collected (which along with the land revenue account for over 90 percent of all taxes collected by the state), as well as the amount of land redistributed, the number of people treated at government owned medical facilities, the share of villages in a district with electricity, and the total amount of power used by a district. However, using the change in the taxes paid and services distributed to each district as the dependent variable in the baseline specification in table 7, the estimations cannot reject the hypothesis that these other taxes and government services are uncorrelated with electoral success of the state government. Furthermore, the signs are not consistent across specifications, and most point estimates are significantly smaller in magnitude than those estimated in tables 5 and 6.

It is important to note that these results survive important robustness checks. First, table 8 performs an important falsification test which suggests the outcome of close elections is not detecting an unobserved relationship between agricultural support and omitted variables. Columns (1) through (4) regress the changes in the land tax burden and agricultural credit immediately following the current election on close election outcomes four and five years in the future. One might expect a correlation if the outcomes of close elections were not being driven by exogenous shocks to voter turnout, but were rather being driven by some unobserved relationship.

For example, state governments might have better success in close elections in regions where the party has more continuous support and which also happen to be more affected by long-term negative agricultural shocks; or perhaps, the state government has different incentives to manipulate close election outcomes in regions which would be more responsive to agricultural support. However, the specifications estimated in columns (1) and (3) cannot reject the hypothesis that these forms of agricultural support are uncorrelated with future election outcomes. Furthermore, columns (2) and (4) demonstrate that the original relationship estimated in tables 5 and 6 survive the inclusion of success in future election outcomes.

Second, the timing of the changes to agricultural support is very important to the interpretation of the results. It is certainly possible that politicians expected close elections and changed agricultural support as a campaign strategy immediately prior to the election, and the effect being described above might be an adjustment back to the status quo. However, columns (5) and (6) of table 8 suggest that this is not the case, and that the changes to the land tax burden and agricultural credit are being driven by the current election outcome. Specifically, when using the change in agricultural support immediately preceding the election as the dependent variable, estimates significantly decrease in magnitude and lose their precision.

Conclusion

This article presents a simple model of electoral uncertainty which demonstrates a centralized government might increase the amount of agricultural support provided to regions it had lost in the previous election. Using the Indian state of Andhra Pradesh, I find evidence of the state government immediately decreased land taxes in regions it had just lost in the previous election and provided more state-sponsored agricultural credit to the same regions. This pattern is consistent with a model, where given electoral uncertainty, it is optimal to try and catch up in regions the party is trailing rather than bolstering existing leads. Furthermore, the responsiveness of only agricultural support to election outcomes suggests that agricultural producers are particularly important to the political process and are targeted during times of political competition.

However, there are many questions not addressed by this analysis. First, finding evidence of one electoral strategy does not preclude the existence of others. Whether the government is engaged in other sorts of voter mobilization, such as increasing resources to certain ethnic groups, punishing individual dissenters, etc., is unobserved. Second, these results do not directly address the welfare effects of politically-motivated spending. Although the composition of the spending suggest that relatively poorer voters were targeted (i.e., agricultural producers), one cannot observe which households actually received the agricultural support, and thus cannot necessarily determine the welfare and productivity impacts of these policies. Lastly, given data limitations, this analysis cannot directly incorporate states other than Andhra Pradesh into the empirical analysis. What particular policies other states might be using to target less supportive regions is unknown.

Notes

[1]See De Gorter and Swinnen (2002) for an excellent review.

[2]The analysis is restricted to the state of Andhra Pradesh because it is the only state for which detailed statistical abstracts are available annually.

[3]In addition to being linked to the motivations of politicians, this issue is inherently tied to studies addressing the regional incidence of taxation (e.g., Bull, Hassett, and Metcalf 1994) and taxation in developing countries (e.g., Ahmad and Stern 1988; Gordon and Li 2005).

[4]Specifically, the density f_θ is increasing over the interval $(-\infty, 0)$ and decreasing over the interval $(0, \infty)$.

