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The Usefulness of Corruptible Elections

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ABSTRACT: The belief that elections reduce rent seeking by government officials is widely held, likewise the belief that rent seeking decreases as elections are less subject to corruption. In this paper we develop and test a model in which these beliefs are carefully examined. Our model indicates that, while elections may provide a disincentive for rent seeking, this disincentive (1) need not actually materialise, and (2), is not necessarily correlated with the integrity of the electoral protocol. We next consider the ability of village-level elections in rural China to reduce rent seeking, and the extent to which this ability varies as the elections are more or less corruptible. We find that in practice, even elections that appear quite corruptible provide a strong disincentive to rent seeking. Moreover, our results indicate which types of electoral reform lead to more effective popular oversight of leaders, and which do not.

Key words: Elections, Property rights, China
JEL classification: H0, H7, D7, Q0.

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1. Introduction

The belief that elections reduce rent seeking by government officials is widely held, likewise the belief that rent seeking decreases as elections are less subject to corruption.¹ In this paper we develop and test a model in which to examine carefully these beliefs. We find that elections do in fact provide a disincentive for rent seeking, but that this disincentive need not vary with the integrity of the electoral protocol. In practice, it appears that a corruptible election is often as useful as an uncorruptible election.

Our theoretical analysis establishes that, while elections can reduce rent seeking by government officials, equilibria in which legitimate elections do not curtail rent seeking are also possible. The theoretical analysis, however, sheds little light on whether equilibria in which elections curtail rent seeking are more or less likely than equilibria in which they do not. Still more surprising, the theoretical model indicates that, even in equilibria where elections curtail rent seeking, marginal changes in the "nuts and bolts" details of choosing officeholders need not have any effect on equilibrium rent seeking by elected officials. That is, corruptible elections may be just as useful as uncorruptible elections.

To test the implications of this model we draw on data we collected describing the political economy of a sample of rural Chinese villages. This sample constitutes a nearly ideal statistical laboratory in which to investigate the consequences of marginal changes in democratic procedures. The many small villages in rural China engage in many of the same economic activities, and subsequent to governance reforms conducted in the late 1980's, are similar in their form of government. Consequently, it is reasonable to look for relationships between marginal changes in the democratic process and marginal changes in economic outcomes. We pursue precisely this strategy.

Our empirical findings are also surprising. Despite features in the original reform with the potential to condemn village democracy to irrelevance, village elections serve as a powerful check on rent seeking by local leaders. Moreover, this incentive effect is robust to the various unsavory electoral practices common in these elections. Indeed, we find that variation in some of our measures of electoral protocol are not associated with measurably large variation in the incentive effect provided by elections. Not only do elections provide leaders with strong incentives to act in the interests of their constituents, but this feature of elections is far from being a fragile one. It is robust to the awkward institutions of local democracy in rural China, and to various changes in the election process which serve to make the elections more or less corruptible. Even corruptible elections provide leaders with strong incentives to act in the interests of their constituents.

¹We are grateful to Ramon Myers, Kevin O'Brien, Scott Rozelle, and to seminar participants at Brown, Queen's, CIAR, and, at the 2003 North American Summer Meetings of the Econometric Society, for helpful comments and discussions.

In an era where the ability to create working democratic governments is an increasingly important part of foreign policy, these results should be of considerable interest to policy makers. We find that even very poorly conducted elections can have large incentive effects, and furthermore, that the benefits from additional reforms to improve election integrity may be small. Having said this, our findings allow us to rank the importance of four possible election reforms. We find the strongest evidence that restrictions on proxy voting will improve the ability of electorates in rural China to oversee their leaders. The evidence that reductions in government involvement in the nominating process will improve the quality of government is almost equally strong. We find no evidence that switching from mobile to fixed polling places or increasing opportunities to make campaign speeches affects government behavior.

Finally, our results shed light on the process by which property rights in land are formed in rural China. Our empirical analysis is concerned with the bureaucratic shifting of land between “responsibility land”, a property rights regime in which a large share of land rents remain with the villagers, and “contract land”, a property rights regime in which a larger share of land rents go to the village government. Our finding is that village elections lead to a link between increases in the share of village land that is held as responsibility land and electoral success.

2. Elections and Rent Seeking in Rural China

We assess the ability of elections in rural China to curtail rent seeking by village leaders, and the extent to which this ability varies with the details of election protocol. To begin, we describe the operation of rural governments and the conduct of elections. In order to deduce a measure of government rent seeking, we also describe the nature of property rights in agricultural land.

A. Village Governance

The two principle figures in most rural Chinese villages are the “village leader or head”(cunzhang) and the “party secretary”(shuji). Since the late 1980’s, the village leader is almost always an elected official. The party secretary, however, is typically either appointed by the township government or selected by the village party “cell”. In addition to these two officials, the village government typically includes several subordinate elected officials.

However elected, the village leader shares power with the appointed party secretary, although it is not clear how the responsibilities of the two officials are delineated. The reform that required the election of Village Leaders, The Village Organic Law, appears

to be deliberately vague on this matter. It specifies certain specific responsibilities for the village leader, while leaving the Party Secretary in charge of “core leadership” (Bernstein and Guo (2002)), a mandate vague enough to subsume all or none of the leader’s responsibilities. Anecdotal evidence indicates that there is considerable variation in the actual division of authority. In response to the question “Who is in charge of this village?” villagers often name the leader and often the secretary (and often some other person in the village who is not currently an officeholder, such as a former party secretary).² Not surprisingly, Bernstein and Guo (2002) document several cases where this arrangement leads to conflict between the two officeholders.

B. Elections

Starting in the late 1980’s villages in rural China were required by the Village Organic Law to hold an election every three years for a village leader and a village council (Pastor and Tan (2000)). Our data provide a history of village leadership and electoral turnover for 60 rural villages. These data were collected as a retrospective history from a current or (in a few cases) an *ex officio* village official. Altogether, we have information about 139 village leaders and 129 party secretaries. We describe our data in more detail below. An appendix describes our data on leader turnover exhaustively.

For all 60 of our villages we record the date of the most recent election. All 60 villages report an election during the five years 1996-2000, of which all but 6 report an election during the three years preceding the survey (1998-2000). Of these 60, we observe 28 villages where the incumbent survives this election. In the remaining 32 villages, we observe that the village leader changes in the election year. For these villages our data do not distinguish between villages where incumbents declined to run for re-election, and villages where they ran for re-election and were defeated. We note, that for our purposes, the distinction does not appear to be an important one: If we regard the decision to run for re-election as an endogenous one, any leader who runs for re-election and loses should be regarded as having made a mistake. Finally, in 3 of the 32 villages, the incumbent village leader was promoted to party secretary at the time of the most recent election. Our presumption is that these leaders did not run for re-election, and we exclude their villages from our sample. This leaves us with a sample of 57 villages.

Our data indicate that 49% of incumbents survived the most recent elections. Table 1 shows that these survival rates also decrease with time. This is consistent with our observation that term length is decreasing with time.³ Not surprisingly, we also observe

²Scott Rozelle: personal communication 2002.

³For those villages where we observe two completed spells in office, the average second term is shorter than the average first term.

TABLE 1
ELECTION COUNT AND SURVIVORSHIP BY YEAR AND PROVINCE

| Province | Year of Most Recent Election | | | | | Total |
|----------|------------------------------|-----------|------------|-------------------------------------|------------|------------|
| | 1996 | 1997 | 1998 | 1999 | 2000 | |
| Hebei | 0 | 0 | 0 | 1 ¹ 0.00 ² | 9 0.33 | 10 0.3 |
| Shaanxi | 0 | 1 0.00 | 2 0.00 | 5 0.20 | 1 0.00 | 9 0.11 |
| Liaoning | 1 1.00 | 3 0.67 | 5 0.60 | 0 | 0 | 9 0.67 |
| Zhejiang | 0 | 0 | 7 0.57 | 3 0.33 | 0 | 10 0.50 |
| Sichuan | 0 | 2 1.00 | 7 0.86 | 1 0.00 | 0 | 10 0.80 |
| Hubei | 0 | 1 1.00 | 1 1.00 | 7 0.43 | 0 | 9 0.55 |
| Totals | 1 1.00 | 2 0.71 | 22 0.64 | 17 0.29 | 10 0.30 | 57 0.49 |

Notes: 1. # of villages reporting election in that year; 2. Share of incumbents returned to office.

considerable heterogeneity in survival rates across provinces, from only 10% in Shaanxi, to 80% in Sichuan.

Our data also record the number of elections conducted in each village between the survey date in late fall 2000 and the 1988 inception of the Organic Law. The number of elections held in this period ranges between 1 and 6, with a mean of 3.4, and a median of 4. Thus, while all of our villages hold elections, elections are a recent and evolving phenomena.

As the first glimmerings of democracy in China, village elections have been the subject of much study, e.g., O'Brien and Li (2000), Pastor and Tan (2000), and Bernstein and Guo (2002), Chen (1999), Dearlove (1995), Li (2002), Leung(1996), and a body of literature now suggests two stylised facts about the implementation of electoral reforms and the nature of village democracy. First, at least until recently, resistance to the Organic Village Law by both village bureaucrats and their superiors was common and may still persist. This resistance impedes the implementation of the democratic and electoral reforms stipulated by the law in favor of a regime where bureaucrats are less subject to electoral oversight. Second, elections are being held in most villages.

Our data are broadly consistent with findings in this literature. Table 1 shows dramatically different rates of re-election success across provinces, consistent with differential enforcement of election laws at the provincial level. We also find that elections are widely held and that they are associated with high rates of leader turnover.

C. Electoral Protocol and Electoral Success

We now turn our attention to the "nuts and bolts" details of how elections are conducted, and to the relationship between these details and the likelihood of re-election. Several papers have examined the conduct and outcomes of village elections, e.g., O'Brien and Li(2000) and Pastor and Tan (2000). These papers find that elections are often vulnerable to corruption, if they are not actually corrupt.

