The Strategy of Ambiguity in Electoral Competition

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ABSTRACT

Why do candidates use a strategy of ambiguity even though the Median Voter Theorem does not prescribe it? In order to rationalize the use of a strategy of ambiguity, scholars have assumed either that voters are intrinsically risk loving, that candidates have their own policy preferences, that voters do not know where the candidates stand on policies, or that candidates do not know the distribution of voters’ preferences. In this paper, we propose a reasonable alternative: that voters can secure a reservation utility from other alternatives when they feel alienated. Facing voters with such alternatives, candidates are likely to adopt ambiguous rather than clear strategies. In equilibrium, however, candidates do not want to be too ambiguous; it is advisable that they devote their campaign time to at most two policy stands.
1. INTRODUCTION

The analysis in this paper was partly motivated by the following observation in Taiwan’s 1996 presidential election:

(T)he people of Taiwan are baffled (about presidential candidate Lee Teng-hui’s stance on joining the mainland). In opinion polls, a third say they believe he is for unification, another third say he wants Taiwanese independence, and the remainder say they have no idea at all. (Time, March 18, 1996)

Lee Teng-hui ended up with a sweeping victory, winning 54 percent of the vote in a multi-candidate election.1 If we believe that Lee Teng-hui was rational to have chosen his strategy of ambiguity, we should be able to characterize the benefits of such a choice in an equilibrium context. Why did Lee, an incumbent candidate, adopt a strategy of ambiguity? To explain the strategy of ambiguity in electoral competition, this paper develops a model to establish the conditions under which ambiguity is a preferred strategy for candidates.

Downs (1957) initiated the research on political ambiguity by putting forward the proposition that on certain “controversial issues” candidates may perceive incentives to equivocate, in order to “becloud their policies in a fog of ambiguity.” The same observation was noted by V. O. Key (1958), who stated that politicians often adopt unclear stands, as if “addicted to equivocation and ambiguity.” To study ambiguity, we need to answer three questions. First, are candidates ambiguous about their policy positions or policy priorities? Voters might find a candidate position on an individual issue ambiguous, or they might find how a candidate’s prioritizes multiple issues ambiguous. In this paper, we deal only with the former type of ambiguity.

Second, how do candidates create ambiguity? There are at least two methods. The first method is ambiguity through concealment; that is, players selectively withhold information in order to create ambiguity. Shepsle (1972) illustrates this type of ambiguity using a quote of “say nothing, promise nothing” from Nicholas Biddle, the manager of William Henry’s campaign for the presidency. Page (1976) also assumed

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1 Of course, one cannot attribute Lee’s victory to any single factor; his ambiguity strategy might help, but other factors, such as the missile threats of China, might also help.
that candidates create ambiguity through concealment.

[C]andidates must allocate their emphasis . . . among policy stands. . . . If . . . preferences are intense, but widely dispersed – e.g., a bimodal distribution – any stand the candidate takes will offend someone. If he agrees with the left-hand mode, he will outrage voters on the right; if he switches and takes a stand on the right-hand mode, he will alienate people on the left; and if he moves to the middle, everyone is disgruntled. Obviously, the candidate’s best strategy is to avoid an issue of a divisive sort, and place (as nearly as possible) no emphasis on them. (p. 744)

The second method is ambiguity through ambivalence. President Lee Teng-hui, for example, created his baffling image not by ignoring the issue of Taiwanese independence but by attending activities sponsored by different political parties. On those occasions Lee showed great sympathy for each party’s platform, providing party supporters some subjective probability perception that Lee Teng-hui is on their side.2

Third, how can a strategy of ambiguity be characterized? If ambiguity is produced through concealment, it is difficult to characterize voter’s perception of ambiguity when candidates place no emphasis and take no positions on controversial issues. Ambiguity through ambivalence, however, can be operationalized more intuitively. When a candidate allocates resources to different stands on a single issue, he provides voters with a probability assessment of how he will deal with the issue if elected. In other words, the ex ante allocation of a candidate’s time, money, and energy to participating in the activities of various voter groups is perceived by voters as the candidate’s ex post probability of policy stands. Formally, this characterization is the same as the one proposed by Shepsle (1972), in which ambiguity in a candidate’s strategy is characterized as a nondegenerate probability distribution over positions on a single dimension:

\[
(C)\text{candidates for office are represented not by points in } [A, B], \text{ but rather by probability distributions over points in } [A, B]. \quad \text{That is, candidates are perceived by voters as lottery tickets over policy alternatives, and voters (like gamblers) must choose between uncertain prospects. Candidates, on the}
\]

