

# Vote Buying, Village Elections, and Authoritarian Rule in Rural China

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## ABSTRACT

This article explores the effects of electoral competition and the size of the electorate on outcomes of grassroots elections, examining China's village elections. China's authoritarian regime has allowed, encouraged, and required elections to be held at the village level, but not at higher levels. Using a simple game-theoretic model, this article suggests a logic that can account for how introducing elections at the grassroots level is consistent with the survival strategy of the authoritarian regime. At equilibrium, electoral competition would increase the probability of vote buying in a smaller electorate, while it may decrease the probability of vote buying in a larger electorate. In other words, electoral competition gives strong incentives for candidates to buy votes, but not to form an organization for mobilizing votes in a smaller electorate. Hence, the apparently democratic institution of grassroots elections would not threaten the survival of an authoritarian regime.

**KEY WORDS:** China; village elections; democratic institutions in authoritarian rule; electoral corruption

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Contrary to the traditional view of dictatorships in the existing literature (e.g., Arendt [1948] 1973; Friedrich and Brzezinski 1965; Linz 2000),<sup>1</sup> which focuses on the means by which a totalitarian leadership exercises absolute control over society, many authoritarian regimes actually have some democratic institutions, especially electoral and legislative systems, within their regimes. While scholars have often considered these democratic institutions in authoritarian regimes as a harbinger to democratization in China (e.g., Chan 1998; Pei 1995; but Louie 2001) and other nondemocratic countries (e.g., Mozaffar 2002; Schatz 2006; Schedler 2002), Levitsky and Way (2002, 51) argue that they are rarely “incomplete or transitional forms of democracy.” How are the roles and functions of these democratic institutions in authoritarian regimes different, if at all, from those in democratic regimes? This article argues that democratic institutions in authoritarian regimes are primarily designed as a survival strategy of the regime.<sup>2</sup> An authoritarian regime is responsive to popular preferences through democratic institutions only when the regime’s survival strategy coincides with the functions of the democratic institutions.

The institutional development of village elections within China’s authoritarian regime is an excellent case for examining this issue. China’s village elections have acquired special attention in light of the limited political reforms introduced during the last three decades of the

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<sup>1</sup> Linz (2000) is an important exception in that he distinguishes totalitarian systems and authoritarian regimes. However, his work does not directly analyze how democratic institutions matter for political participation under authoritarian regimes but focuses on typology to distinguish totalitarian and authoritarian regimes.

<sup>2</sup> For recent discussions about the arguments on how the Chinese Communist Party pursues its survival strategy, see Schubert (2008) and Wright (2008).

post-Mao era.<sup>3</sup> The leadership of the Chinese Communist Party (CCP) has allowed, encouraged, and required elections to be held at the village level. China's authoritarian regime hoped that the village elections would improve local governance in its vast countryside—where the majority of the Chinese population resides even after large-scale migration from rural to urban areas over the last three decades—by disciplining local officials and preventing massive rural unrest (Li 2003; Li and O'Brien 1999; O'Brien 1994; Shi 1999). Some empirical findings suggest the positive effects the regime hoped for: villages with elected local officials are more likely to have leaders receptive to popular preferences (Alpermann 2001; Kennedy, Rozelle, and Shi 2004; Manion 1996, 2006), and the implementation of village elections has arguably reduced the likelihood of mass uprising (Li 2001; O'Brien and Li 2001; Pastor and Tan 2001).

The argument that democratic institutions help an authoritarian regime survive is not new.<sup>4</sup> For instance, elections helped alleviate intraparty tension over personnel management of party officials in authoritarian regimes in Latin America (Geddes 2006). In Mexico, the authoritarian party discouraged potential opposition powers from cooperating with each other by winning the overwhelming majority in elections (Magaloni 2006). The authoritarian regime has constrained, split, and co-opted the opposition powers through elections in the Middle East (Lust-Okar 2005). And in Egypt, authoritarian elections have helped the regime decide to distribute rents and even public goods (Blaydes 2009).<sup>5</sup> What is common in these examples is

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<sup>3</sup> For the most comprehensive empirical analysis of China's village elections, see He (2007). For the most recent review of China's village elections, see O'Brien and Han (2009).

<sup>4</sup> For the most comprehensive analysis exploring this argument, see Gandhi (2008).

<sup>5</sup> Brownlee (2007) emphasizes the importance of effective authoritarian parties to alleviate the intraregime competition over the distribution of rents and official positions.

that democratic institutions may solve intraregime conflict that would otherwise undermine the regime's stability and jeopardize its survival. The key for the regime's survival strategy is to use elections to strengthen the ruling party while deterring the formation and growth of opposition parties.

While this article accepts the argument that authoritarian regimes use elections to solve intra-regime conflict and constrain potential organized challenges from opponents, it focuses on a factor that has so far received little attention in the study of authoritarian elections: the size of the electorate. China's authoritarian regime established an electoral institution at the village level, but not at higher levels. This article argues that the regime finds these elections to be useful for its survival as long as elections are limited to the grassroots level. And arguably, that is why the CCP leadership has hesitated to introduce elections for higher-level authorities.

Tocqueville ([1835 & 1840] 2000) praised grassroots elections as deserving principal credit for the effective democratic government of America in the early nineteenth century. However, studies on electoral institutions since have found that grassroots elections are prone to corruption because the constituencies in elections with small-sized electorates tend to vote based on personal patronage. For example, Cox (1987, 169-70) finds that there had been "a sizable personal vote in the constituencies" in the British parliamentary elections until the mid-nineteenth century and that "the politics of avoiding or of winning a contest often involved reliance on influence, patronage, and bribery." Interestingly, though, candidates started stressing policy in their electoral campaigns in the mid-nineteenth century when they had to appeal to the larger electorate that developed with the extension of suffrage. Golden (2003) also suggests that there were institutional incentives in postwar Italy for candidates to search for personal votes, which resulted in extensive political corruption and ineffective democratic government.

Moreover, Kousser (1974) argues that in the post–Civil War American South, restrictions on African Americans’ suffrage made candidates rely on personal patronage and caused the one-party rule of the Southern states. Furthermore, after Tocqueville left America, grassroots politics became less important, elections at higher levels became more important, and major competing parties have developed in American politics since the 1860s (Aldrich 1995, chapters 3–5; Charles 1956).

The evidence seems to suggest that it is inevitable for grassroots elections to be corrupt, contrary to what Tocqueville thought. However, a survey of the Chinese countryside reveals that some village elections are corrupt and others are not. Using a simple, game-theoretic model of electoral competition by two candidates, this article suggests a logic that may account for this variation. What conditions might exacerbate electoral corruption and what conditions might make a grassroots election less corrupt?

The model shows that the probability of a corrupt candidate winning an election increases as the size of the electorate decreases. At the same time, if voters have a consensus on which candidate they will elect, the probability of a corrupt candidate winning will be lower. In short, the model shows that elections are more likely to be clean if voters have reached a pre-electoral consensus on whom to vote for, which may deter grassroots elections from being corrupt. However, if the size of the electorate is above a certain threshold, then electoral competition, not a pre-electoral consensus, may lower the probability of a corrupt candidate winning. Once the size of the electorate reaches a certain level, vote buying becomes a costly strategy to win an election, and hence candidates rely more on electoral campaigns stressing their policy proposals and appeal to the larger electorate with relatively low costs. When each candidate has an incentive to campaign for policy proposals, they will organize their efforts to mobilize the voters

and the formation of a party will be an effective strategy for winning an election (Norris 2002, 127).