[5] Simply differentiating, the curvature of ΔV follows directly from assumptions regarding the distribution of θ and concavity of each voters' utility.

[6]Specifically, the density g is increasing over the interval $(-\infty, 0)$ and decreasing over the interval $(0, \infty)$.

[7]This is very similar to a model of third-degree price discrimination (e.g., Mas-Colell, Whinston, and Green 1994).

[8]Andhra Pradesh is a large Indian state with a population of over 75 million people according

to the 2001 Census.

[9]The results are identical using other margins of victory to define close elections.

[10]The results survive using other measures of state government success in close elections. In particular, the results survive using the following measure of the total number of extra seats won by the state government through close elections: $\frac{CloseWon_{rt} - CloseLost_{rt}}{TotalSeats_r}$.

[11]I use the change in the share of total land taxes collected and total agricultural credit distributed to account for the fact that districts have different sizes. The results are identical when using the simple change in rupees.

[12]Controls include the share of government seats held by female candidates, lagged share of seats lost by the state government, an indicator equal to one if the region is in a drought, and an indicator equal to one if rain is above historical averages.

[13]Results are identical when estimating specifications regressing $Support_{r,t+1}$ on $Support_r$ and the rest of the RHS variables, as well as estimating specifications differencing both the right and left-hand-side variables.

[14]Angrist and Evans 1998 proposes a similar solution when encountering a similar problem where the proposed instrument only randomizes amongst a subset of the entire sample.

[15]Denoting the matrix of independent variables where observations are ordered by the n clusters as X, the submatrix with only the observations from the i'th cluster as X_i, and r_i as the vector of estimated residuals from the i'th cluster, Bell and McCaffrey (2002) suggest to estimate the variance-covariance matrix with $V_{brl} = (X'X)^{-1}[\sum_{i=1}^{n} X_i' A_i r_i r_i' A_i X_i](X'X)^{-1}$, where $A_i' A_i = (I_i - H_{ii})^{-1}$ and $H_{ii} = X_i(X'X)^{-1}X_i'$. This estimate differs from typical clustered variance estimators in two ways. First, the standard clustered estimator has a degrees-of-freedom adjustment where the variance-covariance matrix is multiplied by $\frac{n}{n-1}$. Second, the standard estimator does not inflate the estimated residuals r_i with a weighting matrix A_i. The weighting matrix A_i is not unique, and the authors suggest either the Cholesky decomposition or the symmetric square root of $(I_i - H_{ii})^{-1}$. The reported p-values use the Cholesky deomposition, but the results are identical when using the symmetric square root. The Matlab code is available upon request from the author.

[16]The p-values use a t-distribution with 20-k degrees of freedom.

[17]In estimations not shown, the results are also similar using a block bootstrap to estimate the standard errors.

[18]The group where the state government lost less than or equal to half of close elections is larger than the other group because districts with no close elections are assigned a value of zero and because it contains a number of regions where the success was exactly .5. If these regions are excluded, the number of regions in each group is approximately equal and the results are

qualitatively identical.

[19]Controls include the share of winning politicians who are female and the share of seats lost by the state government in the previous period.

[20]I thank Vikram Pathania for providing me with the data on district rainfall.

[21]The signs replicate Cole, Healy, and Werker (2012) and are consistent with the results of Wolfers (2006), where voters hold the incumbent government responsible for negative income shocks, or for the government's response to the negative income shocks. The previous incumbent government performed better in regions with higher rainfall (i.e., the incoming state government lost a higher share of seats), and the previous incumbent government performed worse in regions with low rainfall (i.e., the incoming state government lost a lower share of seats).

