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ON COMMITTED CITIZEN-CANDIDATES *

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Abstract

I study if the equilibria of the citizen-candidate model analyzed in Osborne and Slivinski (1996) are robust to some degree of commitment from candidates. In analogy with their notion of "sincere" voting, I consider one of "sincere" commitment: commitment is costless to positions closer to one's ideal point than any other candidate's position, but it is too costly to positions further away. With "sincere" voting this ensures candidates always vote for themselves. I show that, for the most common population distributions, all the multiple candidate equilibria analyzed in Osborne and Slivinski (1996) are not equilibria in this model, as the unique equilibrium with four or less candidates has a single candidate entering.

Keywords: Spatial Elections; Citizen-Candidates; Commitment.

JEL Classification: C72, D72, D78.

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On Committed Citizen-Candidates*

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March 18, 2005

Abstract

I study if the equilibria of the citizen-candidate model analyzed in Osborne and Slivinski (1996) are robust to some degree of commitment from candidates. In analogy with their notion of "sincere" voting, I consider one of "sincere" commitment: commitment is costless to positions closer to one's ideal point than any other candidate's position, but it is too costly to positions further away. With "sincere" voting this ensures candidates always vote for themselves. I show that, for the most common population distributions, all the multiple candidate equilibria analyzed in Osborne and Slivinski (1996) are not equilibria in this model, as the unique equilibrium with four or less candidates has a single candidate entering.

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1 Introduction

The citizen-candidate model of Osborne and Slivinski (1996) [OS from now on] and its companion, the model in Besley and Coate (1997) [BC from now on], have become an important reference in the literature of candidate entry in positive political economics. In OS voters are "sincere", whilst in BS they are free to vote whom they wish, but both integrate in one an environment where individuals of the same population participate in elections and can become candidates. Moreover, in BC the model allows for analyses of electoral competition in a multidimensional space. However, both models rely on a restrictive assumption, contrary to a long tradition in the formal study of political competition: candidates cannot commit to any policy but their unique preferred point.

In the model the assumption is made because candidates care, apart from winning, for the policy implemented. The argument is that, if a candidate has an ideal point, it is not credible for him to promise that, once in office, he will not implement the policy he prefers. However, this assumption runs in the face of any actual election where candidates express a preference for some particular policy but are willing to compromise and implement some other point. That is, there is room for commitment beyond a candidate's expressed ideal point.

In this paper I introduce some flexibility in the range of policies that citizen-candidates can commit to. However, I do not attempt to give a proper explanation of how far can candidates commit to or compromise away from their ideal point. Instead, I intend to test the robustness of OS to commitment beyond a single point without allowing costless commitment to any point.[1]

[1] With strategic voting, Feddersen, Sened, and Wright (1990) study entry with costless commitment, but there candidates have no preferences for policies.

Assuming commitment to any point might seem like a very strong assumption to make when candidates have an ideal point. For this reason I consider a weaker form of commitment. In particular, I assume that candidates can costlessly commit to other policies than their preferred point, as long as they are (weakly) closer to it than the policy offered by any other candidate. Instead, they face a prohibitive cost if they commit to a policy further away from their ideal point than any other candidate's policy. I label this notion "sincere" commitment. With "sincere" voting it ensures that we consider the largest set of policies candidates commit to whilst still voting for themselves. The environment is otherwise identical to that in OS. I show that the assumed lack of commitment of candidates in their model is indeed a very strong restriction to make: for population distributions which are constant (the Uniform) or with a single peak (most used in practice), none of the multiple candidate equilibria they analyze survives the relatively weak notion of commitment analyzed in this paper.

2 The Model

A community of citizens distributed on a continuum have to select a policy on $\Re$. The distribution of citizens is labelled F and it is assumed to have a single median, m. Each citizen has linear preferences over policies indexed by an ideal point i. The distance of an implemented policy x from this ideal point represents each citizen i's utility: $-\left|x-i\right|$. As in OS, voting is assumed to be "sincere". That is, each of k candidates occupying a given position x get $\frac{1}{k}$ of the votes of those citizens with ideal points closer to x than any other policy.