This article proceeds as follows. The first section identifies the institutions of China's village elections and their unique characteristics.<sup>6</sup> The second section discusses the main assumptions about electoral competition in rural China underlying the model, formalizes the discussion to lay out the game, and solves it. The third section shows how electoral competition and the size of the electorate may influence electoral outcomes, applying a numerical example to the model's equilibrium. The fourth section discusses the model's implications for discussions of China's village elections and its authoritarian politics. Some conclusions follow.

## **COMPETITION AND CORRUPTION IN CHINA'S VILLAGE ELECTIONS**

In 1980, 85 peasant households in Hezhai Village, Guangxi Province, participated in a landmark event: the first popular election for a Villagers' Committee (VC) in China. The Chinese government institutionalized the elections of VC members by the Organic Law of

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<sup>6</sup> The set of cases examined in this article is selected from the author's field interviews and previous studies of other scholars. Most of the author's field research on village politics was conducted in 2004–05. The author conducted field interviews with more than a hundred people in forty villages across seven out of China's thirty-one provinces (i.e., Guangdong, Guizhou, Hebei, Hubei, Hunan, Jiangxi, and Zhejiang). The seven provinces include both rich industrialized villages in coastal regions (such as Guangdong and Zhejiang) and poor agricultural villages in inland regions (such as Guizhou, Hebei, Hubei, Hunan, and Jiangxi). The list of interviewees, cited by number throughout the article, and the interview questions are available from the author upon request.

Villagers' Committee (hereafter the Organic Law) in 1988, revising it in 1998. Since the law's adoption, village elections have spread throughout China and become one of the most widely researched areas of study in Chinese politics.

Among the many features that characterize China's village elections, two factors in particular make this electoral institution unique. First, even though the Organic Law stipulates that the elected VC is the village's highest decision-making organization, the nonelected Village Party Branch (VPB) is apparently more powerful and influential in village politics than the VC.<sup>7</sup> These two organizations are vested with the authority to make policy decisions in every Chinese village. However, the VPB is often at an advantage over the VC because the township government—the superior authority of the village—supports the VPB as part of the CCP's vertical organization. Moreover, the implementation of village elections may be difficult as it “often involves a struggle between villagers who demand improved accountability and township leaders who, initially at least, refuse to cede their authority to appoint village cadres” (Li and O'Brien 1999, 143). Nonelected party officials at the township and county levels have many opportunities to use a strategy of “feigned compliance” to resist holding village elections

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<sup>7</sup> Oi and Rozelle (2001) observe in the 32 villages they study that the non-elected VPB members are more powerful than the elected VC members. My observation from field research was consistent with this view. In the six villages where the author interviewed the VC Chief and the Village Party Secretary simultaneously, with one exception, it was always the Village Party Secretary who answered most of the interview questions (Interviewees 12–13, January 2005; 55–56, 58–59, 75–76, March 2005; 91–92, April 2005). The only exception occurred when the Village Party Secretary was drunk when the author reached the village office, and could not answer the author's questions (Interviewee 67, March 2005).

(Kelliher 1997, 84). Furthermore, there are reported cases of a CCP-supported candidate failing to be elected and nonelected township officials subsequently declaring that the nonelected CCP cadres should be in charge of all administrative responsibilities, with the elected cadres simply empowered to follow the CCP cadres' decisions (He 1997; Liu 2000).

Second, the unique characteristics of the village community influence voters' behavior, candidates' strategies, and electoral outcomes. For example, when interviewing Vice-Secretary of R Town in Hunan Province, who was in the position of monitoring implementation of village elections in his town, the author asked: "How do candidates conduct a campaign during the village election?" He proudly responded: "Candidates in the village elections in our town never carry on a campaign. So we don't have a problem of 'buying votes.' No campaign, no corruption" (Interviewee 53, March 2005). His answer was interesting, because he assumed that campaigning and vote buying should be closely related, and hence if there was campaigning, the elections would be tainted by corruption.

Here is another example. When interviewing the VC Chief of D Village in Hebei Province, the author asked: "How was the last election for you? How did you appeal to villagers during the election?" He answered: "I did nothing during the last election. I felt that I did not have to be VC Chief as I had already been Village Party Secretary. But villagers nominated me for candidacy and I was elected" (Interviewee 20, January 2005). Again, his answer is interesting, because under normal circumstance if a candidate does nothing, the candidate will usually lose the election. In fact, he thought there was no need to campaign at all. Two villagers said that they were satisfied with his job when he was Village Party Secretary and thus they had no reason to nominate someone else as a candidate for VC Chief (Interviewees 28–29, January 2005). Institutionally, candidates in village elections do not decide to run themselves but are

nominated by villagers, village cadres (especially VPB cadres), or township cadres (Kennedy 2002; O'Brien 1994).

These two anecdotes suggest that those who are involved in village elections perceive that a campaign is not necessary to win an election. A Chinese village is small enough a community for each villager to know all the other villagers in person as they interact with each other on a daily basis. This not only applies to S Village in Guangdong Province, a small village with a population of 309, but also to Z Village in Hebei Province, a big village with a population of over 5,000. In Z Village, the author asked three villagers whether they know everyone in their village. They all responded along the lines of: “Yes, I know everyone. Of course, I know some of them better than others, and I’m not familiar with some of the villagers. But I can recognize all the villagers. We usually go to the same elementary school if we live in the same hamlet and all the villagers go to the same junior high school” (Interviewees 35–37, April 2005). In a Chinese village, it is rare for someone to immigrate from outside the village; thus, it is easy to maintain affinities formed during the school period.

The fact that residents in the community know each other highlights a significant difference between grassroots elections such as China’s village elections and an election with large electorates. In a grassroots election, it is easy for voters to acquire personal information about the candidates. Thus, policy proposals that candidates state in their campaigns will not change voters’ information about the candidates. Therefore, in a small electorate, campaigning is not an effective strategy to win an election. In contrast, vote buying—corruption—can easily be an effective means to win an election with a small electorate. First, the number of votes needed to win, and hence the number of votes needed to bribe, will *ceteris paribus* be smaller as the electorate is smaller. Second, more importantly, a small community makes it easier for a

candidate to figure out what each voter personally wants, and candidates can thus promise their favored voters the provision of *private* goods that will exclusively benefit them, instead of promising the constituency the provision of public goods that will benefit the whole electorate.

In a small community such as a Chinese village, voters may already know whether the candidate has the intention and ability to provide public goods. In a grassroots election, voters and candidates know each other personally, and voters may easily acquire personal information about the candidates. Under the conditions of perfect information, it is not costly for a candidate to seek office by treating a subset of the electorate to dinner or to give private goods to voters, as a way of ensuring to voters their intention and ability to give particular voters a personal favor. On the other hand, it is relatively costly to attempt to sway voters by stating policy proposals that promise the provision of public goods for the whole electorate. If seeking votes in electoral competition implies campaigning to promise voters the provision of public goods, failure to carry out the promise will mean lack of accountability. However, if seeking votes implies buying votes by promising a particular group of voters the provision of private goods, to carrying out the promise results in corruption.