Our analysis concentrates on four election protocols suggested to be important by our experience in the field or by other researchers. These four election protocols are:

Is voting carried out at a fixed location? Ballots are sometimes collected with roving ballot boxes that are carried from house to house on election day (Our survey, and, Pastor and Tan (2000)). Roving boxes are, in principal, easier to stuff than a ballot box at a fixed polling place, and households may be intimidated more easily at home than at a fixed public polling place. When there is a fixed polling place, voting typically occurs at the headquarters of the village government. In a small percentage of cases, typically when

village residents are widely dispersed, voting may occur at the office of each of the village small groups.⁴

Is the nomination of candidates purely popular? Our survey indicates that the process of getting on the ballot is highly variable. In some villages, only individuals or groups of individuals have the right to nominate candidates. In other cases, nominations are made by either the small group (*xiao zu*) or by the village representative committee (*cunmin daibiao hui*). In still other cases, other entities within the village such as the village party cell or the village committee play an important role. Finally, in a handful of cases, the township government plays a key role in the nomination process.

We originally divided the nomination process into four basic types, but subsequently (based on preliminary analysis) reduced our measure of the nomination process to a single categorical variable that is coded 1 if the right to nominate candidates resides solely and entirely with voters or groups of voters. The absence of such direct nominating rights may restrict the slate of candidates available to the villagers, and it is easy to imagine that this systematically biases election outcomes.

Is there a public candidate forum? Our survey indicates that in some villages candidates have an opportunity to address the villagers, while in others, this opportunity is not available. Pastor and Tan (2000) suggests that the ability to make campaign speeches is important. In principal, such speeches increase the information available to the electorate about the slate of candidates. This change in the electorate's information could lead to systematically different election results.

Is proxy voting by non-family members permitted? The franchise is given exclusively to people registered as residents in the village, and extends to registered residents not present in the village on election day. In all of our villages absent residents are allowed to cast their votes by proxy. Our survey also indicates that in about one-third of our villages, residents who are present in the village but unwilling to vote may have their votes cast by proxy. Finally, experience in the field suggests that proxy voting commonly allows a single individual to vote for the entire household.

Our survey records that in some villages, only immediate family members and near relatives may serve as a proxy, while in others non-family members may also do so. Our measure of proxy voting is an indicator variable that takes the value one when only family members may serve as a proxy, and zero when non-family members may serve as a proxy.

⁴Villages are typically divided into 6-8 small groups (*xiao zu*). In the pre-reform era, small groups were the same as the production teams.

TABLE 2
ELECTION PROTOCOL AND SURVIVORSHIP

| Protocol | Number of Villages Reporting the Protocol /Number of Villages with Data | Survival with Protocol | Survival without Protocol | Pr (mean _{with} =mean _{w/o}) (Chi ² test) |
|------------------------------|---|------------------------|---------------------------|---|
| | | % | % | |
| Popular Nomination | 31/59 | 51.6 | 39.2 | 0.343 |
| Public Forum for Candidates | 12/60 | 41.7 | 47.9 | 0.698 |
| Fixed Ballot Box | 24/56 | 45.8 | 43.8 | 0.877 |
| Restrictions on proxy voting | 18/51 | 22.2 | 63.6 | 0.005 |

Clearly, as there are fewer restrictions on proxy voting the opportunities for corruption increase.

Table 2 provides basic statistics about the relationship between election protocol and electoral success. Column 1 reports the number of villages for which we have data on each of the four election protocols, and the number in which we observe a particular protocol. For example, of the 56 villages for which we have information on polling, 24 report that during the most recent election voting was conducted at a fixed ballot box. Column 2 gives the probability that a leader survived an election in villages with the relevant protocol. Thus, among the 24 villages with a fixed polling place, the survival rate of leaders was 46%. Column 3 gives the probability that a leader survives in villages without the relevant protocol.

The table shows that suspicious electoral practices are pervasive in our sample. Polling is conducted at a fixed polling place in only 24 of 56 villages. Candidates had an opportunity to address the voters in a public forum in only 12 of 60 villages. In almost half of the villages, the right to nominate candidates does not reside entirely with voters. Finally, restrictions on proxy voting by non-family members are present in only slightly more than a third of the villages reporting.

When proxy voting is restricted to household members, the survival rate is only 22.2 percent, barely one third the survival rate when proxy voting is less restricted, and the difference is highly statistically significant. With popular nominations, survival is almost

fifty percent higher than without (51.6% versus 35.5%), although the difference is not statistically significant. For the other two protocol variables, the differences in survival rates are negligible and statistically insignificant. Therefore, of the four protocol variables under consideration, the sample means presented in Table 2 suggest that only variation in proxy voting and, possibly, variation in nominating procedures impact election outcomes.

D. Property Rights in Rural China and a Measure of Rent Seeking

In rural China, most agricultural land is in one of two property rights regimes, “responsibility land” (*ziren tian*) and “contract land” (*chengbao tian*).⁵ In our sample, responsibility land accounts for about 73% of the land in any given village, while contract land represents 13%.⁶ The remaining fraction is divided among two other small property rights regimes with which we will not be concerned, private plots (*ziliu di*), which are a legacy of the collective era, and reclaimed land (*kaihuang di*). With the exception of the private plots, all land in the village is nominally the property of the village, and whether the villagers who farm it enjoy the rights associated with responsibility or contract land is determined by the village government.

By western standards, responsibility land is exotic. It is distributed to households on the basis of household size, and possibly household labor supply. It is also subject to periodic “village-wide reallocations” in which the village government confiscates a large share of the stock of responsibility land from households and then reallocates the land to existing and newly formed households. The village may also reassign responsibility land to a different property rights regime.⁷ Village wide reallocations typically occur every 5 or 6 years, and sometimes less frequently. In addition to village-wide reallocations, smaller reallocations of responsibility land are also common.

Responsibility land is subject to two types of “tax”. The first is an agricultural quota which requires the farmer to sell a certain amount of farm output, typically grain, to the state at a below market price. It is often possible to fulfill a quota obligation with a cash payment equal to the difference in the value of quota at market and procurement prices.⁸ The second type of tax is an agricultural tax, payable in grain or cash. Both of these taxes are effectively paid to the central government.

⁵We include in responsibility land what is usually referred to as grain ration land (*kouliang tian*), which is allocated to households to meet grain subsistence needs. The key difference between grain ration land and responsibility land is that the former does not carry a quota. See Brandt et. al. (2002) for a discussion of property rights’ regimes in rural China.

⁶Throughout our analysis, we restrict attention to cropland. While cropland accounts for the majority of agricultural land, some agricultural land is devoted to orchards, greenhouses, and fish ponds.

⁷While the central government periodically issues directives guaranteeing secure tenure on responsibility land, these directives are systematically ignored, and reallocation of village land continues.

⁸In 2000, the implicit tax associated with the quota effectively turned into a subsidy as the market price fell below the procurement price.

Contract land, on the other hand, is a property rights' regime that is familiar in the west. A villager leases land from the village, for a mutually agreed upon price and duration. Rent payments for contract land are made to the village government, and are the property of the village government. Contract land is not generally subject to either the agricultural quota or tax.

Two features of these two types of property rights are important for this analysis. First, the village government is a party to every transaction involving responsibility or contract land. Only the village government may reallocate responsibility land, and the village government is a party to every transaction of contract land. Thus, institutional changes that alter the incentives faced by local bureaucrats may change the distribution of land across two types of property rights. Second, the villager occupying a plot of responsibility land retains more of the land rent than if the land is contract land.⁹ To the extent that taxes appropriate land rents, these rents go to the central government. Conversely, for contract land more of the land rent is extracted for the village coffers, where it may provide benefits to local village officials.¹⁰

It follows from this discussion that increases in the proportion of village land held in responsibility land increase the share of land rents retained by villagers. Conversely, decreases in responsibility land indicate that land rent is being reallocated and possibly appropriated by the village government. An increase in the share of contract land, on the other hand, is very clearly an increase in the amount of land rent appropriated by the village government.¹¹

In light of this, changes in the share of village land in contract and responsibility land are indicators of changes in the rent seeking activity by the village government. Increases in the share of contract land, or decreases in the share of responsibility land both indicate increases in land rent appropriated by the government. Our presumption is that villagers are harmed by these increased levels of rent extraction, and that leaders benefit. In particular, we suppose that leaders either appropriate fund for their own use, or that they prefer to administer governments with larger budgets: Both are probable. Leaders may also derive some benefit by renting contract land to friends and family. Figure 1 presents histograms of election year changes in shares of contract and responsibility land for our

⁹We define the land rent to be equal to the net income from farming the land, less the opportunity cost of the household's labor.

¹⁰Since a village's agricultural tax burden is fixed, as the amount of responsibility land decreases, the tax rate per unit of responsibility land increases. Thus, not only do reductions in responsibility land serve to reallocate land rents, but they also reallocate the tax burden. This too, could lead villagers to find decreases in responsibility land distasteful.

¹¹During our survey pre-tests, we encountered a village where the village leader appropriated all of the responsibility land and converted it to contract land, using land rents purely for his own benefits. Residents of this village were disappointed to learn that we were not reporters there to expose the scandal. This village, however, is not among those sampled in the actual survey.

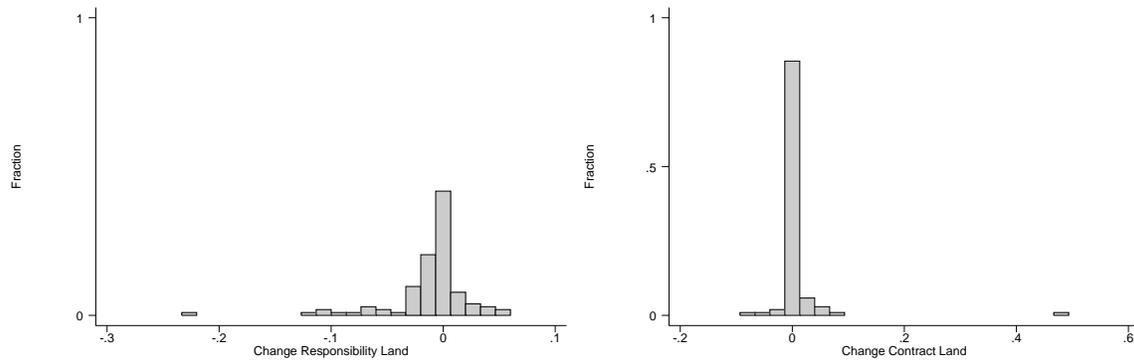


Figure 1. The figure on the left gives a histogram of changes in the share responsibility land in the year prior to the most recent election. The figure on the right presents the corresponding histogram for changes in the share of contract land.

sample.

