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Expressive voting, vanishing moderate voters, and divergent ideologies

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Abstract

By introducing expressive voting in the Downs-Hotelling model and allowing voters to abstain from elections, this paper illustrates that low ideological motivation to vote will induce divergent ideologies among candidates because candidates need extreme ideologies to attract extreme voters. Moderate voters will choose to abstain from elections.

1   Introduction

In the Downs-Hotelling model, Downs (1957) predicts that two candidates' ideologies converge at the median voter, and that voters refuse to vote in the presence of voting costs and an almost zero probability that their votes can make a difference. Many studies in the literature have attempted to resolve divergences in ideologies and the paradox of voting.

To explain reasons for voting from a psychological perspective, Ferejohn and Fiorina (1974) assume that the minimization of regrets is part of the decision-making process of voting, and Bendor et al. (2003) and Fowler (2006) consider voting behavior an adaptive learning process. However, the psychological approach is not considered rational from the perspective of economics. Feddersen and Sandroni (2006) and Coate and Conlin (2004) abandon individualism and develops group voting rules, but these authors do not address the issue of cooperation within groups. Palfrey and Rosenthal (1984) require some voters with zero voting costs to achieve a mixed strategy equilibrium. Perhaps it is better to assume that action of voting itself can make voters happy as the theory of expressive voting suggests. Kan and Yang (2001) analyze ANES data of the presidential election and report evidence of expressive voting.

Several possible reasons have been suggested for the divergence of the two major parties. It is straightforward that candidates with different ideological preferences choose divergent ideologies (Hansson and Stuart, 1984). A lack of difference between candidates may disincentivize voters to vote. To encourage voters to cast votes, candidates must differ in ideology (Adams and Merrill, 2003; Zakharov, 2008). Groseclose (2001) suggests that candidates with lower valence are located at a more extreme position to attract voters with extreme ideologies. Aragones and Palfrey (2002) extends this argument to the case of probabilistic voting. Clearly, voters' traits can cause divergences in candidates' ideology. For example, Roemer (1994) suggests that an uncertain distribution of voters causes divergences among candidates.

The two issues discussed are related. This paper incorporates the ideological motivation to vote into the original Downs-Hotelling model, following the concept of expressive voting. Voters are allowed to abstain from election if voting for any candidate does not induce positive utility. When the ideological motivation to vote is relatively less important than the concerns of the ideological distance in voters' utility, candidates' ideologies will diverge to attract voters with extreme ideologies, and voters with moderate ideologies will choose to abstain from voting. Hence, the present paper shows that both the divergence of candidates' ideologies and the disappearance of moderate voters may be simultaneously explained by introducing expressive voting into the Downs-Hotelling model.

2   Model

Assume that there exist two candidates, a and b, competing for a vacancy. Both candidates choose their ideological positions, I_a and I_b, to maximize the votes they obtain before voters decide whether and for whom to vote. Voters' ideologies are uniformly distributed between -1 and 1.

The utility obtained by Voter x, whose ideology is located at x, from voting for Candidate i is

$$U_{xi} = \begin{cases} w \cdot |x| - |x - I_i| & \text{if } |x - I_i| \leq |x - I_{-i}|, \\ -|x - I_i| & \text{otherwise,} \end{cases} \tag{1}$$

where $w > 0$ is the variable used to measure the relative importance of the voter's ideological motivation to vote in utility. Following Brennan and Buchanan (1984), voting for a candidate whose ideology is closer than the other is similar to cheering for the favorite team on the field, and the voters are rewarded by their expressive voting behavior. More precisely, the first part of the right-hand side of Equation (1) $w \cdot |x|$ indicates that voters with more extreme ideologies are more willing to vote when he votes for the preferred candidate. In other words, an extremist has a stronger ideological motivation to vote. This critical assumption is supported by the findings of Greene and Nelson (2002). [1] The second part simply follows the traditional assumption in Downs (1957) that voters care about the ideological distance between them and each candidate. The smaller this distance is, the more a voter favors a candidate.

For simplicity, it is assumed that all voters possess the same $w > 0$. Indeed w may reflect the level of voters' average motivation to vote in a specific election. This motivation may vary with different elections, and it may be encouraged or discouraged by the nationwide socio-economic status during the campaign. When $w \geq 1$, voters have a relatively strong ideological motivation to vote. However, when $0 < w < 1$, voters' ideological motivation to vote is relatively weak. Further, to incorporate the consideration of voters' absence from elections, it is also assumed that Voter x will not cast a vote when both U_{xa} and U_{xb} are negative or zero.