2 Ironically, Lee Teng-hui once lamented: “I have stated my attitude against independence more than 130 times, how come people still do not believe me?” (China Times, November 6, 1995) The reason people still had doubts was because Lee also spent nearly the same amount of time uttering sympathetic words to the supporters of Taiwanese independence.
other hand, must choose their electoral strategies from the set of all probability distributions over \([A, B]\). (p. 559)

This is the definition of strategy of ambiguity that we will use in this paper.

The strategy of ambiguity in electoral competition has been a source of research interest for many scholars. To gain a perspective of how we might contribute to the literature, we review some of the important theoretical findings on ambiguity in the next section. Then in section 3 we show that if voters can secure a reservation utility when they feel alienated, they might prefer a candidate who adopts ambiguous positions on an issue to one who adopts a clear position. In section 4 we present the theoretical findings of our model. We conclude in section 5.

2. REVIEW OF ANALYTICAL RESULTS ON AMBIGUITY

The theoretical foundation of most of the models on ambiguity is the Median Voter Theorem. In the context of two-candidate elections, Downs (1957) establishes that if (1) the election concerns only one salient issue, (2) candidates compete to maximize the probability of winning, (3) all citizens know the candidates’ platforms, (4) all citizens vote, (5) citizens have single-peaked preferences on the issue, (6) both candidates know the preference distribution of citizens, and (7) both candidates have perfect spatial mobility (i.e., they are free to advocate any issue position), then the dominant strategy for both candidates is to choose the median voter’s most preferred position as their platform. In Downs’s model both candidates need to take a clear stand on the issue; no ambiguous positions are allowed. To rationalize the strategy of ambiguity, scholars have assumed either that voters are intrinsically risk taking, that candidates are maximizing something other than votes, that voters do not know where the candidates stand, or that candidates are uncertain of voters’ preference distribution. In the following, we provide a review of some of the most important theoretical findings on ambiguity in electoral competition.

Instead of assuming that candidates have perfect information about the preferences of voters, Glazer (1990) relaxes this assumption and assumes that candidates have only imperfect knowledge concerning voters’ preferences, are unsure of the location of the median voter, and thus are reluctant to specify an incorrect and, therefore, beatable position. In order to avoid taking a wrong position, candidates will choose to be ambiguous even when voters are risk averse.
Aragones and Neeman (2000) contend that candidates strive to maximize more than just votes, as assumed in the Downsian model. If candidates are maximizing between the probability of winning the election and the flexibility in policy implementation after winning, then ambiguous platforms can be sustained in equilibrium when the uncertainty concerning the median voters’ preferences is “not too small.”

Dellas and Koubi (1994) assume that voters do not know the candidates’ platforms. They argue that since uninformed voters have a higher probability than the informed ones to vote for the low-ability candidates, low-ability candidates will tend to send fuzzy signals to create more uninformed voters. However, this result is puzzling. If in equilibrium only low-ability candidates choose ambiguous strategies, then this is a separating equilibrium. Rational voters would know that candidates adopting ambiguous positions are inferior and thus should vote against them.

Chappell (1994) assumes that candidates have their own desired stands, which may be unknown to voters. Candidates’ campaign advertisements are a means of informing the voters, and the decision not to advertise is interpreted as an ambiguous strategy. In a slightly different context, Alesina and Cukierman (1990) consider a two-period model in which the incumbent policymaker has his own preferred stand. When there is a gap between the incumbent’s preferred stand and the stand that maximizes the probability of getting reelected in the second period, the incumbent will deploy an ambiguous strategy in an attempt to reduce the probability that voters may ascertain his true preferences from the observed policy outcome in the first period. The Alesina-Cukierman model is a dynamic one with more emphasis on the existence of stochastic discrepancy between policies and observed outcomes.