As described above, changes in contract land and changes in changes in responsibility land are nearly equivalent as measures of government rent seeking. In fact, there are two important differences. First, contract land accounts for a relatively small share of total land and is often concentrated in the hands of a few households. Since our survey involves about 5% of households in each village, it often happens that we do not interview a single household with contract land. Thus our measure of changes in contract land is a noisy one. Since responsibility land is widely held this problem does not arise for responsibility land. Thus, our measure of changes in the share of contract land is probably noisier than is our measure of changes in the share of responsibility land. Second, a reduction in responsibility also occurs if the village sells some of its land for either residential or commercial uses. Reportedly, these kinds of sales have been widely subject to official corruption. (Contract land is less likely to be subject to such sales, precisely because it is under contract.) In light of these differences between contract and responsibility land, our analysis concentrates on changes in the share of responsibility land.

3. A Model of Electoral Defeat as Punishment and its Implications

We are interested in examining the ability of elections to reduce rent seeking by elected officials, and, the way that the influence of elections varies as elections are more or less corruptible. In this section we develop a theoretical model in which to pursue these inquiries. We have three objectives in developing this model. First, to provide a basis for an empirical assessment of the ability of elections to punish rent seeking. Second, to formalise what is meant by electoral corruptibility, and third, to provide a basis for tests

to measure the impact of such corruptibility on the ability of elections to restrain rent seeking.

Our model is driven by two stylised facts. First, voters can discipline leaders by denying them office in the future. Second, at some point, as leaders age, this threat loses its effectiveness. We also suppose that candidates' time preferences cannot be observed prior to inauguration, although the equilibria we describe are robust to dropping this assumption.

In our model, there exist equilibria in which leaders restrict current rent seeking in exchange for the opportunity to return to office and collect further rents. Thus, the extent to which elections restrict rent seeking is limited by the willingness of leaders to accept reductions in current rent in exchange for increases in future rent. The ability of elections to limit rent seeking is also constrained by the ability of an electorate to replace leaders conditional on any given level of rent seeking. This condition gives rise to a formalisation of electoral corruptibility and suggests an empirical approach to the problem of assessing the importance of electoral corruptibility.

There is a fairly extensive theoretical literature analysing electoral cycles in fiscal policies (see Besley and Case (1995a) for a bibliography). In these models a politician has private information about his ability, e.g., Rogoff (1990), or about his tastes, e.g., Besley and Case (1995a) or Banks and Sundaram (1998). Electoral cycles in fiscal policies arise as separating equilibria wherein leaders choose policies to signal their type to the electorate. Our model finds that electoral cycles also emerge as a consequence of quite different economic forces. We regard elections as a repeated game between a long lived electorate and a series of short lived politicians. In this setting, electoral cycles can emerge, not as a consequence of a signalling game, but as a consequence of trigger strategies employed by the electorate and politicians. In the existing literature, it is natural to think of cycles as a consequence of leaders' efforts to establish a good reputation; in our model it is more natural to think of cycles as emerging from the electorate's efforts to preserve a good reputation.

While our principal objective for the theoretical analysis is to motivate our econometric investigations, given the high level of interest in electoral cycles in fiscal policy,¹² our model is of intrinsic interest since it suggests a new cause for such cycles. Further, our model is much better suited to our data than are the extant signalling models. Signalling models of electoral cycles are intended to represent large western democracies where the electorate is likely to be poorly informed about a politician's tastes and ability, and where "rent seeking" activity involves the manipulation of fiscal policies to suit the tastes of the

¹² For example, Besley and Case(1995a,b,2003), Persson and Tabelinni(2003), Petterson-Lidbom(2002)

politician rather than the electorate.¹³ These models are not well suited to an analysis of small rural villages where, since the electorate is personally acquainted with their politicians, there can be much less uncertainty about their tastes and abilities, and where rent seeking involves, not marginal changes in public policy, but outright confiscation of property. This is precisely the environment that our model is intended to describe.

The second contribution of our theoretical analysis is to point out that "electoral corruptibility" can be formalised as a constraint on the electorate's strategy set. The argument for this formalisation applies equally well to signalling models of electoral cycles in fiscal policy.

A. *The Electoral Cycle as a Strategic Game*

Begin with the following description of a village's electoral history. Electoral reform occurs at time $t = 1$ and a leader is drawn at random from the pool of candidates. This leader then chooses an amount of rent to extract from the village. The electorate observes this level of rent extraction and chooses to return the incumbent to office for a second term, or selects a new leader from the pool of candidates. In the second period, the leader chooses an amount of rent to extract from the village, and the electorate again chooses a voting strategy. This process repeats itself in subsequent periods.

This description of the electoral process makes clear that elections may discipline leaders by denying them the rent associated with additional time in office. If an electorate is able to make an incumbent's electoral success conditional on low levels of rent seeking activity, then the incumbents will reduce rent seeking activity in order to increase their chances of re-election. In what follows we restate our stylised description of the electoral process as an extensive form game in order to examine the robustness of this intuition.

We imagine that there are two types of candidates for office, "patient" and "impatient". Impatient leaders serve only one term, and therefore, do not care about payoffs in the subsequent period. Patient leaders care about payoffs in both the current and subsequent period. However, if patient leaders return to office for a second term they return as impatient leaders. New leaders are selected at random from the pool of candidates, and the proportion of patient candidates in the pool of candidates is $\alpha \in [0,1]$. Thus, patient leaders replace outgoing incumbents with probability α .¹⁴

In each period the leader chooses an amount of rent to extract from the voter. Let $R_t^L \in [\underline{R}, \bar{R}]$ denote the amount of rent extracted in period t . These rents are imagined as

¹³Indeed, as the amount of private information decreases, electoral cycles must disappear from these models.

¹⁴Since "patient" and "impatient" implicitly reflect a politician's time until retirement, these terms are near synonyms for "young" and "old". The difference is that, while age may be easily observed, time until retirement date will often be private information that is related to age.

benefits that accrue to the officeholder strictly above the opportunity cost of his time. The upper bound of this interval is the threshold at which rent seeking becomes criminal and is restricted by legal rather than electoral sanctions. The lower bound is arbitrary. Let I_t be an indicator variable which is one in each period when the incumbent in period t wins re-election, and zero when a patient incumbent is defeated or an impatient incumbent retires. An electoral history for the village is a sequence $H = (R_t^L, I_t)_{t=0}^{\infty}$ which records rent extraction and electoral success for all time periods. Similarly, an electoral history of the village at time T is a subsequence $H_T = (R_t^L, I_t)_{t=0}^T$.

A patient leader's payoff is the sum of rent today and rent tomorrow, where rent tomorrow is discounted by the leader's subjective discount factor and by the probability of retaining office. That is, preferences of a patient leader elected in period t are $U(R_t^L, R_{t+1}^L) = R_t^L + \delta \Pr(I_t = 1)R_{t+1}^L$. An impatient leader is concerned only about payoffs in the current period, hence the payoffs of an impatient leader are $U(R_t) = R_t$. Since patient leaders who return to office for a second term, return as impatient leaders, their payoffs in the second term are also $U(R_t) = R_t$.

There is a single infinitely lived voter – “the electorate” – who decides whether or not to choose a new leader in each period. The electorate's payoff depends on the entire electoral history, and is given by $W(H) = -\sum_{t=0}^{\infty} \gamma^t R_t^L$, where γ is the electorate's subjective discount factor. That is, the electorate is better off as the discounted present value of rent extracted by a sequence of leaders decreases.

Impatient leaders always choose \bar{R} . Denote the action of a patient leader at t by R_t^L . After a patient incumbent chooses a level of rent extraction, the electorate chooses the probability with which it re-elects the leader. We allow the electorate to make re-election conditional on the observed level of rent seeking, but to simplify the analysis, restrict attention to simple deterministic re-election functions, i.e.,

$$I(R_t^L, R_t^E) = \begin{cases} 1 & \text{if } R_t^L \leq R_t^E \\ 0 & \text{if } R_t^L > R_t^E \end{cases} . \quad (1)$$

Given this restriction on the form of re-election functions, an action for the electorate in each period is simply a choice of R_t^E , the threshold level of rent extraction determining whether or not an incumbent is returned to office. The electorate chooses the re-election threshold from $[\underline{R}, \bar{R}]$, the same set from which the leaders choose rent extraction. Thus, the electorate's strategy set is large enough that it can punish any feasible amount of rent seeking with electoral defeat.

Let S_t^E, S_t^L denote a strategy for the electorate at time t and a strategy for a patient leader elected at time t .¹⁵ A strategy S_t^E for the electorate at time t is a choice of R_t^E for each

¹⁵To lighten notation S_t^L is a patient leader's strategy at time t conditional on the leader attaining office. Looking at such conditional strategies relieves us of keeping track of a “null move” and payoff for these leaders when they never attain office.

time period $t' \geq t$, for each possible electoral history at time $t - 1$, and for each possible strategy profile for the patient leaders. Thus $S_t^E : (H_{t-1}, (S_{t'}^L)_{t'=t}^\infty) \longrightarrow (R_t^E)_{t=t}^\infty$. A strategy for a patient leader elected at time t is a function which chooses R_t^L for every possible electoral history at time $t - 1$, and every possible strategy for the electorate and future leaders. Thus $S_t^L : (H_{t-1}, S_t^E, (S_{t'}^L)_{t'=t+1}^\infty) \longrightarrow [\underline{R}, \bar{R}]$. A strategy profile for the economy is $((S_t^E)_{t=0}^\infty, (S_t^L)_{t=0}^\infty)$.