Data Appendix. Variable Definitions and Summary Statistics

Variable	Definition	Mean (st. dev)	Obs
Dependent Variables			
Difference Land Tax	Difference (Post-Pre) in region's share of total land taxes paid	-.0001 (.026)	140
Difference Agricultural Credit	Difference (Post-Pre) in region's share of total agricultural credit distributed by State Development Bank	.0004 (.046)	120
Election Outcomes			
ShareLost	ΣSeats Lost by party controlling state gov./ Σ Seats	.337 (.196)	140
ShareCloseLost_1.5%	ΣSeats Lost by state gov in close/ Σ Close Elections	.281 (.407)	140
ShareCloseLost_2%	Same as above with different cut-off	.329 (.416)	140
ShareCloseLost_2.5%	Same as above with different cut-off	.359 (.401)	140
Indicator_1.5%	Indicator for regions with no close elections using 1.5% as the cut-off	.443 (.499)	140
Indicator_2%	Same as above with different cut-off	.329 (.471)	140
Indicator_2.5%	Same as above with different cut-off	.264 (.443)	140
Controls			
ShareFemale	ΣSeats Won by women./ Σ Seats	.048 (.062)	140
ShareLost_Lag	ΣSeats Lost by party controlling state gov. in last election/ Σ Seats	.284 (.217)	140
Excess	Indicator equaling 1 if rain is 25% higher than regional ave. from 1950-1996	.17 (.377)	100
Drought	Indicator equaling 1 if rain is 25% lower than regional ave.	.298 (.223)	100

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Table 1. Summary Statistics of Agricultural Support by Group

	Share of Total Seats Lost by the Incoming State Government	PostLandTax-PreLandTax	PostCredit-Precredit[a]	N[b]
	(1)	(2)	(3)	(4)
Entire Sample	.337 (.017)	-.0001 (.002)	.0003 (.004)	140
Share of Close Elections Lost by the Incoming State Government >.50	.436 (.032)	-.009 (.0035)	.017 (.016)	32
Share of Close Elections Lost by the Incoming State Government <=.50	.308 (.018)	.0026 (.0026)	-.005 (.002)	108
Difference	.128*** (.038)	-.012** (.005)	.022** (.010)	-

Notes: This table illustrates the baseline identification strategy and reports group means of the share of total seats lost by the state government and the difference in agricultural support grouped by success in close elections. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses.

a. Column for agricultural credit contains 120 observations.

b. If the identification strategy was valid, there should be approximately the same number of regions with above 50% success in close elections as below. However, there are more regions with less success here because regions where there were no close elections were assigned a value of zero and the group contains a number of observations in which the incoming state government won exactly half of the close elections in a district. All results are identical if the sample is restricted to regions in which there was at least one close election, and in that case, there are approximately the same number of regions where the party controlling the state government won over half the close elections as won less than half.

Table 2. Description of Close Election Outcomes

Share of Close Elections Lost by the Incoming State Government	Sample Mean	Standard Dev.	95% Confidence Interval for Sample Mean	Average Number of Close Elections in a District	Max number of Close Elections in a District	N
	(1)	(2)	(3)	(4)	(5)	(6)
ShareClose Lost1.5%	.505 (.048)	.429	(.408,.602)	1.67	5	78
ShareClose Lost2%	.491 (.044)	.422	(.404,.577)	1.90	6	94
ShareClose Lost2.5%	.488 (.039)	.394	(.411,.565)	2.21	8	103

Notes: This table reports the outcomes of close elections in each district in time period t using cut-offs for the margin of victory that identifies an election as close between 1.5 and 2.5% of the vote share. Column (1) presents the sample mean of the share of close elections lost in a district, and reports the standard error for the sample mean clustered at the district level; column (2) presents the standard deviation; column (3) presents the 95% confidence interval for the estimate of the sample mean using the clustered standard error; columns (4) and (5) present the average number of close elections in a district in a single election and the maximum number of close elections in a district in a single election; and column (6) presents the number of district-election observations with at least one close election.