The last model we review is that of Shepsle (1972), though he is the first to explicate the strategy of ambiguity. In his model the challenger has the option of adopting a strategy of ambiguity, but the incumbent can only take a clear stand. So a choice between the incumbent and the challenger is like a choice between a certain outcome and a lottery. Once candidates are perceived by voters as lotteries, the risky lottery is unlikely to appeal to risk-averse voters. Not surprisingly, Shepsle shows that if a majority of voters is risk acceptant in some interval containing the median voter’s most preferred position, then the challenger can defeat the incumbent occupying the median most-preferred point by adopting a strategy of ambiguity with an expectation at the median voter position.³

³ Shepsle’s result has been challenged and modified by Lewis (2000), who shows that risk-acceptant voters do not always benefit ambiguous candidates because the definition of risk acceptance used by
Shepsle’s finding is path breaking but unsatisfactory, for a number of reasons. First, in his model only the challenger has the option of choosing a strategy of ambiguity. His analysis, therefore, has no bite when both the challenger and the incumbent can adopt the strategy of ambiguity. Second, Shepsle assumes that voters are risk acceptant without providing a reasonable justification. Third, although Shepsle shows that it is possible for a strategy of ambiguity to defeat a clear strategy, he does not establish the necessary or sufficient conditions. Fourth, his model assumes that everyone votes. In this paper we seek to extend and generalize Shepsle’s model along these directions. We assume that (1) both the incumbent and the challenger have the option of choosing a strategy of ambiguity; (2) instead of adopting an ad hoc assumption of risk-taking behavior, we assume that voters can secure a reservation utility even when their ideal points are distant from the candidates’ position; (3) voters can choose to abstain from voting if neither candidate offers an attractive policy choice; and (4) we establish the conditions under which strategies of ambiguity can be sustained in equilibrium. Before we present our model, we provide an explanation for (2), the existence of reservation utility and its effects on the candidate’s strategy.

3. INCLUDING VOTERS’ RESERVATION UTILITIES

In the context of one-dimensional space, we typically assume that a voter whose ideal point is $z$ receives the following utility if she votes for $X$ and $X$ is elected:

$$u(z; x) = \alpha - |x - z|$$

where $\alpha$ is a constant, measuring the utility of the ideal outcome, $z$ is the voter’s ideal point, and $x$ is candidate X’s position.\(^4\) The distribution of $z$ is assumed to be uniform. Later we shall briefly explain the impact of relaxing the above assumptions.

Now suppose that voters unhappy with a policy can resort to behavioral alternatives such as “voting with the feet” (Tiebout, 1956; Hirschman, 1970).\(^5\) The available-

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\(^4\) To simplify our algebra, in this paper we assume that the cost of voting is zero. If the voting cost is large, it would be more difficult for candidates to attract alienated voters, and the condition of sustaining a time-allocation swap would be more complex in the proof of some of our theorems.

\(^5\) The voting-by-feet argument is more common in the literature of local public goods, rather than in
ity of such alternative options ensures that voters whose ideal points are far away from the position advocated by a candidate can secure a reservation value, \( u_0 = \beta \).

When voter \( z \) has a reservation utility \( \beta \), his or her utility function when facing \( X \) and \( Y \) (standing respectively at \( x \) and \( y \)) can be specified in the following simple form (see Figure 1).

\[
U(z; x, y) = \max\left\{ \alpha - |x - z|, \alpha - |y - z|, \beta \right\}. \tag{2}
\]

According to (2), \( z \) will vote for the candidate closer to his ideal point or abstain if both candidates are more than \((\alpha - \beta)\) units away from \( z \) (i.e., \(|z - x| > \alpha - \beta \) and \(|z - y| > \alpha - \beta \)). Thus, if a voter can resort to alternatives to secure his reservation value, his utility function becomes nonconcave (see the heavy line in Figure 1). In other words, nonconcavity is an outcome of their rational comparison of what candidates can do for them and what voters can do for themselves.\(^6\)

In the following example we show that voters having reservation utilities might

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\(^6\) The non-concavity of preferences here is not our innovation; it is similar to the state-dependent preferences characterized in Marshall (1984). In the latter paper, the “state” refers to the consumption of a lumpy good, whereas here, the “state” refers to facing a discontinuous scenario resulting from, say, migrating to other jurisdictions.
actually prefer a candidate adopting an ambiguous strategy over one using a clear strategy.