A patient leader's objective is to choose rent extraction to maximise his payoffs, taking as given his village's electoral history and the way that electoral success responds to rent seeking. That is, a patient leader solves,

$$\max_{R_t^L \in [\underline{R}, \bar{R}]} R_t + \delta I(R_t^L, R_t^E) \bar{R}.$$

Therefore, a patient leader's optimal rent extraction is

$$R_t = \begin{cases} R_t^E & \text{if } R_t^E \geq (1 - \delta) \bar{R} \\ \bar{R} & \text{if } R_t^E < (1 - \delta) \bar{R} \end{cases}.$$

In words, a patient leader will forgo rent extraction in the present period in order to retain office, but only up to the point where the forgone rent is offset by the present value of next period's expected rent.

We are now able to examine more carefully the intuition that the threat of electoral defeat can cause leaders to reduce their rent seeking activity in exchange for more time in office. Let $R^* \in [(1 - \delta) \bar{R}, \bar{R})$. Suppose that all patient leaders choose to play R^* in their youth, and the electorate in each period promises to re-elect any leader who plays $R_L \leq R^*$. Such strategies give rise to the "cooperative" outcome in which patient leaders restrict their rent seeking in exchange for a second term in office. The problem with these strategies is that the electorate's promise to re-elect patient leaders is not credible. If the electorate returns a patient leader to office, they are guaranteed an impatient leader who engages in maximal rent seeking the next period. On the other hand, if they do not re-elect the patient leader, then with probability α a patient leader takes office and engages in low levels of rent seeking. Thus, the electorate should never honor its promise to return a patient leader to office. This commitment problem is the principal obstacle to equilibria where elections discourage rent seeking.

Solving this commitment problem requires that leaders and electorate condition their actions on the history of play. The strategies which enforce the cooperative outcome as a Nash equilibrium are described in Proposition 1.

Proposition 1 *There exists a Nash equilibrium such that the electorate and patient leaders always choose the action R^* , for any $R^* \in [(1 - \delta) \bar{R}, \bar{R})$.*

Proof Say that a history H_t is *cooperative for R^** if for all $t' \leq t$, the electorate has re-elected every leader who extracted no more rent than R^* . More formally, a history H_t is cooperative for R^* if $I_{t'} = 1$ whenever $R_{t'}^L \leq R^*$ for all $t' \in \{1, \dots, t\}$. The initial history, H_0 , is assumed cooperative in R^* .

Let S_t^{E*} be the strategy where the electorate promises to return a leader to office whenever the leader chooses a low level of rent extraction *and* the electorate has never broken this promise in the past. That is,

$$S_t^{E*} = \begin{cases} R^* & \text{if } R_t^L \leq R^* \\ \underline{R} & \text{Otherwise.} \end{cases} \quad (2)$$

Let S_t^{L*} denote the strategy where a patient leader chooses a low level of rent seeking at all histories where leaders who selected this strategy have always been re-elected, and a high level of rent seeking otherwise. That is,

$$S_t^{L*} = \begin{cases} R^* & \text{if } H_{t-1} \text{ is cooperative for } R^* \\ \bar{R} & \text{Otherwise.} \end{cases} \quad (3)$$

We suppose that the leaders and electorate follow these strategies and show that each is a best response to the other at all nodes along the cooperative path.

Consider a patient leader elected at time t at a node where H_{t-1} is cooperative for R^* . At such a node, if the patient leader follows S_t^{L*} he gets payoff $U(R^*, \bar{R}) \geq \bar{R}$. Deviating to a higher level of rent extraction, $R_t^L > R^*$, assures that the leader will not be re-elected, and hence gets payoff $U(R_t^L, 0) = R_t^L \leq \bar{R}$. Deviating to a lower level of rent extraction $R_t^L < (1 - \delta)\bar{R}$ guarantees a strictly smaller payoff in the patient leader's first term with no increase in re-election probability. Therefore, if H_{t-1} is cooperative for R^* , then S_t^{L*} is a best response to S_t^{E*} .

Consider the electorate's problem at time t at a node where H_{t-1} is cooperative for R^* and a leader chooses $R_t^L \leq R^*$. If the electorate follows S_t^{E*} and returns the incumbent to office, then in period $t + 1$ rent extraction will be \bar{R} and in period $t + 2$ there is probability α of a patient leader who observes a history that is cooperative in R^* and chooses a low level of rent extraction. On the other hand, if the electorate deviates from S_t^{E*} and does not return the incumbent to office, then all subsequent patient leaders observe histories that are not cooperative for R^* and play \bar{R} , making the electorate strictly worse off. It follows that S_t^{L*} is a best response to S_t^{E*} . \square

Proposition 1 establishes that our intuition that leaders will refrain from rent seeking in order to secure more time in office is consistent with self-interested behavior. However, achieving such an outcome requires that the players overcome the electorate's commitment problem. The solution to this commitment problem developed in Proposition 1 is a

weak one: Nash equilibrium precludes the possibility that once off the equilibrium path the electorate or the leaders change their strategies, even if it is in their interests to do so. With this caveat in place, it seems reasonable to imagine a stylised agent intended to represent an “electorate” that acts with the sort of limited ratiocination implied by the Nash equilibrium.¹⁶

There also exist equilibria of this game where the outcome is “non-cooperative”, with all leaders serving a single term and engaging in maximal rent seeking. For example, the strategies where leaders choose \bar{R} for all histories and the electorate chooses \underline{R} for all histories are a Nash equilibrium where $R_t^L = \bar{R}$ in all periods.

These results refine our intuition that elections can restrict rent seeking by elected leaders: Such reductions in rent seeking are a possible, but not a necessary consequence of elections. It is possible for elections to occur which allow the electorate substantial discretion in its choice of leaders and, in equilibrium, these elections need not restrict rent seeking by leaders at all. Furthermore, these results suggest that elections will not serve to drive rent seeking by leaders to zero. Elections restrict current rent seeking with the credible promise of future rents. Thus, the basis of a democratic election’s ability to reduce rent seeking is the presence of some residual positive rents to office holding.

B. *Corruptibility of Elections*

Given two elections, we define one to be more corruptible than the other if, all else equal, it allows a leader to engage in higher levels of rent seeking and still retain office. More formally, an election or an election protocol is more corruptible if, at any given level of rent seeking, an electorate’s ability to replace a leader is more constrained. That is, an election is more corruptible as the set of re-election functions available to the electorate shrinks.

Until now we have permitted the electorate to choose re-election functions of the form,

$$I(R_t^L, R_t^E) = \begin{cases} 1 & \text{if } R_t \leq R_t^E \\ 0 & \text{if } R_t > R_t^E \end{cases} ,$$

where R_t^E is selected from a set $[\underline{R}, \bar{R}]$. If we continue to restrict attention to such deterministic re-election functions, our definition of electoral corruptibility suggests that we regard elections which allow the electorate this choice of election functions as perfectly uncorrupt. The election protocol which gives rise to this choice set for the electorate

¹⁶ It appears to be possible to achieve the cooperative outcome of Proposition 1 as a Bayesian perfect equilibria. Such equilibria would entail a more credible solution to the electorate’s commitment problem at the cost of strategies that require a more complicated response to the history of play. It is not obvious such ratiocination is plausible for our stylised electorate. Moreover, such a theorem does not affect the basic conclusion that we draw from Proposition 1: The cooperative outcome can be achieved provided agents find a way to overcome the electorate’s commitment problem.

places no restrictions on the ability of the electorate to dismiss its leaders: The electorate's strategy set is large enough that it can punish any feasible amount of rent seeking with electoral defeat.

To make the notion of a corruptible election precise for the case of deterministic re-election functions, we define an election to be corruptible if for some $\underline{R}^C > \underline{R}$, the electorate is restricted to choose its strategy from $[\underline{R}^C, \bar{R}]$. That is, a corruptible electoral protocol is one where leaders who engage in sufficiently low levels of rent seeking cannot be defeated in an election. This matches our intuition very closely. As \underline{R}^C increases, the leader may engage in progressively higher levels of rent seeking without the possibility of electoral defeat. This favors the incumbent leader's welfare over that of the candidates or the electorate.

While this is a "reduced form" description of electoral corruptibility, it seems an apt description of our data. If an incumbent anticipates the opportunity to obtain an additional vote through corrupt electoral practices, then he can increase rent seeking by an amount that alienates an additional vote without affecting the outcome of the election. Equivalently, the minimum level of rent seeking associated with losing an election increases marginally with the opportunity to stuff a single ballot. Thus more corruptible elections are those where the leader has an opportunity to cast proxy votes for their constituents, where leaders can stuff ballots in a mobile ballot box, or where leaders can prevent competitors from communicating with the electorate.

The ability to control the nominating process also leads to a more corruptible election: A leader who can choose an unattractive challenger can afford to alienate more voters. Thus an election with a purely popular nominating process is a less corruptible one and leaders in such villages should be less likely to survive elections. However, a purely popular nominating process should also have a second effect. A less restrictive nominating process should select leaders who are better, at least on the basis of observable characteristics. These leaders will extract less rent from their constituents and be more likely to survive an election. As we will see later, it is this second effect that appears to dominate in our data: All else equal, leaders in villages with a purely public nominating process are more likely to survive re-election.

An interesting implication of this definition of corruptibility is that corruptible election protocols need not result in different outcomes than perfectly uncorrupt elections. If a less corruptible election enables a rational electorate to dismiss a leader for a lower level of rent seeking, the electorate may not take advantage of the improved electoral protocol: Doing so may cause a leader to prefer a single term in office with high rent seeking to two terms in office, the first with low rent seeking.