Citizens cannot directly vote for a policy, but must vote for a citizen who commits to a particular policy when deciding to run as a candidate. A candidate receives a benefit b from winning the race. When deciding whether to enter the race or not, a citizen evaluates the cost of entering, c. In addition, a citizen faces a cost $\bar{c}$ if he or she enters at a policy further away from his or her ideal point than the policy of another candidate. I assume it is very costly for a citizen to incur in such action, i.e. $\bar{c} >> 0$. The winner is the candidate who obtains most votes. If two or more candidates tie, then each wins with equal probability. If no citizen enters, then they all obtain the payoff $-\bar{c}$. In analogy with OS, I call a distribution of candidates a candidate *configuration.* In both here and OS, we look at pure strategy Nash equilibria of this game with sincere voters.

Note that I assume candidates can commit, but as $\bar{c}$ is assumed very large, commitment is "sincere" in analogy with voting. In essence I want to see if allowing candidates to commit, but remaining "sincere" as citizen-candidates, changes the predictions of the model in OS.

3 Potential Types of Candidates in Equilibrium

Before comparing all the equilibria that arise in this model and all that arise in OS, it is important to understand what types of candidate behavior could arise in both settings. For this reason I first identify the different types of candidates that can potentially arise in an equilibrium. Types of candidates are identified by how many of them can sit at a particular position and their performance in the election: potentially they can lose, win, or tie. Obviously, in a given equilibrium we cannot observe candidates who are tying and others who win, but the particular structure assumed in OS and here ("sincere" voting and a one dimensional policy space) restricts the types of candidates that can arise. I show that all the potential types that arise in here can arise in OS and viceversa.

3.1 Winners

The first result we state is obvious: because of sincere voting, a winner can only sit on his own.

Lemma 3.1 *Winners sit at a position on their own.*

Proof. With sincere voting, if some other "winner" was sitting at the same position, they would both be tying. ■

Things become more interesting with tying candidates.

3.2 Tying candidates

There can always be a candidate who is tying and sitting at some position by himself. However, if voters are sincere, then there cannot be more than two tying candidates sitting at a given position. The reason is that if there were three or more, a new citizen could enter on some side of that position and win the election. Moreover, even with only two tying candidates sitting at a position, new entry is possible as long as the candidates do not sit at the median of their voter support. That is, they cannot get support of more than one half on one side and less than a half on the other.

Lemma 3.2 *Candidates that are tying either sit at a position:*

(i) on their own, or:

(ii) share it with another tying candidate, both sitting at the median of their voter support.

Proof. (i) If three or more candidates tie at a given position, then at least half of that support must be on one of the two sides. It follows that if a citizen were to enter very close to them on that side, he would win for sure.

(ii) The same logic as for (i) applies. With half the share of votes two tying candidates get, it is enough to tie. However, if they are not sitting at the median of their support, then there would be more than half support on one side and a citizen could enter on that side close to them and win. ■

Finally, I consider the behavior of sure losers.

3.3 Sure losers

Sure losers come in a single type, as no more than a single candidate would sit at a given position to lose.

Lemma 3.3 *There is only one type of sure loser: one sitting on his own.*

Proof. (i) There can be no more than one candidate sitting at a given position.

In principle there could be more than one sure loser sitting at a position. However, the only reason to remain in the race would be that if he were to jump out of the race or locate elsewhere, then the remaining candidate(s) would not be sure losers anymore: they would either tie or win. However, because of "sincere" commitment, the only positions a given candidate can sit at must be weakly preferred to any other candidate's position, so he would always benefit if that position won with a positive probability. Thus, if by sitting at a given position he was ensuring that position did not win with positive probability, he would jump out of the race.

(ii) There can be at least one candidate sitting at a given position.

Even if he is losing, by sitting at a given position a candidate can potentially make sure that some votes that would otherwise go to some position he does not like do not end up supporting it. ■

It is now necessary to compare the types of candidates that can arise in OS and compare them to the four types found in this environment: winners, single tiers, twin tiers, and/or single losers.

Proposition 1 *The only potential equilibrium type of candidates in OS are winners, single tiers, twin tiers, and/or single losers.*

Proof. In OS, Lemma 1 shows that a sure loser will not share his position with another candidate (who, by sincere voting, must also be a sure loser). Lemma 2 establishes that all the other types of equilibrium candidate behavior mentioned above are also possible in OS. ■

Thus, all candidate types in this model can potentially arise in OS and viceversa.

4 Equilibria

The argument I now build shows that all the multiple candidate equilibria analyzed in OS do not survive in this environment. The argument is constructed in two steps. First I eliminate candidate types that could potentially enter at the extreme of the candidate configuration under *any* voter distribution F. Then I consider the possible configurations under a voter distribution F with no peaks (i.e. the Uniform), and with a single peak (i.e. most distributions used in practice). In OS only equilibria with less than five candidates are analyzed. None, but one of those survives under these conditions.