Table 3. Relationship between Close Election Outcomes and Overall Electoral Success

	Dependent Variable: Total Share of Seats Lost by the Incoming State Government		
	(1)	(2)	(3)
Share of Close Elections Lost by the Incoming State Government- 2.5% of the vote Share	.146*** (.031)	-	-
Share of Close Elections Lost by the Incoming State Government- 2% of the vote Share	-	.118*** (.031)	-
Share of Close Elections Lost by the Incoming State Government- 1.5% of the vote Share	-	-	.140*** (.034)
F	22.54	14.52	16.86
Obs	140	140	140

Notes: This table reports the first stage relationship between success of the party controlling the state government in close elections in a district and the overall success of the party. All specifications include time and district fixed effects. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses. In results not shown, standard errors are nearly identical when estimated using Bell and McCaffrey's Bias Reduced Linearization.

Table 4. Regional Correlates of Close Election Outcomes

	Dependent Variable:		
	Share of Seats Lost by the Incoming State Government in Close Elections		Total Share of Seats Lost by the Incoming State Government
	(1)	(2)	(3)
High Rain	-.047 (.106)	.146 (.162)	.151** (.056)
Low Rain	-.026 (.100)	.039 (.179)	-.095** (.042)
Share Female	-.237 (.864)	-.022 (1.36)	-.021 (.495)
Total Share of Seats Lost by the State Government in the Last Election	-.146 (.178)	-.423 (.260)	-.138 (.099)
Controls[a] and Regional Fixed Effects	N	N	Y
p-value[b]	.8784	.521	.038**
N	100	100	100

Notes: This table estimates the correlations between close election outcomes and other observable characteristics of districts. Close elections are defined as any election in which the party controlling the state government finished first or second and the election was determined by less than 1.5% of the total vote share. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses. In results not shown, standard errors are nearly identical when estimated using Bell and McCaffrey's Bias Reduced Linearization.

a. Controls include time dummies and an indicator equaling one if there were no close elections in a district in the time period.

b. P-value derived from a joint test of all reported coefficients equaling zero.

Table 5. Electoral Targeting of Land Tax Burden

	Dependent Variable: Difference in Land Tax Burden						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of Close Elections Lost by the Incoming State Government	-.015** (.0063)	-.019*** (.0056)	-.019** (.0075)	-.023** (.009)	-	-	-
Share of Seats Lost by the Incoming State Government	-	-	-	-	-.107* (.054)	-.139** (.059)	-.113* (.054)
IV	N	N	N	N	Y	Y	Y
Indicator[a]	N	Y	Y	-	N	Y	Y
Controls[b]	N	N	Y	Y	N	N	Y
p-value BRL[c]	.032**	.003***	.027**	-	.032**	.003***	.027**
Observation	140	140	100	53	140	140	100

Notes: This table estimates the relationship between the land tax burden and the success of the party controlling the state government in close elections. Close elections are defined as any election in which the party controlling the state government finished first or second and the election was determined by less than 1.5% of the total vote share. Columns (1)-(4) estimate the direct OLS relationship; columns (5)-(7) estimate IV specifications using the share of close elections won by the party controlling the state government as an instrument for the party's success in all elections in a district. All specifications include district fixed effects and time dummies. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses.

a. Columns (2)-(3) and columns (6)-(7) include an indicator equal to one if there were no close elections in the entire district. IV specifications using the indicator include it both in the set of instruments and the final specification.

b. Columns (3)-(4) and column (7) include district controls, which include he share of incumbents that are female, the share of seats won by the party controlling the state government in the previous election, an indicator equaling one if rain is 25% higher than regional average between 1950 and 1996, and an indicator equaling one if rain is 25% lower than regional average between 1950 and 1996. The rain variables are available only until 1996, and thus the specifications only include observations between 1978 and 1996.

c. P-value BRL denotes a p-value for the coefficient of either the share of close elections lost or the coefficient of the share of total seats lost equaling zero using Bell and McCaffrey's Bias Reduced Linearization to produce the standard errors and a t-distribution with a degree of freedom adjustment to take the small number of clusters into account.