The possibility that corruptible and uncorruptible elections result in identical behavior can be seen clearly in the cooperative equilibrium described by Proposition 1. Along the

equilibrium path the electorate always returns to office any leader who extracts no more rent than R^* , where $R^* > \underline{R}$. Corruptible elections do not affect this outcome, provided $\underline{R}^C < R^*$. In such an equilibrium, the ability of the electorate to punish rent seeking is not restricted by the corruptibility of the elections; rather, it is restricted by the willingness of leaders to forgo current rent in exchange for future rent. This is determined by the time preferences of leaders and by the upper bound on rent seeking \bar{R} . This upper bound on rent seeking is determined, outside electoral process, for example, by the efficacy of the legal system or the fear of insurrection.

Thus, the model suggests that two regimes are possible, one in which corruptibility matters, and another in which it does not. If a village is in a non-cooperative equilibrium or if the corruptibility of elections is not a binding constraint on electorate behavior, then the degree of corruptibility is irrelevant to the observed outcome. On the other hand, if the corruptibility of an election is binding on electorate behavior, then rent seeking will increase as electoral protocols become more corruptible.

Knowing which of these two regimes prevails is of fundamental importance to policy makers. In the first regime, decreases in rent seeking by leaders cannot be achieved by electoral reform. It can only be achieved by reforms which decrease the threshold at which rent seeking becomes subject to legal sanctions. In the second regime, electoral reform can have the expected effect and lead to lower levels of rent seeking by leaders. With this said, theory tells us only that two regimes are possible, determining which regime prevails in any particular case is an empirical question.

C. *Econometric Model*

The theoretical analysis is driven by a small number of parameters for each village i ; the upper and lower bounds of the electorate's strategy set, \bar{R}_i and \underline{R}_i , the leader's time preferences, δ_i , and an implicit indicator variable for whether the leader is "patient" or "impatient". As a practical matter, we expect that these parameters will vary systematically with observable features of villages and leaders. Thus, $\bar{R}_i = \bar{R}(x_i, \mu_i)$ and $\underline{R}_i = \underline{R}(x_i, \mu_i)$, where x_i and μ_i are village level variables related to the amount of land rent that may be extracted from the village, with x_i observed and μ_i not observed by the econometrician. Similarly, $\delta_i = \delta(z_i)$, where z_i are leader characteristics affecting his tastes.

R_i^* , the threshold amount of rent which divides re-election from defeat is a function of the parameters \bar{R}_i and δ_i . Thus, we have $R_i^* = R^*(\bar{R}_i, \delta_i) = R^*(x_i, z_i, \mu_i)$. Given this, by inspection of Equation 3, we have the leader's choices of rent seeking as

$$S_i^{L*} = S^{L*}(x_i, z_i, \mu_i, \eta_i), \quad (4)$$

where η_i is a random variable, observed only by the leader, describing the leader's type, e.g., patient or impatient. By inspection of Equation 2 we have the electorate's equilibrium

choice of threshold as a function of the leader's choice of rent seeking, along with R_i^* , and \underline{R} . Thus we have,

$$S_i^{E*} = S^{E*}(x_i, z_i, \mu_i, S^{L*}(x_i, z_i, \mu_i, \eta_i)). \quad (5)$$

This equation, together with Equation 1 gives rise to a re-election function for each village. That is, a function which assigns a probability of re-election to each level of rent seeking. If y_i is an indicator variable that takes the value 1 when a leader is re-elected and zero otherwise, then this re-election function may be written,

$$\Pr(y_i = 1 | x_i, z_i, \mu_i, S^{L*}(x_i, z_i, \mu_i, \eta_i)) = F(B_0 + B_1 x_i + B_2 z_i + B_3 S^{L*}(x_i, z_i, \mu_i, \eta_i) + \mu_i). \quad (6)$$

The theoretical analysis imposes the strong simplifying assumption that F is a simple step function. In the empirical analysis, we relax this assumption and estimate F non-parametrically and as a standard Logit distribution.

The theoretical analysis suggests two possible ways to assess the importance of election protocol. The first is to look at the effect of the protocol variables on rent seeking, i.e., in Equation 4. This approach is used in empirical studies of electoral cycles in fiscal policy; Besley and Case (1995a), Petterson-Lidbom(2002), Torsten and Persson (2003). The second way to assess the importance of election protocol is to look at the effect of election protocol on re-election probabilities, i.e., in Equation 5.

In the absence of variation in whether or not villages hold elections, Equation 4 does not give us any insight into the ability of elections to punish rent seeking. However, this is precisely what is captured by the parameter B_3 in Equation 6. All else equal, as the magnitude of this parameter is larger re-election probabilities are more sensitive to rent seeking activities. Equation 6 also affords an opportunity to assess the importance of election protocol. If an election protocol is binding on the electorate's strategy then the re-election function should shift as we move from villages with the protocol, to villages without it.

Econometric Issues

Estimating Equation 6 poses a difficult econometric problem. Since unobserved village variables, μ_i , occur in the expression for S^{L*} , our estimate for B_3 will be biased. The standard response to this problem is to find a variable correlated with the endogenous variable but not with the error term, and conduct IV estimations. Such an approach is not possible in this case.

To see this, note that the only variable that occurs solely in S^{L*} is η_i , however this variable reflects the leader's private information about his type. Thus, a persuasive instrument would need to be one observed by the leader and the econometrician, but not the villagers. More intuitively, we cannot use leader characteristics like age or education as instruments.

If such variables affect leader tastes, then upon observing them, the electorate will adjust its strategy accordingly, and the variable's effect does not occur solely through its effect on S^{L*} .

Having said this, it is pretty clear which way this endogeneity problem will bias our estimate of B_3 . Since the differences in unobserved village characteristics cause extra dispersion in S^{L*} , the magnitude of our estimate of B_3 will be biased downward (in the same way that measurement error attenuates coefficient estimates). This intuition will be borne out by our regression results.

A second potential problem is the endogeneity of the electoral protocol variables. A particularly corrupt leader may be more likely to arrange for an election without a fixed polling place, while the electorate in such a village is likely to resist such an action more actively or to monitor a roving polling box more closely. What we observe is the equilibrium effect of these different processes. Having said this, there is some evidence to suggest that the choice of electoral process is not entirely endogenous to the village. The Organic Law places responsibility for monitoring elections with the Ministry of Civil Affairs and the county and township governments (O'Brien and Li (2000)), which may or may not be sensitive to lobbying by candidates and voters. Moreover, regressions to predict the various processes using county indicators (our sample contains two villages per county) gives R^2 's of .7 and .8, which suggests that much of the variation in protocol is explained by processes exogenous to the village. Finally, efforts to develop first stage regressions to predict election protocol using variables which reflect village endowments and the difficulty of communication with government and press outside the village, met with very poor success.

A third potential problem is error in measuring the election protocol variables. In order to learn about election protocols, in each village, our survey teams interviewed a village cadre (or *ex officio* cadre) about how the last election was conducted.¹⁷ All of our discussion so far is based on these cadre reports. As a check, our survey teams also asked four villagers the same questions. Unsurprisingly, the four villagers did not always give the same answers, and did not always agree with the cadre. This suggests that the cadres and villagers are reporting election protocols with some error. Since the presence of measurement error leads to attenuation bias, it is important for us to address this problem if we are to conclude that certain protocol variables are *not* important.

To make our problem manageable we first construct a variable which contains the modal villager response to each of our protocol questions. For villages where we record both modal villager and cadre responses to our protocol questions, these responses agree about 80% of the time. If reporting errors are random, this is consistent with cadre and

¹⁷"Cadre" refers to any government official. In our case enumerators typically interviewed the village leader, or *cunzhang*, and occasionally interviewed the party secretary.

modal villager reporting correctly about 90% of the time.¹⁸ While we do measure election protocol with some error, our measures appear to be quite accurate.¹⁹

Our exposition concentrates on results based upon cadre responses to the protocol questions. However, to assess the importance of errors in measuring protocols on our results we duplicate these estimations using the modal villagers responses. Unless noted otherwise, these results are qualitatively identical to those we report. In order to assess the importance of attenuation bias we also experiment with a two stage procedure which uses the modal villager's response and a collection of village controls as an instrument for the cadre's response.

4. Data

Our data were collected as part of a major household and village-level survey conducted during the fall of 2000.²⁰ Altogether, we surveyed 1200 households in 60 villages in 30 counties in 6 provinces of China. The provinces are: Liaoning, Hebei, Shaanxi, Sichuan, Hubei, and Zhejiang. The selection of counties and villages was based on a stratified sample; the selection of households in each village was random. Enumerators also interviewed one or more cadre in each village.

Our household and village-level data provide a rich and detailed description of village economic and political life. Among other things, our data include: (1) the history of leadership turnover in each village; (2) details about when and how the most recent village election was conducted; (3) recent changes in household and village land holdings; (4) household and village demographics and labor supply behavior; and (5) a retrospective history of leader characteristics.

While much of the survey was administered to all 20 households in each village, to reduce the burden of the survey, only four village households were questioned on topic 2 above, while only leaders were asked about topic 5. Leaders were also interviewed on all other topics.

¹⁸If each report the true protocol with probability p , then they will make identical reports with probability $p^2 + (1 - p)^2 = .8$. Solving gives $p = 0.89$

¹⁹There is one variable for which the villager and cadre reports are systematically different. The villagers report only four villages with a public forum, and in all of these villages the incumbent did not survive the election. The cadres however, report public candidate forums in 12 villages, in 5 of which the incumbent survived (see Table 2). For this protocol we prefer the cadre responses. Cadres are more likely to have attended a public candidate forum than an average villager, and we suspect that villagers are more likely to attend such a forum if they are unhappy with the current government.

²⁰These data were collected in collaboration with Nansheng Bai, Scott Rozelle, Linxiu Zhang, and the Chinese Center for Agricultural Policy, Beijing.