Moreover, in a small village community, candidates' promises to provide private goods are deemed credible once they show their intention and ability to give personal favors because they will face social sanctions through their daily interactions with villagers if they do not keep their promise. By contrast, in an election with a large electorate, elected leaders will face electoral sanctions by failing to be re-elected if they do not fulfill the pledges after election. In this way, candidates will be forced to make policy pledges during the electoral campaigns, to which candidates and elected leaders will be held accountable to the electorate.

In sum, the cost of punishment for the corrupt act of buying votes is arguably low in the case of China's village elections. On the one hand, the cost of punishment can be measured by the severity of punishment and the possibility of being punished (Becker 1968). On the other hand, the cost depends on whether formally specified punishment is enforced. Even with formal rules stipulating severe punishment, if people do not believe that cases of corruption are revealed and formal rules are enforced, the punishment will not be considered a cost of the illegal act and will not deter it (Tsebelis 1989). In China's village elections, officials in the position of monitoring village elections do not have a strong incentive to regulate the elections because implementation of fair village elections is not considered an important criterion for the evaluation of local officials by higher authorities (Edin 2003; O'Brien and Li 1999; but Kennedy 2007). At the same time, the cost of punishment for failing to provide private goods is seemingly high in China's rural community. Strong affinities in the community make social sanctions effective when a candidate fails to provide promised private goods when elected.

Therefore, it is not puzzling that candidates compete to buy votes by providing private goods in campaigns for Chinese village elections—and generally in grassroots elections. However, competition for vote buying does not always occur. In some cases, elected cadres succeed in their efforts to provide *public* goods and voters feel satisfied with these representatives. The next section introduces a game-theoretic model that may account for when a grassroots election will not lead to competition for vote buying.

## **THE MODEL OF CHINA'S VILLAGE ELECTIONS**

This section provides a formal description of the game and predicts the pattern of the outcomes of village elections. The model describes the electoral competition between two

candidates as a noncooperative simultaneous-move game. In the model, two candidates compete to win an election. A formalization of the incentive structures faced by candidates of China's village elections will yield predictions of when each candidate will take the strategy of vote buying and when a vote-buying candidate will win an election.

### **The Candidates' Choice of Strategies and Payoffs**

The matrix in Figure 1 shows the incentives affecting candidates in a village election. The model assumes that all candidates seek to win the election. How much the candidate would gain from being in office varies by village. Thus, the utility the candidate would gain from winning the election is denoted  $W$  ( $W > 0$ ). Each candidate has two strategies: buying votes ( $BV$ ) and not buying votes ( $NBV$ ). The cost of buying votes ( $C$ ) is the multiplication of the cost to buy one vote ( $\beta$ ) and the number of votes needed to buy ( $V$ ) (i.e.,  $C = \beta V$ ). Moreover, the number of votes needed to buy is positively associated with how much the candidate is behind the other candidate ( $\rho$ ) and the size of the electorate ( $E$ ) (i.e.,  $V = \rho E$ ). Therefore, the cost of buying votes can be written as:

$$C = \beta\rho E \tag{1}$$

Notice that in this formulation, the cost of buying votes *ceteris paribus* goes up as the size of the electorate increases.

[Figure 1 about here]

The model assumes that if one candidate buys votes while the other candidate does not, the candidate that has bought votes will win. Moreover, the cost of buying votes to win is higher as the candidate is weaker. If both candidates adopt the same strategy, Candidate 1 will have a chance to win the election with the probability of  $p$  and Candidate 2 will have a chance to win

the election with the probability of  $1 - p$  ( $0 < p < 1$ ). Because one can define the competitiveness of an election as the difficulty with which one can predict who will win, the election whose value of  $p$  is closer to 0.5 will be considered more competitive. How much Candidate 1 is behind Candidate 2 is positively associated with  $1 - p$  while how much Candidate 2 is behind Candidate 1 is positively associated with  $p$  (i.e.,  $\rho_1 = A + \varphi(1 - p)$  and  $\rho_2 = A + \varphi p$ ).<sup>8</sup> Thus, Candidate 1's and Candidate 2's costs of buying votes could be written respectively:

$$C_1 = \beta(A + \varphi(1 - p))E \quad (2)$$

$$C_2 = \beta(A + \varphi p)E \quad (3)$$

### Solution to the Model

Now this article presents the solution and main results of the model. This analysis only examines the case of  $0 < p \leq 0.5$  and hence assumes without loss of generality that Candidate 1 is weaker. Candidates 1 and 2 must choose their strategies simultaneously. Thus, neither candidate is certain about which strategy the other candidate will take. Below, I write outcomes using the notation: (Candidate 1's strategy, Candidate 2's strategy). The conditions to sustain each equilibrium outcome are derived from the matrix and solved in terms of  $W$ . The formal solution to the model is presented in the Appendix.

(*BV, BV*)—the case in which both candidates buy votes—will be equilibrium if:

$$W \geq \frac{\beta(A + \varphi(1 - p))E}{p} \quad (4)$$

(*NBV, NBV*)—the case in which neither candidate buys votes—will be equilibrium if:

$$W \leq \frac{\beta(A + \varphi(1 - p))E}{1 - p} \quad (5)$$

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<sup>8</sup> Assume that  $A > 0$  and  $\varphi > 0$ .

(*NBV*, *BV*)—the case in which a stronger candidate buys votes and a weaker candidate does not buy votes—will be equilibrium if:

$$\frac{\beta(A+\varphi(1-p))E}{p} \geq W \geq \frac{\beta(A+\varphi p)E}{p} \quad (6)$$

The mixed strategy Nash equilibrium (MSNE)—the case in which each candidate buys votes with a certain probability—will be the only equilibrium if:

$$\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p} \quad (7)$$

As can be seen in Figure 2, the equilibrium strategies of the two candidates are described as a set of thresholds along the continuum of possible circumstances. The intuition behind these strategies is straightforward. In the villages where each candidate’s expected value of winning an election is high, the candidate is tempted to buy votes. While both candidates will buy votes if the expected value for winning is very high, neither candidate will buy votes if the expected value is very low. In general, the probability that either or both candidates buy votes will be higher and approach one as the expected value increases. However, the reason candidates will buy votes is somewhat different depending on the circumstances.

[Figure 2 about here]

When the expected value for winning an election is very high (i.e.,  $W \geq \frac{\beta(A+\varphi(1-p))E}{p}$ ), both candidates will buy votes. Buying votes is the best strategy for both candidates whatever strategy the other candidate takes—i.e. buying votes is a dominant strategy for both candidates. In the elections where candidates will always buy votes, the game takes the form of a Prisoner’s Dilemma. In the Prisoner’s Dilemma, each player’s rational strategy to maximize his or her individual payoff ends up with a worse outcome than some other possible outcome that may be better for *both* players. In the game of China’s village elections with a high expected payoff

from winning, each candidate will buy votes to maximize his or her payoff and end up with the outcome of both candidates buying votes; however, the possible outcome that neither buys votes will be a better outcome for *both* candidates than the outcome that both candidates buy votes—i.e., the outcome of both buying votes is Pareto Inefficient. Both candidates will buy votes because they will do better to buy votes regardless of whether the other candidate buys votes. If the other candidate does not buy votes, it will be better to buy votes and win the election, taking advantage of the other candidate's noncorrupt practice. If the other candidate buys votes, it will still be better to buy votes and keep the chance of winning the election to be  $p$  for Candidate 1 and  $1 - p$  for Candidate 2; otherwise, the candidate that buys votes will win the election for sure. Both will use this same reasoning and will take the same strategy of buying votes.