Table 6. Political Targeting of Agricultural Credit

	Dependent Variable: Difference in State-Sponsored Agricultural Credit						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of Close Elections Lost by the Incoming State Government	.023 (.015)	.024 (.018)	.014** (.006)	.018** (.008)	-	-	-
Share of Seats Lost by the Incoming State Government	-	-	-	-	.157 (.101)	.150 (.105)	.086** (.039)
IV	N	N	N	N	Y	Y	Y
Indicator[a]	N	Y	Y	-	N	Y	Y
Controls[b]	N	N	Y	Y	N	N	Y
P-Value BRL[c]	.142	.172	.045**	-	.147	.191	.039**
Observation	120	120	100	53	120	120	100

Notes: This table estimates the relationship between a region's share of agricultural credit disbursed by the state development bank and the success of the party controlling the state government in close elections. Close elections are defined as any election in which the party controlling the state government finished first or second and the election was determined by less than 1.5% of the total vote share. Columns (1)-(4) estimate the direct OLS relationship; columns (5)-(7) estimate IV specifications using the share of close elections won by the party controlling the state government as an instrument for the party's success in all elections in a district. All specifications include district fixed effects and time dummies. . Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses.

a. Columns (2)-(3) and columns (6)-(7) include an indicator equal to one if there were no close elections in the entire district. IV specifications using the indicator include it both in the set of instruments and the final specification.

b. Columns (3)-(4) and column (7) include district controls, which include he share of incumbents that are female, the share of seats won by the party controlling the state government in the previous election, an indicator equaling one if rain is 25% higher than regional average between 1950 and 1996, and an indicator equaling one if rain is 25% lower than regional average between 1950 and 1996. The rain variables are available only until 1996, and thus the specifications only include observations between 1978 and 1996.

c. P-value BRL denotes a p-value for the coefficient of either the share of close elections lost or the coefficient of the share of total seats lost equaling zero using Bell and McCaffrey's Bias Reduced Linearization to produce the standard errors and a t-distribution with a degree of freedom adjustment to take the small number of clusters into account.

Table 7. Targeting of Alternate Forms of Government Expenditure

	Difference in the Share of Excise Taxes Paid	Difference in the Share of Sales Tax Paid	Difference in Share of Total Land Redistributed	Difference in the Share of People Treated at Government Medical Facilities	Difference in the share of Villages With Electricity[a]	Difference in the Share of Total Power Used by Region
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Close Elections Lost by the Incoming State Government	-.003 (.006)	-.073 (.132)	.001 (.034)	.008 (.008)	-.094 (.072)	-.0002 (.0019)
Obs	100	100	100	100	80	100

Notes: This table estimates the relationship between other forms of state policies and the success of the party controlling the state government in close elections. Close elections are defined as any election in which the party controlling the state government finished first or second and the election was determined by less than 1.5% of the total vote share. All specifications estimate the direct OLS relationship, and although not shown, the IV estimates analyzing the relationship between expenditures and overall electoral success are similar. All specifications include district fixed effects, time dummies, and control variables. District controls include an indicator equaling one if the party controlling the state government was not involved in any close elections in a district, the share of incumbents that are female, the share of seats won by the party controlling the state government in the previous election, an indicator equaling one if rain is 25% higher than regional average between 1950 and 1996, and an indicator equaling one if rain is 25% lower than regional average between 1950 and 1996. The rain variables are available only until 1996, and thus the specifications only include observations between 1978 and 1996. All results are identical if the rain indicators are dropped and observations from all elections are included. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses. In results not shown, standard errors are nearly identical when estimated using Bell and McCaffrey's Bias Reduced Linearization.