TABLE 3
LEADER BEHAVIOR IN YEAR PRIOR TO AN ELECTION

| | Age | Responsibility Land | Contract Land | Share with Investment in Schools |
|--------------|---------------|---------------------|------------------|----------------------------------|
| Survivor | 45.8 (6.3) | -0.006 (0.025) | 0.003 (0.010) | 0.67 |
| Non-Survivor | 46.0 (6.7) | -0.013 (0.032) | 0.026 (0.084) | 0.44 |

Notes: For year prior to and after an election, Col 1: Mean leader age at inauguration. Col. 2: Mean change in the share of cropland held as responsibility land. Col 3: Mean change in share of cropland held as contract land. Standard deviations are in parentheses, Col 4: Share of villages with a capital investment in schools in the year before an election.

5. Empirical Results

A. Rent Seeking Conditional on Election Outcomes

The theoretical model indicates that re-election probabilities should vary with the level of rent seeking behavior. Table 3 takes a first look at this hypothesis.

To measure rent seeking by leaders we use the change in the proportion of village land that is held as contract or responsibility land from one year to the next. In accordance with our earlier argument, we suppose that villages experiencing increases in the share of contract land or decreases in the share of responsibility land are villages where the leader has increased rent seeking activity.

Table 3 presents the mean values of election year rent seeking by leaders who subsequently survived the election to serve another term, and those who did not. For completeness, Column 1 gives mean age for each class of leaders. Columns two and three of Table 3 present mean annual changes in the share of village land in responsibility and contract land (and the corresponding standard errors). On average, losers decreased the share of responsibility land by 0.017 in the year prior to an election, while an average winner allowed the share of responsibility land to decrease by only 0.006. Similarly, an average loser increased the share of contract land by 0.019 while the average winner increased it by only 0.003. Thus, rent seeking in the year prior to an election is associated with electoral defeat, in accord with the predictions of our model. Column four of Table 3 gives the share of villages where the government undertook a capital expenditure on schools in the pre-election year. We see that 2/3 of successful incumbents made such

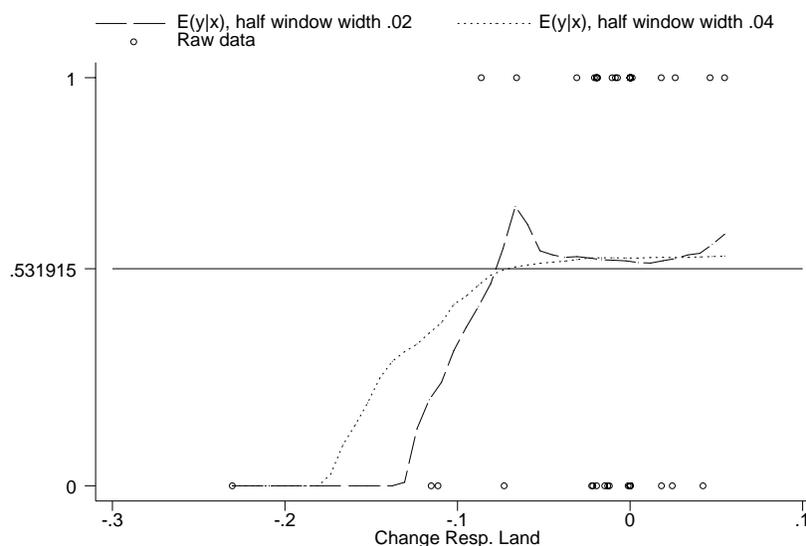


Figure 2. Kernel estimate of the probability of electoral success conditional on changes in the share of responsibility land.

investments, compared with fewer than 1/2 of unsuccessful incumbents.²¹

To sum up, Table 3 shows that electoral failure is associated with larger decreases in the proportion of responsibility land, with larger increases in the share of contract land, and with a lower incidence of capital expenditure on schools. While these results suggest that elections are affecting behavior in the expected way, they should be regarded with some circumspection. First, the statistics for contract land are based on a small number of villages. Only 13 villages report a change in the stock of contract land in the year prior to an election. Second, according to the relevant statistical tests, none of the differences in means enumerated in Table 3 are statistically significant at ordinary levels of significance.

B. Non-parametric Estimates of Re-election Probabilities

Figure 2 presents the results of non-parametric regressions which show the expected rate of re-election success conditional on changes in responsibility land. That is, non-parametric estimates of the re-election functions of Equation 5. The regressions are based on "kernel" density estimates using the Epanechnikov kernel and half window widths specified in the figure (Yatchew (2003), Ch. 3). These figures conform with our expectations. Electoral success increases as leaders increase the share of responsibility land.

While Figure 2 confirms that elections do provide an incentive for leaders to reduce rent seeking if they want to remain in office, it says nothing about the role of election protocol. In order to investigate the relationship between election protocol and re-election probab-

²¹Capital investments in local schools are generally funded with village revenues rather than revenue from the center.

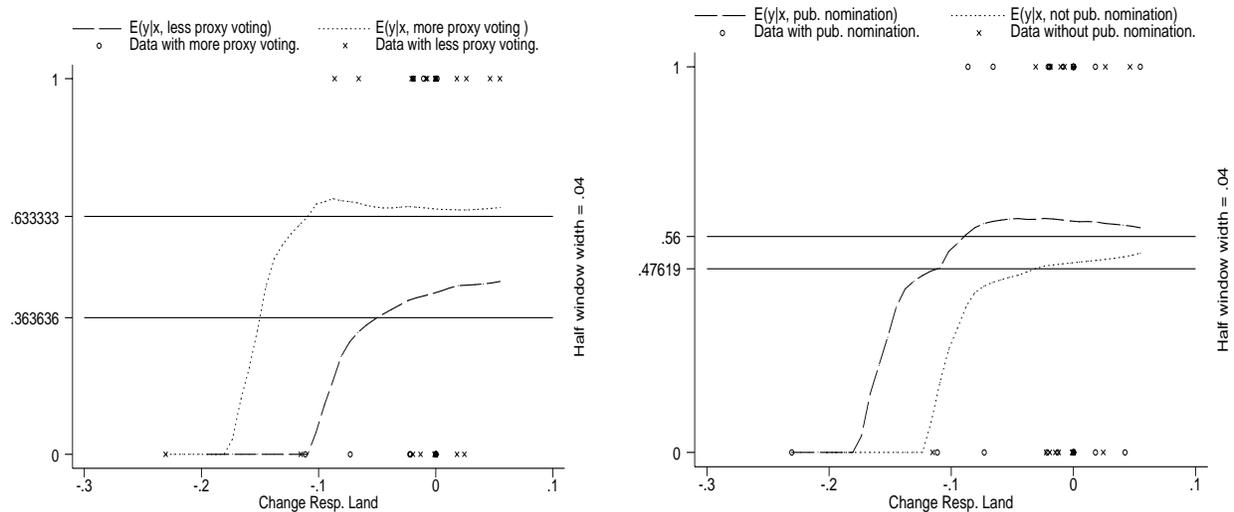


Figure 3. Kernel estimates showing the probability electoral success conditional on changes in the share of responsibility land, and on protocol variables. Relaxing restrictions on proxy voting shifts the re-election function to the right along the x axis. A reducing government involvement in the nominating process shifts the re-election function to the left.

ility, Figure 3 presents two figures. The left figure shows the results of non-parametric regressions which predict the expected rate of re-election success conditional on changes in responsibility land for subsamples with and without restrictions on proxy voting. These figures show that, at all levels of rent seeking, re-election is less likely in villages with more restrictions on proxy voting. The right figure shows the results of non-parametric regressions which predict the expected rate of re-election success conditional on changes in responsibility land for subsamples with and without a purely public nominating procedure. These figures show that, at all levels of rent seeking, re-election is more likely in villages with less government involvement in the nomination process.

We also estimated re-election functions like those in Figure 3 for the other two election protocol variables (not reported). Consistent with our findings in Table 2 these regressions did not support the hypotheses that these protocol variables affect re-election probabilities.

C. Regression Results

We now examine the relationship between electoral success, electoral protocol, and rent seeking while controlling for other possible sources of variation in the data. Given the econometric model discussed above, there are two ways to proceed. First, to estimate Equation 4 to check whether levels of rent seeking vary systematically with election protocol. Second, to estimate Equation 6 to check whether the probability of electoral success varies systematically with rent seeking activity or election protocol.

Our efforts to assess the effects of the cadres' reported election protocol in Equation 4 failed to find any effect of the election protocol variables on rent seeking. One conclusion consistent with this finding is that, for whatever reason, election protocols simply do not matter in rural China.

However, two other explanations are also possible. First, the evolution of democratic institutions in rural China has been rapid, and substantially driven by decisions made at higher levels of government (O'Brien and Li(2000)). Given this, it is possible that leaders often do not know election protocols until after their election year behavior is determined. In this case, the leaders regard all elections as identical *ex ante*, and we will observe no systematic differences in rent seeking as protocol varies.

Second, an estimation of Equation 4 pools leaders who survived the election with those who did not. Since our theory tells us that leaders who do not survive re-election should all engage in maximal rent seeking, given a high turnover rate, estimates of the effect of changes in electoral protocol will be attenuated by this pooling. The natural solution to this problem is to restrict the sample to leaders who were re-elected. When we duplicated our estimates of Equation 4, but restricted our sample to those leaders who survived the election, we continued to find that the protocol variables did not affect levels of rent seeking, with one exception.

If we use the modal villager's assessment of the nominating process, we find that the coefficient of the nominating process variable is positive and statistically significant in estimates of Equation 4. That is, villages where the modal villager reports a purely public nominating experience, on average, experience larger increases in responsibility land than do villages where the modal villager does not report government involvement in the nominating procedure. This result is robust to the inclusion of several different sets of controls, but is not robust to using the leader's reports about the nominating process.

We now turn our attention to an examination of the effect of rent seeking and election protocol on the probability of re-election.

a. Simple Model

Table 4 presents the results of Logit regressions to estimate the re-election function of Equation 5. In these regressions we predict the likelihood of electoral success as a function of leader age, pre-election rent seeking, and various combinations of observable village characteristics, x_i .