Once the expected value for winning an election is lower than a certain threshold (i.e.,  $\frac{\beta(A+\varphi(1-p))E}{p} \geq W \geq \frac{\beta(A+\varphi p)E}{p}$ ), Candidate 1 (the *weaker* candidate) will stop buying votes while Candidate 2 (the *stronger* candidate) will keep buying votes. The stronger candidate knows that she will be likely to win with a higher probability (i.e.,  $1 - p > p$ ) once she chooses the strategy of buying votes, even if the weaker candidate also chooses the strategy of buying votes. If the weaker candidate does not buy votes, the stronger candidate will still find buying votes to be a better strategy to ensure certain victory. Thus, the stronger candidate has an incentive to buy votes regardless of the strategy the weaker candidate takes—i.e., buying votes is a dominant strategy for the stronger candidate. For the weaker candidate, by contrast, the expected value of winning an election is not high enough to keep the probability of winning to be  $p$  by buying votes, given that the other candidate will buy votes. Therefore, the weaker candidate will not take the strategy of buying votes under this condition.

If the expected value for winning an election is even lower (i.e.,  $\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p}$ ), the stronger candidate will not always have an incentive to buy votes. Instead she will prefer not buying votes if the other candidate does not take the strategy of buying votes, because buying votes is costly relative to the expected value of winning even for the stronger candidate. Conversely, the weaker candidate will have an incentive to take the strategy of buying votes if and only if the stronger candidate does not buy votes, but prefer not buying votes otherwise. Thus, for each candidate, the best strategy depends on the strategy the other candidate takes—i.e., neither candidate has a dominant strategy. Moreover, both candidates have an incentive not to let the other candidate know which strategy she will take. With this logic, each candidate *may* buy votes with a certain probability but will *not always* buy votes. Both candidates will take one strategy with a certain probability and the other strategy with another certain probability. At the equilibrium, Candidate 1 will choose to buy votes with the probability of  $\frac{\beta(A+\varphi p)E-pW}{(1-2p)W}$  and choose to not buy votes with the probability of  $\frac{(1-p)W-\beta(A+\varphi p)E}{(1-2p)W}$ , while Candidate 2 will buy votes with the probability of  $\frac{(1-p)W-\beta(A+\varphi(1-p))E}{(1-2p)W}$  and will not buy votes with the probability of  $\frac{\beta(A+\varphi(1-p))E-pW}{(1-2p)W}$ .

When the expected value of winning an election is very low (i.e.,  $W \leq \frac{\beta(A+\varphi(1-p))E}{1-p}$ ), neither candidate will buy votes. The cost to buy votes is so high for both candidates, relative to the benefit from winning an election, that neither candidate will have an incentive to buy votes whatever strategy the other candidate takes—i.e., not buying votes is a dominant strategy for both candidates.

## COMPARATIVE STATICS AND NUMERICAL EXAMPLE

This article will now assess the effect of electoral competition and the size of the electorate on the behavior of vote buying in China's village elections. It examines below how changes in certain parameters would affect the equilibria. Below, it assigns certain values to the parameters in the game and examines how changes in the values of certain parameters would affect the probability that the candidate who has bought votes would win the election.<sup>9</sup>

### Competition in a Grassroots Election

Article 14 of the revised Organic Law in 1998 specified that each election ought to be *contested*. It defined a contested election as one in which the number of candidates should exceed the seats available. Thus, in accordance with the revised Organic Law, contested village elections have spread throughout China. This article defines a competitive election as one in which the race between candidates is so close that one cannot easily predict who will win. Thus, contested elections are not necessarily *competitive*.

Would electoral competition prevent a corrupt candidate from being elected? Answering this question is important because empirical findings suggest that a vote-buying candidate is often elected in a competitive election (e.g., Kennedy 2009); thus, how to prevent a vote-buying candidate from getting elected is a major policy question for China's village elections. The extent to which the election is competitive can be modeled as the value of  $p$  approaches 0.5.

In the game, if one candidate buys votes and the other candidate does not, then the candidate who has taken the strategy of buying votes will win. Thus, as long as the expected

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<sup>9</sup> Though altering parameter values change numerical results, it does not necessarily change substantive results.

value of winning an election is higher than a certain threshold (i.e.,  $W \geq \frac{\beta(A+\varphi p)E}{p}$ ), the winner of the election will always be the one who has bought votes. However, once the value of  $W$  is below this threshold, there will be a possibility that neither candidate chooses the strategy of buying votes. In the range of this game's MSNE where both candidates take one strategy with a certain probability and the other strategy with another certain probability (i.e.,  $\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p}$ ), a vote-buying candidate will win the election with the probability of  $1 - \frac{(\beta(A+\varphi p)E - pW)((1-p)W - \beta(A+\varphi(1-p))E)}{(1-2p)^2 w^2}$ . Then if the expected value of winning is even lower (i.e.,  $W \leq \frac{\beta(A+\varphi(1-p))E}{1-p}$ ), neither candidate will buy votes, and hence the winner will never be vote-buying.

Overall, candidates are *ceteris paribus* more likely to choose the strategy of buying votes as an election becomes more competitive. As an election becomes more competitive, and hence  $p$  is closer to 0.5, the range where at least one candidate always buys votes,  $W \geq \frac{\beta(A+\varphi p)E}{p}$ , is larger—as long as  $0 < p \leq 0.5$ . Moreover, as  $p$  is larger, the range where candidates take the mixed strategy,  $\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p}$  is smaller. The range where neither candidate buys votes,  $W \leq \frac{\beta(A+\varphi(1-p))E}{1-p}$  is also smaller as  $p$  is larger.

To illustrate the exercise of comparative statics, this article offers a numerical example. To be specific, it considers an example assigning  $\beta = 0.05$ ,  $\varphi = 0.2$ ,  $A = 5$ , and  $E = 1.5$ . With these parameters, Figure 3 shows how the probability of the election having a vote-buying winner depends on the extent of electoral competition  $p$  and the expected value of winning an election  $W$ .

[Figure 3 about here]

When  $W$  is small, no candidate takes the strategy of buying votes however competitive the election is (i.e., whatever value  $p$  is), and the winning candidate is not a vote-buying one. However, after  $W$  exceeds a certain threshold (i.e.,  $W = \frac{\beta(A+\varphi(1-p))E}{1-p}$ ), at least one candidate has an incentive to buy votes with a certain probability, and a winner may be a vote-buying candidate. This threshold is reached more quickly as the election becomes *less* competitive. For this example, the threshold will be  $W = 0.45$  if  $p = 0.1$ ,  $W = 0.53$  if  $p = 0.25$ , and  $W = 0.66$  if  $p = 0.4$ .

When  $W$  is low, the cost of buying votes is high enough, compared to the gain from winning an election, to prevent both candidates from buying votes. However, as an election becomes less competitive, the weaker candidate's expected payoff from not buying votes while the stronger candidate does not buy votes is lower. Thus, the weaker candidate will have more of an incentive to deviate from the strategy of not buying votes to that of buying votes. Knowing that the weaker candidate will have more of an incentive to buy votes, the stronger candidate will also have more of an incentive to buy votes.