I summarize the time line of the game below. In Stage 1, given the knowledge of the distribution of x and voters' decision rules, two candidates simultaneously choose I_a and I_b to maximize the votes they obtain in the election. In Stage 2, given the knowledge of the locations of I_a and I_b, voters choose whether and for whom to vote.

3 Equilibria

I solve the subgame perfect equilibrium of the model. However, the equilibrium varies with the relative importance of ideological motivation to vote in voters' utility. Hence, the following analysis is divided into two parts by the range of w.

Scenario I: Strong ideological motivation to vote ($w \geq 1$)

In the scenario of $w \geq 1$, voters' ideological motivation to vote is strong. Those voters with more extreme ideologies are more likely to cast their votes because the dis-utility resulting from the ideological distance is easy to outweigh. Candidates will choose an ideological location closer to the mid-point to persuade more voters with moderate ideologies to cast their votes by reducing the ideological distance.

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[1]Drinkwater and Jennings (2007) define the expressiveness as citizens' responsibility to vote. They apply a different definition, and report a different result. However, it is inappropriate to treat their findings as a counterproof of the assumption in this paper.
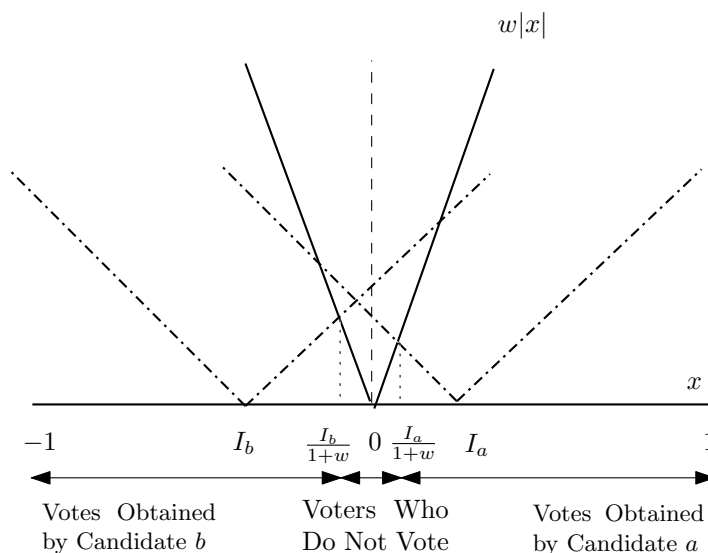
Figure 1: $w \geq 1$

Lemma 1 *A candidate whose ideology is not located at 0 will be beaten by the other candidate whose ideology is in the opposite direction and closer to 0.*

Proof 1 *Due to the symmetric assumption of the distribution of voters' ideologies, we only consider the case below. Let $I_b < 0 < I_a$ and $|I_a| < |I_b|$. Candidate a can obtain $1 - \frac{I_a}{1+w}$ votes and Candidate b at most $\frac{I_b}{1+w} - (-1)$ (please refer to Figure 1)[2]. Because $1 - \frac{I_a}{1+w} > \frac{I_b}{1+w} - (-1)$, Candidate a must be able to choose an ideology that is in the opposite direction and closer to 0 to beat Candidate b when Candidate b's ideology is not located at 0.*

Proposition 1 *When $w > 1$, both candidates choose their ideological positions at 0.*

Proof 2 *Based on Lemma 1 , no candidate will choose an ideology different from 0. Further, either candidate who faces an opponent with an ideology at 0 must also choose the same ideological position to avoid failure in the election. Hence, when $w > 1$, the only equilibrium is that both candidates choose ideological positions at 0.*

Scenario II: Weak ideological motivation to vote ($0 < w < 1$)

In contrast to Scenario I, voters are reluctant to vote because of a smaller w. Candidates must choose an ideology closer to that of voters who are more likely to vote. In the model, voters with more extreme ideologies are more likely to cast votes; therefore, candidates will no longer both choose an ideology at 0.