Column 1 includes only leader age and rent seeking. Column 2 also includes provincial fixed effects. Column 3 includes several additional village-level variables to control for the effect of unobserved village heterogeneity. More specifically, to control for the costs of collective action and coordination costs, we include the number of households in the

village and the furthest distance between two small groups in the village. To control for the cost of access to other levels of government or the press we include commuting time to the township (the next highest administrative level) and the percentage of village households with phones. Because land may cease to be a factor in elections as it becomes a less important part of the village economy, we include two variables to control for differences across villages in the "value" that villagers put on land; farm land per capita in the village, and the percentage of individuals of working age involved in agriculture.

We argued earlier that the probable endogeneity of the rent seeking variable will cause us to underestimate the true importance of this variable. In spite of this, the regressions in Table 4 show a robust relationship between rent seeking behavior and re-election probabilities. Moreover, these estimates respond in the expected way to the inclusion of additional control variables: The magnitude and significance of the rent seeking variable increases in magnitude and significance as we add control variables.

Column 4 adds an indicator for pre-election capital spending on schools. This variable has the correct sign, but is not quite statistically significant at usual levels. Given the crudeness of our measure of government spending the low significance of this variable is not too surprising. To provide a final check on our findings, Column 5 includes an interaction between the land/labor ratio and change in responsibility land. As there is more land per unit of labor, land becomes less valuable and the importance of changes in responsibility land for re-election should decrease. This is exactly the result we see in Column 5. Together with Table 3 and Figure 2, the regressions in Table 4 make a strong case for the ability of rural Chinese electorates to replace rapacious leaders at election time.

We now turn our attention to the role of electoral protocol. For comparison purposes, Column 1 of Table 5 duplicates the regression of Table 4, Column 4. The other columns of this table duplicate this regression, but add the election protocol variables one at a time. Consistent with our earlier results, we see that only the coefficient of restrictions on proxy voting is statistically significant and it has the expected sign. As with other village controls, including the proxy voting or the nominating procedure variable in the regression leads to a large increases in the coefficient of the rent seeking measure.

We have experimented widely with regressions, like those in Table 5, that include the protocol variable, e.g., interactions between protocol variables and rent seeking, different combinations of control variables. The results of these regressions are broadly consistent with those reported in Table 5. We also experimented with regressions which include more than one election protocol variable, but due to data limitations these regressions were uninformative.

TABLE 4
RENT-SEEKING AND SURVIVORSHIP – SIMPLE MODEL

| | (1) | (2) | (3) | (4) | (5) |
|-----------------------------|-----------------|--------------------|--------------------|--------------------|---------------------|
| Village Leader Age | .00 (.04) | -.07 (.05) | -.11 (.07) | -.11 (.07) | -.12 (.11) |
| Chg Resp Land | 10.98 (9.70) | 24.54** (11.54) | 29.21** (11.14) | 32.55** (12.55) | 115.83** (47.30) |
| School Inv. | - | - | - | 1.22 (.84) | - |
| Land/Labor*Chg Resp Land | - | - | - | - | -78.76 (48.91) |
| Village Controls | N | Y | Y | Y | N |
| Provincial Dummies | N | Y | Y | Y | Y |
| Log Likelihood | -37.55 | -29.64 | -25.56 | -24.72 | -22.19 |
| Number of Obs | 55 | 55 | 55 | 53 | 53 |

Note: 1. Standard errors are in parentheses. 2. The village controls include number of households; the furthest distance between two small groups in the village; the time it takes to get to the township; the percentage of households with phones; land per capita; and the percentage of working individuals in the village that farm. 3. ***=1%, **=5%, *=10%.

TABLE 5
RENT SEEKING, PROTOCOL AND SURVIVORSHIP --- SIMPLE MODEL

| Variable | (1) | (2) | (3) | (4) | (5) |
|---------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
| Village Leader Age | -0.11 (.07) | -0.11* (.06) | -0.11 (.07) | -0.21** (.10) | -0.10 (.08) |
| Chg Resp Land | 29.21* (17.63) | 39.66** (14.35) | 30.24** (11.73) | 77.14** (38.43) | 31.07** (14.16) |
| Protocol Variables: | | | | | |
| Nomin. Procedure | | 1.13 (.81) | | | |
| Cand. Public Forum | | | .45 (1.98) | | |
| Proxy voting | | | | -5.12** (1.46) | |
| Fixed Ballot Box | | | | | .75 (1.59) |
| Village Controls | Y | Y | Y | Y | Y |
| Provincial Dummies | Y | Y | Y | Y | Y |
| Log Likelihood | -25.56 | -24.09 | -25.49 | -11.33 | -17.73 |
| Number of Obs | 55 | 52 | 53 | 45 | 50 |

Notes: Robust standard errors are in parentheses. ***=1%, **=5%, *=10%.

b. A Model with Many Types of Leader

The preceding estimates implicitly assume that leaders and electorate play about the same strategies regardless of the leader's observable characteristics. There is no *a priori* basis to think this is true. Indeed, Besley and Case (1995a) find that governors who differ in their observable party affiliation behave in a qualitatively different ways. Thus, we might expect that old leaders and young leaders will have systematically different tastes for rent seeking, and that electorates will therefore choose different re-election functions to play against old and young leaders. In this section we investigate this hypothesis by incorporating the interaction term *Leader age* \times *Change in Responsibility Land* into our earlier regressions.

Table 6 duplicates the first four columns of Table 4 with the additional interaction term. The interaction term causes two noteworthy changes. First, the coefficients of two terms involving rent seeking are estimated somewhat more accurately. In most of the regressions we reject the hypothesis that these parameters are zero at the 1% level rather than the 5% level of Table 4. Second, the sign of the coefficient for rent seeking flips.

In fact, these regressions show that for a leader older than the sample average of 46, increases in rent seeking are associated with lower rates of re-election, while for leaders with below the sample average age, higher rent seeking is associated with higher rates of re-election. Despite the different magnitudes of the coefficient estimates, these statements are true for each of the four regressions reported in Table 6.

On first glance, these results seem odd. However, recalling the differences observed by Besley and Case (1995a) between Republican and Democratic governors is helpful. In the results reported in Table 6, the electorate appears to expect old leaders to behave like "Republicans" and keep rent extraction low. On the other hand, the electorate appears to expect that young leaders will behave like "Democrats" and extract rent from the village to be used for public works. The results from Column 4 of Table 6 provide further evidence for this characterisation: Old leaders get less benefit from school investment than do young leaders.

To check whether our results about election protocol are robust to the inclusion of the leader age/rent seeking interaction term, Table 7 duplicates the results of Table 5, with two changes. First, as in Table 6, we include the interaction of leader age with changes in responsibility land. Second, to conserve degrees of freedom, we drop the village controls from all regressions. The results in Table 7 are qualitatively the same as those presented in Table 5. Only the proxy voting variable has any impact on re-election success.

TABLE 6
RENT-SEEKING, PROTOCOL AND SURVIVORSHIP –TWO COHORT MODEL

| | (1) | (2) | (3) | (4) |
|--------------------|-----------------------|------------------------|-------------------------|-------------------------|
| Village Leader Age | .09 (.05) | .06 (.06) | .04 (.08) | .10 (.08) |
| Chg Resp Land | -563.42** (274.21) | -855.51*** (292.61) | -1414.31*** (485.44) | -1675.93*** (638.02) |
| Age*Chg Resp Land | 12.43** (6.03) | 19.25*** (6.41) | 31.97*** (10.68) | 37.77*** (14.08) |
| School Inv. | - | - | - | 21.20* (12.58) |
| School Inv.* Age | - | - | - | -.44 (.27) |
| Village Controls | N | N | Y | Y |
| Provincial Dummies | N | Y | Y | Y |
| Log Likelihood | -32.61 | -23.71 | -17.06 | -15.73 |
| Number of Obs | 55 | 55 | 55 | 53 |

Note: 1. Standard errors are in parentheses. 2. The village controls include number of households; the furthest distance between 2 small groups in the village; the time it takes to get to the township; the percentage of households with phones; land per capita; and the percentage of working individuals in the village that farm. 3. ***=1%, **=5%, *=10%.

TABLE 7
RENT SEEKING, PROTOCOL AND SURVIVORSHIP --- TWO COHORT MODEL

| Variable | (1) | (2) | (3) | (4) | (5) |
|---------------------|-----------------------|-----------------------|-----------------------|-------------------------|-----------------------|
| Village Leader Age | .06 (.06) | .04 (.06) | .07 (.07) | .11 (.08) | .10 (.08) |
| Chg Resp Land | -855.51** (292.61) | -815.05** (298.31) | -904.56** (307.15) | -2320.05** (1032.98) | -840.17** (274.85) |
| Age*Chg Resp Land | 19.25** (6.41) | 18.45** (6.54) | 20.29** (6.73) | 51.78** (23.06) | 18.97** (6.06) |
| Protocol Variables: | | | | | |
| Nomin. Procedure | | .76 (.76) | | | |
| Cand. Public Forum | | | 1.00 (1.08) | | |
| Proxy voting | | | | -3.49* (1.98) | |
| Fixed Ballot Box | | | | | -.30 (1.06) |
| Village Controls | N | N | N | N | N |
| Provincial Dummies | Y | Y | Y | Y | Y |
| Log Likelihood | -23.71 | -23.24 | -23.31 | -14.51 | -21.63 |
| Number of Obs | 55 | 54 | 55 | 47 | 52 |

Notes: Robust standard errors are in parentheses. ***=1%, **=5%, *=10%.