Interestingly, after  $W$  exceeds the threshold, as long as  $W$  is smaller than 0.78, the probability of a corrupt candidate's win *decreases* as the value of  $W$  increases. As  $W$  increases, each candidate primarily has more of an incentive to buy votes to win an election. However, the weaker candidate will prefer the strategy of not buying votes if the stronger candidate buys votes. Moreover, if the weaker candidate does not buy votes, then the stronger candidate will prefer to not buy votes. Thus, both candidates face the dilemma that the condition that gives them an incentive to buy votes will also give them an incentive to not buy votes. Through this strategic

interaction, in the range of  $W < 0.78$ , a larger value of  $W$  will lower the probability of a vote-buying candidate's win.

However, once the value of  $W$  exceeds 0.78, the incentive structure of the candidates will be more straightforward. A higher value of  $W$  will give the stronger candidate more of an incentive to ensure victory by buying votes. In a certain range (i.e.,  $W \leq \frac{\beta(A+\varphi(1-p))E}{p}$ ), the stronger candidate will still prefer not buying votes if she is not sure whether or not the weaker candidate will buy votes. However, as  $W$  is higher, the stronger candidate will be more threatened by the weaker candidate's strategy to buy votes, and thus, the election will have a vote-buying winner because the stronger candidate buys votes and is elected. The stronger candidate will have more of an incentive to ensure victory by buying votes as the election becomes more competitive. Therefore, in the range of  $W > 0.78$ , the probability of a vote-buying candidate's win is higher as the election becomes more competitive. For example, if  $W = 1.3$ , a vote-buying candidate will win with the probability of 1 if  $p = 0.4$ , 0.9 if  $p = 0.25$ , and 0.8 if  $p = 0.1$ .

### **The Size of the Electorate**

How would the size of the electorate affect candidates' vote-buying behavior? Figure 4 examines how the probability of a vote-buying candidate's win depends on the size of the electorate  $E$  and the extent of electoral competition  $p$ , given  $W = 1.3$ . Overall, increasing  $E$  would *decrease* the probability that a vote-buying candidate would win. Moreover, electoral competition would make it *more* likely for a vote-buying candidate to win in a *small* electorate, while it might make it *less* likely for a vote-buying candidate to win in a *large* electorate. For this example, if  $E = 1.5$ , then the probability of a vote-buying candidate's win would be 1 with  $p$

= 0.4, 0.9 with  $p = 0.25$ , and 0.8 with  $p = 0.1$ . Meanwhile, if  $E = 3.5$ , then the probability would be 0 with  $p = 0.4$ , 0.9 with  $p = 0.25$ , and 0.8 with  $p = 0.1$ .

[Figure 4 about here]

When  $E$  is low, candidates will always buy votes regardless of the value of  $p$ . However, increasing  $E$  would increase the cost to provide private goods, and at a certain threshold ( $E = \frac{pW}{\beta(A+\varphi p)}$ ) candidates might stop buying votes. The value of this threshold is smaller as the election becomes *less* competitive. For this example, the threshold will be  $E = 0.52$  if  $p = 0.1$ ,  $E = 1.27$  if  $p = 0.25$ , and  $E = 2.02$  if  $p = 0.4$ . After  $E$  exceeds the threshold, as long as  $E$  is smaller than 2.5, the probability of a corrupt candidate's win decreases as the value of  $E$  increases. After  $E$  exceeds 2.5, the probability of a vote-buying winner increases as the size of the electorate increases. However, once the value of  $E$  reaches a certain threshold (i.e.,  $E = \frac{(1-p)W}{\beta(A+\varphi(1-p))}$ ), no candidate buys votes and the probability of a corrupt candidate's win is 0. The value of this threshold is *smaller* as the election becomes *more* competitive. For this example, the threshold will be  $E = 4.37$  if  $p = 0.1$ ,  $E = 3.68$  if  $p = 0.25$ , and  $E = 2.98$  if  $p = 0.4$ .

When the electorate is small, the cost to provide private goods is low, and hence both candidates have an incentive to buy votes regardless of the other candidate's strategy. However, as the size of the electorate increases, the cost of buying votes also increases, especially for the weaker candidate. The cost of buying votes for the weaker candidates would increase more steeply along with the increase in the size of the electorate as an election becomes less competitive (as the value of  $p$  becomes smaller). Once the weaker candidate's strategy deviates from vote buying, in the new equilibrium both candidates will prefer the strategy of not buying votes if the other candidate does not buy votes. Thus, in this range, a noncorrupt candidate wins an election with a certain probability, and the increasing size of the electorate will lower the

probability of a vote-buying candidate's win. However, once  $E > 2.5$ , the probability of a vote-buying winner increases along with the increase in the value of  $E$  in a certain range (i.e.,  $\frac{(1-p)W}{\beta(A+\varphi(1-p))} \geq E > 2.5$ ), where the stronger candidate will have more of an incentive to buy votes to ensure victory in the case that the weaker candidate buys votes to challenge the stronger candidate's advantage. This range is larger as an election becomes less competitive, because the stronger candidate's cost of buying votes is lower as the value of  $p$  becomes lower. Once the size of the electorate is above this threshold (i.e.,  $E \geq \frac{(1-p)W}{\beta(A+\varphi(1-p))}$ ), both candidates find buying votes so costly that neither candidate buys votes regardless of the other candidate's strategy.

In sum, the model suggests that electoral competition would increase the probability of a vote-buying candidate's win in a small electorate while it might decrease the probability of a corrupt election in a large electorate. In other words, it would be pre-electoral consensus that deters a corrupt candidate from winning in a small electorate, while it would be electoral competition that deters a corrupt candidate from winning in a large electorate. The next section will suggest that this claim might generate additional empirical implications for studies of China's village elections and, more generally, authoritarian politics.

## IMPLICATIONS

The argument developed with the model here has some important implications for the research program on China's village elections and its authoritarian rule. O'Brien and Han (2009), in their recent field review article, point out that the research program on China's village elections should go beyond simply examining the electoral processes. However, once beyond the electoral processes, we will face difficulties. There is a mountain of anecdotal evidence based on field research, and "we can find anecdotal evidence to support practically any claim

about village democratization in one or across several of over 600,000 villages” (Manion 2009, 379–80). One way to solve this problem, as Manion (2009) suggests, is conducting rigorous, well-designed sample surveys. Another way, this article would argue, is solidifying logic about puzzling empirical observations in some way including the use of formal modeling. These two methods are, of course, not contradictory but complementary to each other.

The model developed here suggests that electoral competition would *ceteris paribus* increase the likelihood of a corrupt election. This argument has an implication for Tsai’s (2007) finding that the quality of village elections does not positively influence the provision of public goods once the characteristics of informal institutions—what she calls “solidary groups”—are controlled. The model here shows that in a grassroots election, pre-electoral consensus will decrease the probability of the elected cadre’s provision of private goods. The model’s prediction, incorporating Tsai’s (2007) observation, might generate the following new hypothesis: effective informal institutions would make it easier for villagers to reach a pre-electoral consensus, make a village election less competitive, and give candidates less incentive to promise the provision of private goods. As a result, elected cadres would tend to provide public goods if the village has effective solidary groups.