4.1 Types at the extremes of a configuration

Lemma 4.1 *There are no equilibria with sure losers or single tiers at the extremes of a candidate configuration.*

Proof. First of all, note that if there was a sure loser or a single tier at the extreme, then there are other candidates in the candidate configuration (sure winners or other tying candidates).

Given the above, a sure loser at the extreme would have two options to increase his utility. Which one he picked would depend on whether he had the chance of tying or winning by moving towards his neighboring candidate. If he had no chance, he could drop out of the race, save the cost of entry, and increase the share of votes of his next most preferred candidate. Alternatively, if he had the chance, he could move closer to the next candidate and grab that larger share of votes. Either one of the two actions would increase his utility.

For a single tier at the extreme of the candidate configuration, as voters are continuously distributed, he could win by moving epsilon towards the next candidate. This would also increase his utility. ■

It follows that equilibria can only consist of a single sure winner or twin tying candidates at the extremes.

4.2 Equilibria with less than five candidates and voter distributions with less than two peaks

In OS only equilibria with four or less candidates are analyzed. The next result shows that all equilibria but one of those in their model are not equilibria in this model, when we only consider voting distributions with no peaks (the Uniform distribution) or a single peak (most distributions used in practice).

Proposition 2 *For a voting distribution with one or no peaks, the only equilibrium with four or less candidates is one with a single winner.*

If Proposition 2 is true then, together with Lemma 4.1, we must conclude that there can be no equilibria with twin tiers at the extremes consisting of four or less candidates if the voting distribution has no peaks or a single peak. This is the first part of the proof of Proposition 2. The second shows that, for some parameter values, there is an equilibrium with a single candidate running.

Proof. (i) There are no multiple candidate equilibria with four or less candidates when the voting distribution is constant or single-peaked.

The minimum number of candidates for an equilibrium with twin tiers at the extremes must be made of at least four candidates. I show that no configuration with four twin tying candidates is possible when the voting distribution is Uniform or single peaked.

i.i. Uniform. Divide the interval of voter support in 4. With twin tiers at the extremes of the configuration, then one couple must sit at the lower quartile and the other at the upper quartile. However, a candidate who enters at the median would win the election.

i.ii. Single Peaked. First note that, by Lemma 3.2. twin tiers must sit at the median of their voter support.

Second, couples must enter on each side from the peak of the distribution. For consider the interval in between both couples; because of sincere voting, in this interval the subinterval of support of each couple is of equal length. But both couples must sit at the median of their support, so they must get at least equal voter support in these subintervals. This is not possible if the peak is not between both couples.

Finally, even if the peak is in between both couples, there is one candidate that can enter between them and win for sure. Consider again the interval of support between both couples and note that there is enough vote share for two candidates to tie. Moreover, from sincere voting, if a new candidate entered somewhere in that interval, his interval of support would be a half of this interval. If this candidate decides to sit at the peak of the distribution, then he is getting more than enough to win. For he gets half of the interval where there is enough votes for two to tie, and he is sitting at the point where there is most support and from where support decreases monotonically towards both couples.

(ii) For some parameter values there is an equilibrium with a single candidate running. As in OS, if $b \leqslant 2c$ then a candidate can sit at the median and win for sure, as no other candidate finds it beneficial to enter at the median and tie (and if this new candidate entered anywhere else he would lose). Moreover, if $b < c$ this single candidate can enter at a distance $(c - b)/2$ away from the median and it is still an equilibrium where he wins. Given that there is someone already in the race, no candidate wants to enter to win. However, it is beneficial for the initial candidate to enter because otherwise he faces the payoff $-\bar{c}$. That is, $\bar{c}$ is large enough such that there is always a candidate willing to internalize the externality imposed by no candidate entering. ■

5 Conclusion

I have shown that the multiple candidate equilibria analyzed in Osborne and Slivinski (1996), i.e. those with four or less candidates, are not robust to a weak form of commitment. In this case, when the voting distribution is constant or single-peaked, the citizen-candidate model has a single prediction: a Nash equilibrium exists if $b \leqslant 2c$ where a single candidate enters. The candidate sits at the median if $b \in [c, 2c]$, and if $b < c$ he can sit at any position not further away from the median than $(c-b)/2$. This is the same single candidate equilibrium found in their model.

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