As illustrated in Figure 1, voter $z$’s utility beyond the region $[z - (\alpha - \beta), z + (\alpha - \beta)]$ is the constant reservation utility $\beta$. Suppose a voter at $z = 0.5$ perceives that position $x_1 = 0.5$ will be implemented with probability $p$ and position $x_2 = 0.3$ will be implemented with probability $(1 - p)$. Without the assumption of reservation utility, the expected utility for $z$ would be $p \cdot u(z; 0.5) + (1 - p) \cdot u(z; 0.3)$, where $u(z; x) \equiv \alpha - |x - z|$. Because $p \cdot u(z; 0.5) + (1 - p) \cdot u(z; 0.3) \leq u(z; 0.5 \cdot p + 0.3 \cdot (1 - p))$ for risk-averse voters, they in general prefer a candidate taking a clear strategy at point $[0.5 \cdot p + 0.3 \cdot (1 - p)]$ to a candidate taking an ambiguous strategy by mixing two positions. However, when a reservation utility $u_0$ is present such that $u_0 > u(z; 0.3)$, the expected utility for $z$ becomes $p \cdot u(z; 0.5) + (1 - p) \cdot u_0$, which is greater than $u(z; 0.5 \cdot p + 0.3 \cdot (1 - p))$ in Figure 1.

This example illustrates that the assumption of reservation utilities gives candidates incentives to take ambiguous positions in the hope of gaining votes from those citizens who would otherwise be alienated. In the next section we investigate how the equilibrium pattern is affected when both candidates are free to adopt either a clear or an ambiguous strategy.

4. EQUILIBRIUM ANALYSIS

4.1 Candidates’ strategy space and voters’ choices

In a conventional Downsian model each candidate is required to choose a point on the Hotelling line, hence $p$ and $q$ degenerate to a single-point probability mass. We can interpret this strategy to mean that each candidate allocates the whole unit of his campaign time to only one policy stand. Now considering the possibility that a candidate can distribute his time across many policy stands, the Downsian categorical point-choice becomes a special case. For example, if candidate $X$ allocates $p_1$ and $p_2 = 1 - p_1$ units of time to $x_1$ and $x_2$, respectively, then we say that candidate $X$ gives $p_1$ emphasis to $x_1$ and $p_2$ emphasis to $x_2$. In general, if candidate $X$ can allocate his time to $n$ positions, denoted respectively by $p_1, ..., p_n$, then his strategy space is

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It is not necessary to interpret ambiguity as the allocation of campaign time or resources; all it matters is the perception created in the mind of voters. Campaign time is just an example we use to facilitate our presentation.
\[ S = \left\{ (p_1, \ldots, p_n) \geq 0 \left| \sum_{i=1}^{n} p_i = 1 \right. \right\}. \]  

(3)

Similarly, for candidate \( Y \), the set of his strategies is \( S = \left\{ (q_1, \ldots, q_n) \geq 0 \left| \sum_{i=1}^{n} q_i = 1 \right. \right\}. \)

Suppose \( p \equiv (p_1, \ldots, p_n) \) and \( q \equiv (q_1, \ldots, q_n) \) are respectively chosen by candidates \( X \) and \( Y \). We assume that voters faced with time allocations \( p \) and \( q \) have the following perceptions of the candidates: for \( i = 1, \ldots, n \), candidate \( X \) (\( Y \)) will implement policy stand \( x_i \) (\( y_i \)) with \( p_i \) (\( q_i \)) probability if elected. Given time allocations \( p \) and \( q \), voters decide between voting for \( X \), voting for \( Y \), or abstaining.

We know from the previous discussion that whenever a candidate’s position is too far from a voter’s ideal position, the voter can always secure a reservation utility \( \beta \). Knowing this, the expected utility from voting for candidate \( X \) is

\[ V_X(z) \equiv \sum_{i=1}^{n} p_i \cdot \left( \max \left\{ \alpha - |z - x_i|, \beta \right\} \right). \]  

(4)

Similarly, the expected utility from voting for \( Y \) is

\[ V_Y(z) \equiv \sum_{i=1}^{n} q_i \cdot \left( \max \left\{ \alpha - |z - y_i|, \beta \right\} \right). \]  

(5)

A voter compares (4) with (5) to decide whether to vote for \( X \) or \( Y \), or to abstain. If \( V_X(z) > V_Y(z) \) and \( V_X(z) > \beta \), then he should vote for candidate \( X \); if \( V_X(z) < V_Y(z) \) and \( V_Y(z) > \beta \), he should vote for \( Y \); and if both \( V_X(z) \) and \( V_Y(z) \) are less than \( \beta \), abstain.\(^8\)

### 4.2 Strategic interactions

In the following theorem, we show that a candidate allocating 100 percent of his time at any point on the policy continuum can in fact be defeated. The proof is given in Appendix 1.