Tsai (2007) also finds that villages with multiple lineage groups are less likely to provide public goods than villages with a single lineage group. Moreover, Kennedy (2002, 479–82) observes that villagers are less likely to be satisfied with the electoral process in multi-surname villages than in single-surname villages. In general, it is conventional wisdom that competitive elections worsen the conflict between lineage groups. However, there is variation in the degree of satisfaction that villagers have with the electoral process, quality of the local leadership, and the provision of public goods among multi-kinship villages. Interestingly, Manion (2006) finds

that the villages with more surnames *ceteris paribus* tend to have an increase in public trust in local leaders during the period between 1990 and 1996, while the quality of village elections—in terms of electoral contestation and voting procedures—tends to raise public trust in local leaders during the same period of time. Her logic to account for this finding is that the villages with a few clans experience more intense clan-based politics than the villages with numerous clans.<sup>10</sup>

Incorporating these empirical findings, the model's prediction might generate the following new hypothesis: in multi-kinship villages, whether pre-electoral consensus is reached and hence an election is not corrupt would depend on the relationship among kinship leaders. If the kinship leaders are in conflict, villagers would fail to reach pre-electoral consensus, an election would be competitive, vote buying would be more likely, and public goods would be underprovided; meanwhile, if relations among kinship leaders are cooperative, the village would succeed in reaching pre-electoral consensus, an election would not be competitive, vote buying would be less likely, and public goods would be properly provided. Though more empirical work is needed to examine this hypothesis, some cases are consistent with this hypothesis. For example, Qiu, Qiu, and Xiao (2002) claim that in a village of Jiangxi Province, the Village Party Secretary and the kinship leaders carefully manipulated the electoral process to ensure that a competent leader would be elected. In some cases from Jiangxi, villagers identified those who would have an ability to provide public goods through their observation of intra-kinship politics; and then, through discussions among kinship leaders, the village reached a consensus about who would be suitable for the village leadership (Xiao, Qiu, and Tang 2001, 188–247).

What implications does the model suggest for the emergence of democracy in China's authoritarian regime? Given the prediction that competition might decrease the probability of

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<sup>10</sup> Manion's (2006) sample does not include single-surname villages.

vote buying in an election in a larger electorate, one may infer that candidates might be more likely to campaign to appeal to larger constituencies if the electorate is larger. Once candidates have a strong incentive to appeal to larger constituencies, they might form political organizations to mobilize votes. The emergence of party-like political organizations competing with the CCP would be the biggest threat for the survival of China's authoritarian regime. This is arguably the main reason China's authoritarian regime has hesitated to introduce elections to higher levels.

Interestingly, some experiments of electing the chief of government, especially at the township level, have already been carried out. In the case of electing a township head, candidates indeed formed organizations called "think tanks" or "campaign teams" to mobilize votes (Li 2002, 715). However, after one or two elections were held in several places, township elections have not spread beyond scattered experiments.<sup>11</sup> By contrast, the attempts to allow non-Party villagers to participate in the election for the post of Party Secretary, called the two-ballot system, have spread widely across the whole nation (Li 1999; Liu 2004, chapter 5). In Sichuan and Liaoning Provinces, the provincial government has even institutionalized the two-ballot system by issuing official documents (Jing 2004, 88–90). Thus, there is apparently a pattern of the two-ballot system at the village level spreading more widely than elections at the township level. In this sense, the model's prediction that electoral competition in a larger electorate might decrease the probability of vote buying suggests a logic to account for why the CCP leadership has hesitated to institutionalize elections at higher levels.

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<sup>11</sup> Moreover, then President Jiang Zemin expressed his opposition to direct elections for township leaders in 2001 (Li 2002, 704).

## CONCLUSION

The argument in this article complements recent studies on authoritarian politics, which have made the assumption that even autocrats cannot remain in power without popular support (e.g., Blaydes 2009; Bueno de Mesquita et al. 2003; Gandhi 2008; Lust-Okar 2005; Magaloni 2006). This article focuses on one aspect of authoritarian elections: the size of the electorate. The model's prediction that electoral competition will encourage candidates to buy votes in a smaller electorate while it may discourage them from buying votes in a larger electorate suggests that introducing elections at the grassroots level but not at higher levels is consistent with the survival strategy of China's authoritarian regime.

Much of the literature examining China's village elections has evaluated whether and how elections make governments more accountable and responsive to public interests, such as through the provision of public goods (e.g., Tsai 2007). Many of the empirical studies have positively evaluated elections that are so competitive that no one could predict the winner (e.g., Kennedy 2002). However, the argument in this article brings a different perspective to the evaluations of village elections. The game's equilibrium shows that electoral competition in a grassroots election would lead to competition over the provision of private goods, which would not threaten the survival of the authoritarian regime.

## APPENDIX

### Equilibrium Strategies

**Equilibrium 1.**  $(BV, BV)$  will be a pure strategy Nash equilibrium (PSNE) if  $pW - \beta(A + \varphi(1 - p))E \geq 0$  and  $(1 - p)W - \beta(A + \varphi p)E \geq 0$ . Thus, this PSNE will be sustained if  $W \geq \frac{\beta(A + \varphi(1 - p))E}{p}$  and  $W \geq \frac{\beta(A + \varphi p)E}{1 - p}$ . Because  $\frac{\beta(A + \varphi(1 - p))E}{p} \geq \frac{\beta(A + \varphi p)E}{1 - p}$  as long as  $p \leq 0.5$ ,  $(BV, BV)$  will be a PSNE if  $W \geq \frac{\beta(A + \varphi(1 - p))E}{p}$ .

**Equilibrium 2.**  $(NBV, NBV)$  will be a PSNE if  $pW \geq W - \beta(A + \varphi(1 - p))E$  and  $(1 - p)W \geq W - \beta(A + \varphi p)E$ . Thus, this PSNE will be sustained if  $W \leq \frac{\beta(A + \varphi(1 - p))E}{1 - p}$  and  $W \leq \frac{\beta(A + \varphi p)E}{p}$ . Because  $\frac{\beta(A + \varphi p)E}{p} \geq \frac{\beta(A + \varphi(1 - p))E}{1 - p}$ ,  $(NBV, NBV)$  will be a PSNE if  $W \leq \frac{\beta(A + \varphi(1 - p))E}{1 - p}$ .

**Equilibrium 3.**  $(BV, NBV)$  will be a PSNE if  $W - \beta(A + \varphi(1 - p))E \geq pW$  and  $0 \geq (1 - p)W - \beta(A + \varphi p)E$ . Thus, this PSNE will be sustained if  $W \geq \frac{\beta(A + \varphi(1 - p))E}{1 - p}$  and  $W \leq \frac{\beta(A + \varphi p)E}{1 - p}$ . Because  $\frac{\beta(A + \varphi(1 - p))E}{1 - p} \geq \frac{\beta(A + \varphi p)E}{1 - p}$ ,  $(BV, NBV)$  will never be a PSNE unless  $p = 0.5$ .

**Equilibrium 4.**  $(NBV, BV)$  will be a PSNE if  $0 \geq pW - \beta(A + \varphi(1 - p))E$  and  $W - \beta(A + \varphi p)E \geq (1 - p)W$ . Thus, this PSNE will be sustained if  $W \leq \frac{\beta(A + \varphi(1 - p))E}{p}$  and  $W \geq \frac{\beta(A + \varphi p)E}{p}$ . Because  $\frac{\beta(A + \varphi(1 - p))E}{p} \geq \frac{\beta(A + \varphi p)E}{p}$ ,  $(NBV, BV)$  will be a PSNE if  $\frac{\beta(A + \varphi(1 - p))E}{p} \geq W \geq \frac{\beta(A + \varphi p)E}{p}$ .