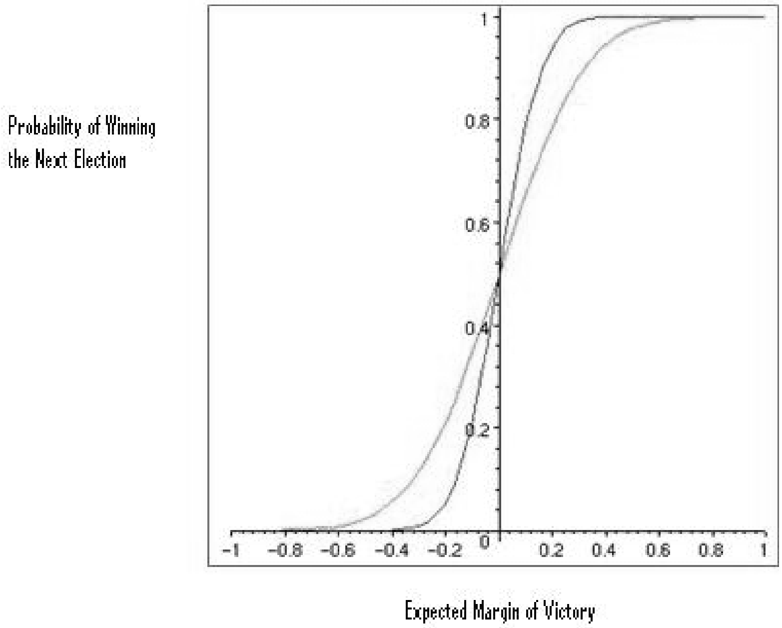
a. After 1996, all districts had 100 percent of villages with electricity, and thus Column (5) only includes elections prior to 1996.

Table 8. Robustness Checks of Baseline Specification

	Dependent Variable:					
	Difference in Land Tax Burden		Difference in Agricultural Credit		Difference in Land Tax Preceding Election	Difference in Agricultural Credit Preceding Election
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Future Close Elections Lost by the Incoming State Government	.003 (.009)	.001 (.009)	-.004 (.006)	-.003 (.005)	-.002 (.005)	-
Share of Close Elections Lost by the Incoming State Government	-	-.019** (.008)	-	.014** (.006)	-	-.001 (.006)
Obs	100	100	100	100	100	100

Notes: This table estimates a number of robustness checks investigating the relationship between state-sponsored agricultural support and success of the party controlling the state government in future elections. Close elections are defined as any election in which the party controlling the state government finished first or second and the election was determined by less than 1.5% of the total vote share. In particular, columns (1) and (3) estimate the relationship between the difference between agricultural support before and after the current election and the success of the party controlling the state government in the next election. Columns (2) and (4) estimate the same relationship, but also include the party's success in current close elections; and columns (5)-(6) estimate the relationship between the success of the party controlling the state government in close elections and the change in agricultural support in the year prior to the election. All specifications include district fixed effects, time dummies, and control variables. District controls include an indicator equaling one if the party controlling the state government was not involved in any close elections in a district, the share of incumbents that are female, the share of seats won by the party controlling the state government in the previous election, an indicator equaling one if rain is 25% higher than regional average between 1950 and 1996, and an indicator equaling one if rain is 25% lower than regional average between 1950 and 1996. The rain variables are available only until 1996, and thus the specifications only include observations between 1978 and 1996. All results are identical if the rain indicators are dropped and observations from all elections are included. Asterisks (***,**,*) denotes significance at the 1%, 5%, and 10% levels respectively. Standard errors clustered by district are in parentheses. In results not shown, standard errors are nearly identical when estimated using Bell and McCaffrey's Bias Reduced Linearization.

Figure 1. Representative probability function



Notes: Using the Normal Distribution to govern the uncertain vote count, each function graphs the probability of winning the next election, ϕ, as a function of the expected margin of victory. However, the function crossing from above at the expected margin of victory of zero incorporates a larger level of the mobilization policy π, and thus a stronger variance in the variance of the unexpected swing in the actual vote total. It is evident from the graph that expected winners dislike the higher variance and face a lower probability of winning the election for any given expected margin of victory. On the other hand more variance increases the probability an expected loser will win for any given expected margin of victory.