\(^8\) Leaving aside the measure zero event with a tied utility, the total support received by candidate \( X \) is therefore \( \int_{\{z|V_X(z)>V_Y(z),V_X(z)>\beta\}} f(z)dz \), where \( f(z) \) is the density function of voters. The total support received by candidate \( Y \) is \( \int_{\{z|V_X(z)<V_Y(z),V_Y(z)>\beta\}} f(z)dz \).
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**Theorem 1:** Suppose that voters have utility functions as specified in equation (2) and that candidates can take ambiguous strategies as defined in (3). If \((\alpha - \beta) < 1/2\), then any clear strategy can be defeated; if \((\alpha - \beta) \geq 1/2\), then spending 100 percent of time at the midpoint \((1/2)\) cannot be defeated.

Theorem 1 demonstrates candidates’ advantage of taking ambiguous issue stances when voters can secure some reservation utility from abstention. Such a reservation utility protects them from incurring the damage caused by extreme policies. This immunity also renders voters self-insured and hence willing to “bet on the lottery” provided (even though with low probability) by a candidate’s promise. Foreseeing this, candidates may use ambiguous strategies rather than clear ones.

Evidently, the condition \((\alpha - \beta) < 1/2\) is crucial to our analysis. It implies that if either (1) the value of \(\alpha\) decreases (meaning that voters are more easily alienated) or (2) the reservation utility \(\beta\) increases (implying that voters have more attractive alternatives), the area covered by a utility tent will shrink, and hence candidates concentrating on one stand will lose more voters. In this case, candidates have strong incentives to employ ambiguous strategies.

Careful readers may note from Appendix 1 that the proof of Theorem 1 relies on an unrealistic manipulation by candidates spending infinitesimal time on many stands. We shall explain in the following subsection that spreading time across many stands is just instrumental thinking in our analysis; in equilibrium no candidate will ever spend time on too many stands.

4.3 The nonexistence of Nash equilibrium

The next question we want to address is whether any ambiguous strategies can be sustained in equilibrium? One may conjecture that, since the time allocated to various stands can be arbitraged easily, no ambiguous strategy is immune to defeat by another strategy. To explore this problem, we first establish the following theorem, the proof of which is also in Appendix 1.

**Theorem 2:** Suppose that voters have utility functions as specified in equation (2) and that the amount of time individual candidates spend on policy stands is perfectly divisible. If \((\alpha - \beta) < 1/2\), then any strategy that spends time on three or more policy stands can be defeated.

Theorem 2 states that any strategy that allocates time to three or more policy
stands can be defeated. Therefore, even if candidates can credibly take positions on three or more of these given stands, they will choose not to do so. Theorem 2 also tells us that candidates do not want to be “too” ambiguous (i.e., divide time among more than two stands). Otherwise their opponents can easily win by concentrating on only two stands. Thus, combining the above discussion with Theorem 1, we know that the only equilibrium possibility left is for both $X$ and $Y$ to spend time on exactly two stands, say $(x_1, x_2)$ and $(y_1, y_2)$. We will now consider this case.

Suppose $X$ spends $(p_1, p_2)$ at $(x_1, x_2)$, respectively. If $Y$ does the same, spending $q_1 = p_1$ and $q_2 = p_2$ at $y_1 = x_1$ and $y_2 = x_2$, then evidently $Y$ receives the same votes as $X$ does. Consider the following change by $Y$: spending $q_2 = p_2 - \epsilon$ on stand $y_2 = x_2 - \delta$ and $q_1 = p_1 + \epsilon$ on $y_1 = x_1$ (see Figure 2). By doing so (following a similar analysis as in the proof of Theorem 1), we see that $Y$ loses at most $\alpha$ votes to the right of $x_2$, loses some marginal votes between $x_2 - \delta$ and $x_2$, and wins all the area covered by the tent at $x_1 = y_1$. Because the left half of tent $(x_2 - \delta)$’s length is near $\alpha$ for infinitesimal $\delta$, the votes $Y$ gains from tent $x_1$ will allow him to win the competition. The above discussion, together with Theorems 1 and 2, implies the following result:

**Theorem 3:** Suppose that voters have utility functions as specified in equation (2) and that the amount of time individual candidates spend on policy stands is perfectly divisible. If $(\alpha - \beta) < 1/2$, any strategy, clear or ambiguous, can be defeated.