**Equilibrium 5.** No PSNE will exist but a mixed strategy Nash equilibrium (MSNE) will

exist if  $\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p}$ . At the MSNE: Candidate 1 will take *BV* with the probability of  $\frac{\beta(A+\varphi p)E-pW}{(1-2p)W}$ , and *NBV* with  $\frac{(1-p)W-\beta(A+\varphi p)E}{(1-2p)W}$ ; and Candidate 2 will take *BV* with the probability of  $\frac{(1-p)W-\beta(A+\varphi(1-p))E}{(1-2p)W}$ , and *NBV* with  $\frac{\beta(A+\varphi(1-p))E-pW}{(1-2p)W}$ . Thus, at the MSNE, (*BV*, *BV*) will occur with the probability of  $\frac{(\beta(A+\varphi p)E-pW)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2}$ , (*NBV*, *NBV*) with  $\frac{((1-p)W-\beta(A+\varphi p)E)(\beta(A+\varphi(1-p))E-pW)}{(1-2p)^2w^2}$ , (*BV*, *NBV*) with  $\frac{(\beta(A+\varphi p)E-pW)(\beta(A+\varphi(1-p))E-pW)}{(1-2p)^2w^2}$ , and (*NBV*, *BV*) with  $\frac{((1-p)W-\beta(A+\varphi p)E)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2}$ .

## Comparative Statics

**Electoral Competition.** If  $W \leq \frac{\beta(A+\varphi(1-p))E}{1-p}$ , then (*NBV*, *NBV*) is a PSNE, and hence the probability of a corrupt candidate's win is 0. If  $\frac{\beta(A+\varphi p)E}{p} \geq W \geq \frac{\beta(A+\varphi(1-p))E}{1-p}$ , then at the MSNE the probability of a corrupt candidate's win is  $1 - \frac{(\beta(A+\varphi p)E-pW)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2}$ ;

$\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E-pW)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2} \right) > 0$  if  $W > \frac{2\beta(A+\varphi(1-p))(A+\varphi p)E}{(1-p)(A+\varphi(1-p))+p(A+\varphi p)}$ ;  $\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E-pW)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2} \right) < 0$  if  $W < \frac{2\beta(A+\varphi(1-p))(A+\varphi p)E}{(1-p)(A+\varphi(1-p))+p(A+\varphi p)}$ ; and  $\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E-pW)((1-p)W-\beta(A+\varphi(1-p))E)}{(1-2p)^2w^2} \right) = 0$  if  $W = \frac{2\beta(A+\varphi(1-p))(A+\varphi p)E}{(1-p)(A+\varphi(1-p))+p(A+\varphi p)}$ , with which the probability of a corrupt candidate's win is at a local minimum. If  $\frac{\beta(A+\varphi(1-p))E}{1-p} \geq W \geq \frac{\beta(A+\varphi p)E}{p}$ , then (*NBV*, *BV*) is a PSNE, and hence the probability of a corrupt candidate's win is 1. If

$W \geq \frac{\beta(A+\varphi(1-p))E}{p}$ , then  $(BV, BV)$  is a PSNE, and hence the probability of a corrupt candidate's win is 1.

**The Size of the Electorate.** If  $E \leq \frac{pW}{\beta(A+\varphi(1-p))}$ , then  $(BV, BV)$  is a PSNE, and hence the probability of a corrupt candidate's win is 1. If  $\frac{pW}{\beta(A+\varphi p)} \geq E \geq \frac{pW}{\beta(A+\varphi(1-p))}$ , then  $(NBV, BV)$  is a

PSNE, and hence the probability of a corrupt candidate's win is 1. If  $\frac{(1-p)W}{\beta(A+\varphi(1-p))} \geq E \geq \frac{pW}{\beta(A+\varphi p)}$ ,

then the probability of a corrupt candidate's win is  $1 - \frac{(\beta(A+\varphi p)E - pW)((1-p)W - \beta(A+\varphi(1-p))E)}{(1-2p)^2 w^2}$ ;

$$\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E - pW)((1-p)W - \beta(A+\varphi(1-p))E)}{(1-2p)^2 w^2} \right) > 0 \quad \text{if} \quad E > \frac{\beta(A+\varphi p)pW + \beta(A+\varphi(1-p))(1-p)W}{2\beta^2(A+\varphi p)(A+\varphi(1-p))} ;$$

$$\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E - pW)((1-p)W - \beta(A+\varphi(1-p))E)}{(1-2p)^2 w^2} \right) > 0 \quad \text{if} \quad E > \frac{\beta(A+\varphi p)pW + \beta(A+\varphi(1-p))(1-p)W}{2\beta^2(A+\varphi p)(A+\varphi(1-p))} ; \quad \text{and}$$

$$\frac{\partial}{\partial W} \left( 1 - \frac{(\beta(A+\varphi p)E - pW)((1-p)W - \beta(A+\varphi(1-p))E)}{(1-2p)^2 w^2} \right) = 0 \quad \text{if} \quad E = \frac{\beta(A+\varphi p)pW + \beta(A+\varphi(1-p))(1-p)W}{2\beta^2(A+\varphi p)(A+\varphi(1-p))}, \quad \text{with}$$

which the probability of a corrupt candidate's win is at a local minimum. If  $E \geq \frac{(1-p)W}{\beta(A+\varphi(1-p))}$ ,

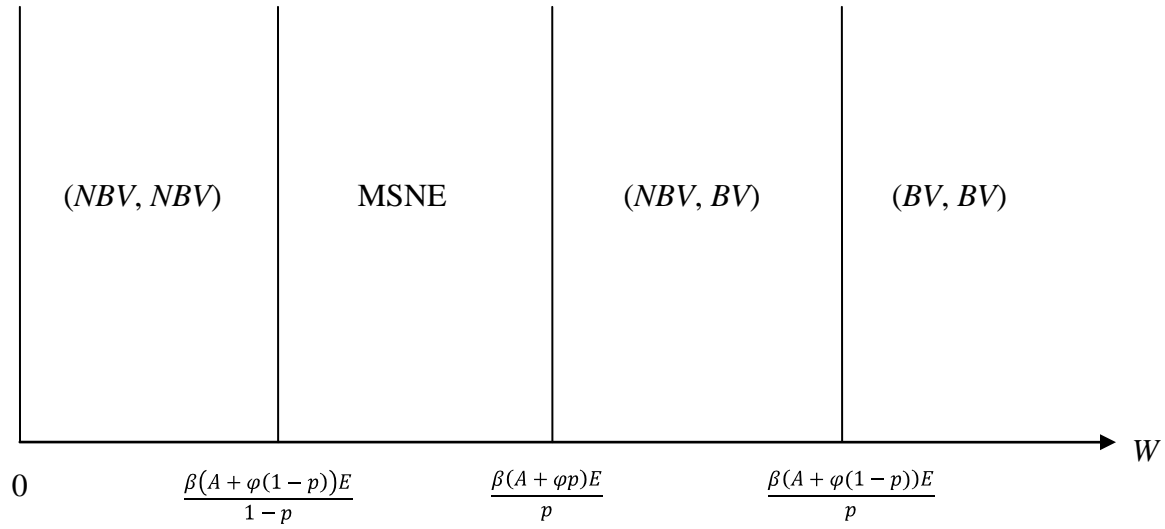
then  $(NBV, NBV)$  is a PSNE, and hence the probability of a corrupt candidate's win is 0.