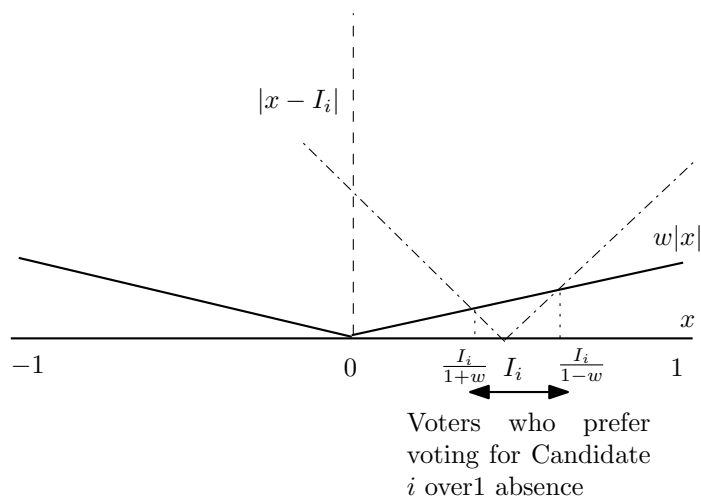**Lemma 2** *At most, a candidate can obtain $\frac{2w}{1+w}$ votes.*

Figure 2: $0 < w < 1$: The Maximum Votes a Candidate Can Obtain

Proof 3 *The proof can be done by construction. The maximum votes Candidate i can obtain must occur when Candidate i receives votes from all voters who prefer casting votes for Candidate i to absence in the election (please refer to Figure 2)[3] . Otherwise, some votes that Candidate i may receive are shared by the other candidate. The amount of votes obtained by Candidate i is $I_i \cdot \frac{2w}{1-w^2}$. Clearly, a more extreme I_i may produce more votes. In the case of $I_i > 0$, when $I_i = 1 - w$,[4] the maximum votes, $\frac{2w}{1+w}$, will be induced.*

Proposition 2 *When $0 < w < 1$, in equilibrium, one candidate chooses an ideology at $1 - w$, and the other chooses an ideology at $-1 + w$.*

Proof 4 *Given any I_{-i}, Candidate i's best response must be $1 - w$ or $-1 + w$ to obtain the most votes, based on Lemma 2 . In such a case, two candidates will receive the same amount of votes and will have the same probability to win the election. Any candidate's deviation will induce less votes received, and he must be defeated surely. Hence, it is clear that the only equilibrium occurs when one candidate chooses an ideology at $1 - w$ and the other chooses an ideology at $-1 + w$.*

Summary of the relation of w and I_i:

The discussions of the above two scenarios shows that the relative importance of the ideological motivation to vote affects candidates' choice of ideology. In general, as the relative importance, w, increases, voters with less extreme ideologies (moderate voters) become more likely to cast their votes, and candidates are willing to choose less extreme ideologies. However, the relation of w and I_i is not linear. When $w > 1$, both candidates choose ideologies at 0, and the increase of w will not alter either candidate's choice of ideology. The relation of w and I_i is illustrated in Figure 3.

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[2]If I_b moves to the left, Candidate b may receive votes less than $\frac{I_b}{1+w} - (-1)$.

[3]Without a loss of generality, Figure 2 illustrates only the case of $I_i > 0$.

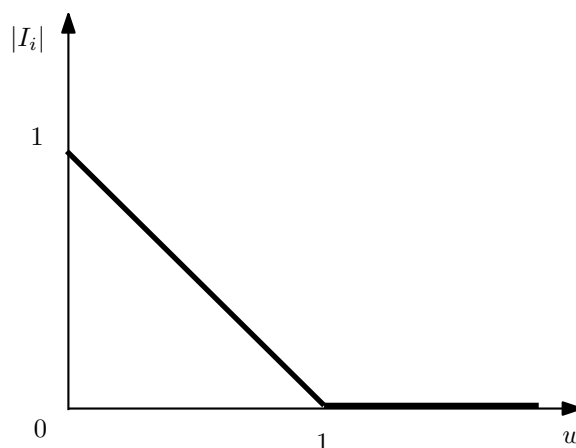[4]This is solved from $\frac{I_i}{1-w} = 1$.

Figure 3: The relation of w and I_i

4   Conclusions

By introducing expressive voting into the Downs-Hotelling model, this paper provides a new, supplemental explanation of why candidates' ideologies diverge and why moderate voters feel reluctant to vote. When partisan voters' willingness to vote is weak, candidates are forced to act radically to draw votes from radical supporters. In contrast, moderate voters will be disappointed by radical candidates and refused to vote. Although further empirical studies are necessary to confirm these theoretical suggestions, the case of the U.S. presidential election in 2000 illustrates the validity of the model in this paper.

Although the election is extremely competitive, the turnout rate is as low as 51.21%, which is the fifth lowest level in history. The low turnout rate reveals voters' low motivation to vote. Indeed, the ideological gap between George W. Bush and Al Gore was clearly identified in their campaigns, as predicted in our model. Further, Martinez and Gill (2005) confirm that both independent voters and moderate partisan voters are reluctant to cast votes.

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