It is important to note that Theorems 2 and 3 hold true regardless of whether the number of policy stands is a decision variable or a fixed number. The sensitivity of relative effort, which gives candidates the opportunity to arbitrage time among multiple stands, is the primary reason that no equilibrium result exists.

![Figure 2 Time Allocation in the 2-Stand Case](image.png)
4.4 Restricting the number of stands

The above analysis assumes that candidates can spend an “infinitesimal” amount of time on an activity and expect to have credibility with voters. A more reasonable assumption is that candidates need to spend a minimum amount of time, say $\theta$, on an activity for voters to feel that candidates’ stances on that policy are sincere and credible. For instance, if $\theta > 1/3$, then a candidate can at most split his time between two activities. Furthermore, many political activities are arranged by interest groups with established reputations, and candidates simply cannot identify themselves (to voters) on stands where no activities are held. That is, the number of policy stands and their locations might be exogenously determined.

After we impose constraints on the minimum amount of time a candidate has to spend on a position and assume that the number of policy stands and their locations are exogenously given, can a strategy that allocates time to only two policy stands be sustained in equilibrium? Which of the two stands should candidates take? How much time should they spend on each stand? In what follows we attempt to answer these questions. To begin, we analyze the case in which candidates choose from only two possible policy stands. Then, we offer an analysis of cases in which three or more policy stands are available.

Suppose that exogenous forces restrict the number of possible policy stands to two, denoted $z_1$ and $z_2$, respectively, and that candidate $X$ spends $p_1$ and $p_2 = 1 - p_1$ at these two places. As long as these two stands are in the $[\alpha - \beta, 1 - (\alpha - \beta)]$ interval, we can show that any $(q_1, q_2)$ chosen by $Y$ allocated to $(z_1, z_2)$ would be an equilibrium. To see this, we first note that a voter at $\bar{z} \equiv (z_1 + z_2)/2$ is indifferent between $X$ and $Y$ since

$$p_1(z - z_1) + (1 - p_1)(z_2 - \bar{z}) = q_1(z - z_1) + (1 - q_1)(z_2 - \bar{z})$$

for any $p_1$ and $q_1$. Thus, each candidate always receives $\alpha - \beta$ votes from one side of the stand where his effort has the advantage, and shares equally the votes from the middle part of $[z_1, z_2]$. Because the shared votes are equal according to equation (6), this implies that any $(p_1, 1 - p_1)$ and $(q_1, 1 - q_1)$ are equilibrium strategies. However, if, say, $z_1$ is out of the $[\alpha - \beta, 1 - (\alpha - \beta)]$ range, but $z_2$ is not, then both candidates will try to win the $z_2$ stand, because its reward range $[2(\alpha - \beta)]$ is larger than that of
z_1 \text{[less than} 2(\alpha - \beta)]. \text{In summary we have:}

\textbf{Theorem 4:} Suppose that there are only two given policy stands, denoted by z_1, z_2. If \(z_1, z_2 \in [\alpha - \beta, 1 - (\alpha - \beta)]\), then any \((p, q)\) is an equilibrium.

The above discussion shows that in order for a two-given-stand ambiguity strategy to be an equilibrium, neither stand can be too extreme (out of the \([\alpha - \beta, 1 - (\alpha - \beta)]\) range); otherwise the gain from ambiguity would be less than the loss.

4.5 The case with three or more given stands

The only case that has not yet been analyzed is the characterization of the Nash equilibrium when there are \(n \geq 3\) exogenously given stands. When \(n \geq 3\), the pattern of equilibrium hinges upon the stands’ relative locations in space. For instance, nearby stands have clear mutual interference, whereas distant stands attract voters largely independent of one another. If \(X\) chooses \((p_1, 1 - p_1)\) at \((x_1, x_2)\), and if there happens to be a stand at \(x_2 - \delta\), then the analysis prior to Theorem 3 tells us that \(X\) can be defeated. But if all other stands are far away from \(x_1\) and \(x_2\), then \(X\) may not be defeated, and a Nash equilibrium may arise. The analysis is not hard, but the cases can hardly be exhausted when \(n\) is large.