**Figure 1. Payoffs in Village Elections**

		Candidate 2	
		Buying Votes (BV)	Not Buying Votes (NBV)
Candidate 1	Buying Votes (BV)	$pW - C_1$	$W - C_1$
	Not Buying Votes (NBV)	$0$	$pW$

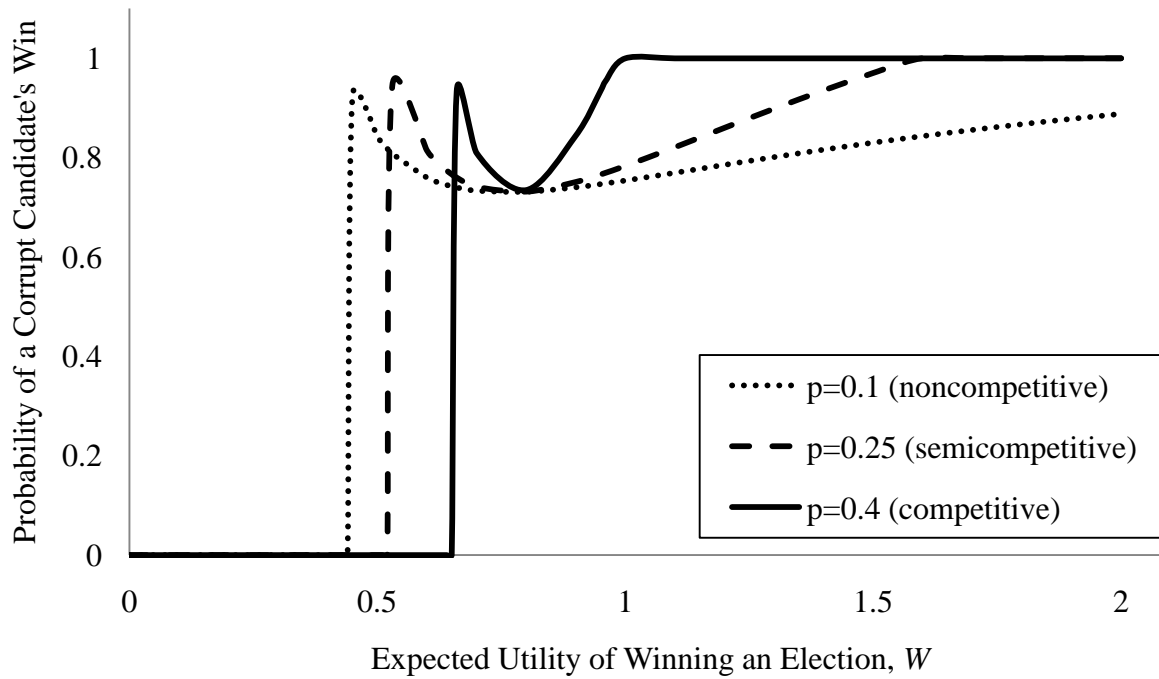
*Note:*  $W$  = the candidate's utility gained by winning the election.  $C_i$  = Candidate  $i$ 's utility lost by buying votes.  $p$  = the probability that Candidate 1 wins the election when both candidates take the same strategy.  $C_1 = \beta(A + \varphi(1 - p))E$  and  $C_2 = \beta(A + \varphi p)E$ :  $\beta$  = the cost to buy one vote;  $E$  = the size of the electorate;  $\varphi$  and  $A$  are positive constant numbers.

**Figure 2. The Equilibrium Strategies in the Game**



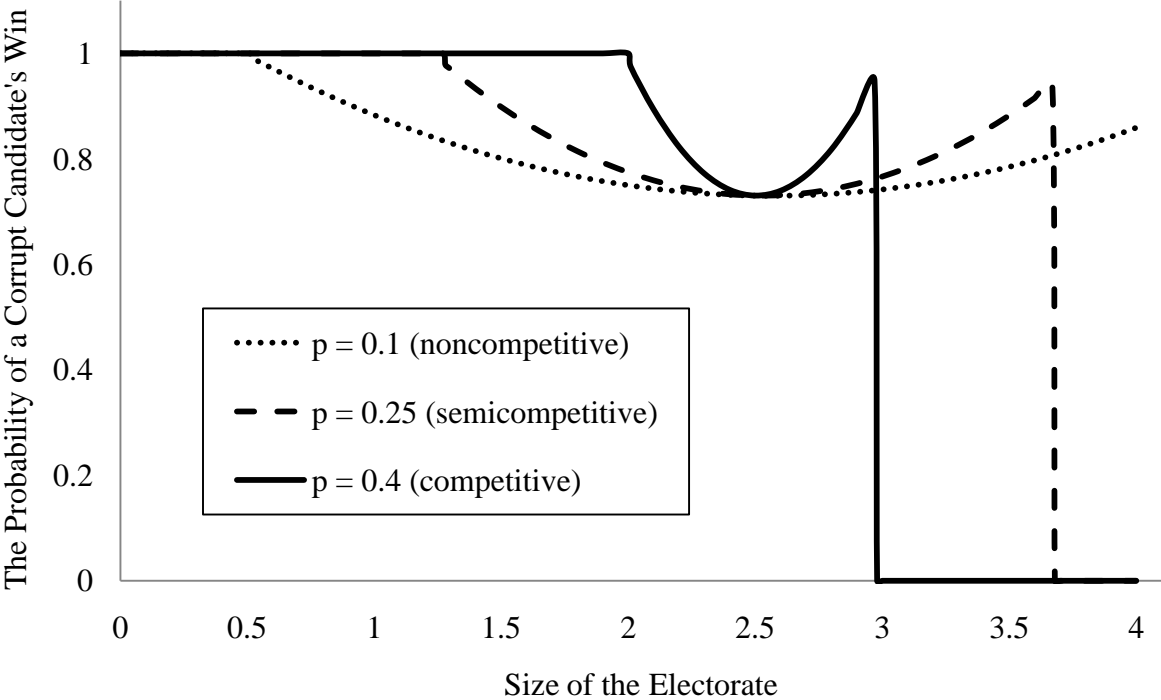
*Note:*  $(BV, BV)$  = both candidates buy votes.  $(NBV, NBV)$  = neither candidate buys votes.  $(NBV, BV)$  = Candidate 1 does not buy votes and Candidate 2 buy votes.  $MSNE$ : Each candidate buys votes with a certain probability.

**Figure 3. Probability of a Vote-Buying Candidate's Win for Different Thresholds of Electoral Competition**



*Note:*  $\beta = 0.05$ ,  $\varphi = 0.2$ ,  $A = 5$ , and  $E = 1.5$ .

**Figure 4. Probability of a Vote-Buying Candidate’s Win Depending on the Electorate’s Size**



Note:  $\beta = 0.05$ ,  $\varphi = 0.2$ ,  $A = 5$ , and  $W = 1.3$ .

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