TABLE 5a
RENT SEEKING, PROTOCOL AND SURVIVORSHIP --- SIMPLE MODEL
VILLAGER RESPONSES

| Variable | (2) | (3) | (4) | (5) |
|---------------------|-----------------|-----------------|-------------------|----------------|
| Protocol Variables: | | | | |
| Nomin. Procedure | 3.37* (1.97) | | 3.78* (1.96) | |
| Proxy voting | | -2.01 (1.35) | -2.29** (0.96) | |
| Fixed Ballot Box | | | | 0.66 (1.78) |
| Log Likelihood | -23.58 | -24.84 | -18.91 | -21.09 |
| Number of Obs | 52 | 52 | 51 | 52 |

Notes: In addition to village controls and provincial dummies, each regression also includes the other explanatory variables reported in Table 5, *Leader Age*, and *Change in Responsibility*. Robust standard errors are in parentheses. ***=1%, **=5%, *=10%.

c. The Importance of Errors in Reported Election Protocols

To assess the importance of errors in the cadres' reported election protocol, we replicated the estimations of Tables 5 and 7 using the modal villagers' reports of election protocol rather than the cadres' reports. These results, reported Tables 5a and 7a, are very similar to those obtained using the cadres' reports.²² However, there are two noteworthy exceptions. First, the coefficients of the modal villager's report on proxy voting in Column 2 of Table 5a is smaller and slightly less significant than its counterpart in Table 5. Similarly for the corresponding results from Tables 7 and 7a. That is, if we use the modal villager's report to measure restrictions on proxy voting we find that restrictions on proxy voting is somewhat less important than when we use the cadre's report. Second, using the modal villager's report on nominating procedure in Column (2) of Table 5 and Column 2 of Table 7 results in larger coefficients that are, respectively, statistically significant at the 10% and 1% levels. Thus, using the modal villager's report to measure nominating procedures we find the nominating procedure is somewhat more important.

We also experimented with a two-stage correction for attenuation bias in our protocol variables. In particular, we performed a first stage OLS regression to predict the cadre's reported protocol as a function of the modal villager's report and village controls. We then used this predicted protocol in first stage regressions corresponding to those reported in Table 5. This procedure resulted in larger and more significant coefficients for changes in nominating procedure, slightly smaller and less significant coefficients for proxy voting, and continued insignificant coefficients for the other two protocol variables. In sum, the two stage regressions are broadly consistent with our other results, but suggest that attenuation bias is more important for our measures of nominating procedure than for measures of proxy voting. We note that this accords with the raw data. The degree of agreement between our two measures of proxy voting is higher than between our two measures of the nomination procedure.

It remains to check whether proxy voting and nominating procedure have an independent effect. According to the villagers' reports, about one half of villages have one protocol but not the other, while about one half have both or neither. Thus, it reasonable to try regressions to separate out the effects of the two variables. Column 3 of Table 5a includes both proxy voting and nominating procedure, and finds that they indeed do have independent effects.²³

²²Since the Villagers report only four villages with a public forum for candidates, and leaders do not survive re-election in any of these four, we cannot duplicate our results based on the leader's reports with villager reports for this variable. See footnote 19.

²³Efforts to duplicate this result using the cadres' reports were unsuccessful. As is commonly the case when we include more than one protocol variable, many village election outcomes are perfectly predicted by such a regression and coefficient estimates are erratic.

TABLE 7a

**RENT SEEKING, PROTOCOL AND SURVIVORSHIP --- TWO COHORT MODEL
VILLAGER RESPONSES**

| Variable | (2) | (3) | (4) |
|------------------|---------------------|------------------|-----------------|
| Nomin. Procedure | 2.202*** (0.83) | | |
| Proxy voting | | -2.11* (1.15) | |
| Fixed Ballot Box | | | -0.18 (1.65) |
| Log Likelihood | 54 | 54 | 54 |
| Number of Obs | -21.17 | -22.90 | -22.90 |

Notes: In addition to village controls and provincial dummies, each regression also includes the other explanatory variables reported in Table 7, *Leader Age*, *Change in Responsibility Land*, and the interaction of *Leader Age* and *Change in Responsibility Land*. Robust standard errors are in parentheses. ***=1%, **=5%, *=10%.

D. Importance of Election Protocol

We have presented evidence that electoral success responds to rent seeking behavior, to restrictions in proxy voting, and to changes in the nominating process. We now assess the magnitude of these effects.

We first evaluate the importance of changes in rent seeking behavior. To do this, for every village in our sample, we evaluate the Logit distribution twice using estimated parameter values from Column 4 of Table 5 and actual values of all village characteristics other than Changes in Responsibility Land. For Changes in Responsibility Land, we use the actual village realisation plus one half of the standard deviation of this variable, and also, the actual village realisation minus one half of the standard deviation of this variable. The difference between these two probabilities is the estimated effect of a one standard deviation change in rent seeking on electoral success for this village. We average this difference over all villages and find that the estimated average effect of a one standard deviation increase in rent seeking activity is a 22% decrease in the probability of re-election.

We next evaluate the effect of changes in the restrictions on proxy voting using the same method, using the coefficients estimated in Column 4 of Table 5. We find that the average estimated effect of switching a village from less restrictive to more restrictive rules for proxy voting is a reduction of 38% in the incumbent's probability of surviving election. The corresponding calculations for the importance of nominating procedure, based on Column 2 of Table 5 indicate that switching from to a purely popular nomination process is associated with a 17% increase in survival rate. In sum, these calculations suggest that changing nominating procedures or restrictions on proxy voting has about the same effect on re-election success as does a one standard deviation change in rent seeking activity.

Since these estimates are based on the assumption that leader rent seeking does not vary as protocol varies, these calculations should be regarded with some caution. With this caveat in place, however, these estimates suggest that a leader in a village where looser proxy voting is permitted can engage in about two standard deviations more rent seeking behavior than in a village where proxy voting is more restricted, and, all else equal, have the same probability of surviving re-election.

On the one hand, these calculations imply that reforms to elections may have important effects on the incentives for leaders to engage in rent seeking behavior. On the other hand, our estimates also show, that if, prior to the most recent elections, all of the villages switched to the least restrictive proxy voting regime, only 69% of leaders would have survived the election (as opposed to the observed survival rate of 49%). For the sake of

comparison, US gubernatorial elections have about a 77% turnover rate.²⁴ Thus, even elections that operate without restrictions on proxy voting provide a strong disincentive to rent seeking.

6. Conclusion

The belief that elections reduce rent seeking by government officials is widely held, likewise the belief that rent seeking decreases as elections are less subject to corruption. In this paper we develop and test a model in which these beliefs are carefully examined.

We find compelling evidence that elections in rural China create a strong incentive for leaders to act in the interests of the electorate. The plot of re-election success versus rent seeking presented in Figure 2 shows very clearly that re-election probabilities increase as leaders act so that a larger share of village land rents remains with villagers. These results are confirmed by our regression results: Nearly all of the regressions in Tables 4-7 show a statistically significant relationship between rent seeking activity and re-election success. Given an environment where an elected leader's authority is (in principle) subject to usurpation by the un-elected Party Secretary, and where electoral practices are suspicious at best, this strikes us as important evidence for the robustness of the democratic process and the usefulness of corruptible elections.

We also find strong evidence that restrictions on proxy voting improve the ability of rural Chinese electorates to oversee their leaders. In Table 2 we see a statistically significant difference in re-election rates as proxy voting by non-family members is and is not allowed. The non-parametric regressions of Figure 3 along with the Logit regressions reported in Tables 5 and 7, all confirm that re-election rates drop in villages with restrictions on proxy voting. These findings persist, at slightly lower levels of significance if we use the modal villager's report rather than the cadre's report.

We also find evidence that a purely public nominating procedure leads to better governance in rural China. In Table 2 we see that re-election rates are higher in villages with purely public nominating procedures than without, but this effect is not statistically significant. This finding is confirmed in the regressions reported in Column 2 of Table 5 and Column 2 of Table 7. After controlling for other sources of variation in the data, the effect of a purely public nominating process on re-election probability is positive but not significant at conventional levels. If we instead use the modal villager's report, these findings persist, but at levels of statistical significance above conventional thresholds.

²⁴This estimate is based on numbers provided in Table 1 of Besley and Case (1995b). In calculating re-election rates, we exclude governors who could not run again because of binding term limits, and those who decided to run for Congress rather than seek re-election.

That leaders are *more* likely to survive re-election in villages with purely public nominating procedures suggests that the dominant effect of open nominating procedures is to recruit better leaders into office, rather than to provide an incentive for incumbents to work harder to stave off more competent challengers. Corroborating this conclusion, we find that if we use the modal villager's reports (but not the cadres' reports), levels of election year rent seeking are lower in villages with purely public nominating procedures than without (in the subsample of villages where the incumbent won re-election).

We find no evidence that having a fixed ballot box or campaign speeches affect the ability of a rural Chinese electorate to oversee its leaders.

Our finding that two of the election protocol variables matter and two do not strikes us as puzzling. The more so because it conflicts with field observers' sense that each of our protocol variables is important. Why does proxy voting affect election outcomes while a mobile ballot box does not? Even if proxy voting is a more effective way for leaders to manipulate elections than are mobile ballot boxes, should we not see that this variable has a similar, if smaller effect?

While it may be that, in fact, mobile ballot boxes and public forums do have an effect on the re-election function, but that this effect is simply too small for us to measure, the theory suggests another possible explanation. The ability of elections to restrict rent seeking is constrained, not by election protocol, but by the leader's preferences, so that some marginal changes in election protocol truly do not affect the equilibrium.

These results appear to have important implications for policy makers wishing to create and reform the institutions of local government in transition economies. First, since it is elections that matter for restraining rent seeking, and this effect is robust to having poorly conducted elections, the emphasis for reform should be placed on the pervasiveness of elections rather than their quality. Second, to the extent that efforts are directed at electoral reform, restrictions on proxy voting and increases in electorate participation in the nominating process should be given a high priority. Other details of campaigning and polling appear less important.

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7. Appendix: Data on Leader Turnover

Figure 1 shows much of what we know about the turnover of leaders. In this figure, a triangle indicates the start of a leader's term. A vertical line up from a triangle indicates the duration of a leader's term. An x indicates the year of the most recent election. The numbers along the figure's top border give the number of elections reported by the interviewed cadre to have occurred in the village since 1988, the (putative) inception of the organic village law.

The line segment for each leader's term is labelled with one of five letters: "S" indicates a leader who survived the most recent election. "W" indicates a winner at the most recent election. "L" indicates a loser at the most recent election. "P" indicates a leader who was promoted and left office to become his village's party secretary. "U" indicates a leader who came to office un-elected.

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