In Appendix 2 we analyze the situation in which there are exactly three stands located symmetrically at \((z_1, z_2, z_3)\) (see Figure 3), where \(z_2 = 0.5\) is the middle point; the distance between stands are equal to \(\gamma (z_2 - z_1 = z_3 - z_2 = \gamma)\), and \(z_1 - 0 = 1 - z_3 = (1 - 2\gamma)/2 < (\alpha - \beta)\). This situation is studied as an example

![Figure 3 The Case with 3 Given Stands](image-url)
to give readers an idea of the complex strategic interactions involved as well as the possible equilibrium pattern.

From the discussion in Appendix 2, we identify an equilibrium in which each candidate receives support from voters around the middle point together with some extremists from one of the two tails. This seems to be a reasonable equilibrium scenario. Our example is a simple illustration, however, as some of the conditions (see (7) and (8) in Appendix 2) are hard to verify without extensive empirical information.

5. CONCLUSION

In this paper we extend and generalize Shepsle’s model by assuming that both the incumbent and the challenger have the option of choosing a strategy of ambiguity; voters can secure a reservation utility when their ideal points are distant from the candidates’ position; and voters can choose to abstain from voting if neither candidate offers an attractive policy choice. The equilibrium results show that (1) the more easily voters become alienated or the higher their reservation utility, the more likely they are to accept ambiguous issue positions; (2) although incentives to be ambiguous exist, candidates do not want to be too ambiguous, as ambiguous strategies that include three or more policy stands can always be defeated by other ambiguous strategies; and (3) equilibrium exists only if both candidates split their time at two policy stands within the boundary defined by voters’ reservation utility.

To simplify the analysis throughout this paper, we have assumed a tent-like utility function and a uniform distribution of voters. If the utility function or the voter distribution is of a general type, the nonconcave utility still arises. It can be seen intuitively that none of our results will be affected. Indeed, the key to our results is voters’ reservation utility itself, not the specific utility functional form. As long as voters can find self-sustaining ways to avoid the low utility brought about by an extreme policy, positive incentives for ambiguous stands naturally arise. Nevertheless, when general utility or voter-distribution functions are assumed, the boundary point at which the nonconcave utility appears becomes hard to characterize analytically, and the specification of the Nash equilibrium can be more complex. Our simplified assumption of a tent-like utility function of course constitutes a trade-off between analytical generality and conceptual clarity.

Our theory helps us understand how reservation utilities outside the regime in
question change the citizens’ voting behavior, and why politicians can take advantage of this by devoting different amount of time among various stands. Our theory complements the existing literature of voting equilibrium, and provides us with a way to rationalize ambiguous strategies by politicians such as Lee Teng-hui.

One task yet to be accomplished is the complete characterization of the Nash equilibrium when the number of given policy stands is greater than three. In section 4 we specify the equilibrium only when there are two or three stands. When the number of given stands is more than three, we are unable to identify the full set of possible equilibria. This difficulty arises not because of the analytical complexity but because we cannot identify a plausible pattern with regard to the distribution of policy stands. Once the pattern is more specific, we will be able to establish more concrete results. Furthermore, a more complete characterization of equilibria can also help us derive testable implications against which we can implement empirical analysis. This is left to the work in the future.
APPENDIX 1: Proof of Theorems

Proof of Theorem 1:
Suppose $(\alpha - \beta) < 1/2$. There are two cases to be considered. Case A: candidate $X$ spends 100 percent of his time at point $z \in [\alpha - \beta, 1 - (\alpha - \beta)]$. We will show that there is a strategy whereby candidate $Y$ can beat $X$.

If candidate $Y$ also spends 100 percent of his time at point $z$, then both will get equal support. Now suppose that candidate $Y$ decides to spend $1 - \epsilon$ time at point $z + \delta$, where both $\epsilon$ and $\delta$ are small numbers (see Figure A1). We shall explain shortly where $Y$ shall spend the $\epsilon$ proportion of time. For now, however, let us look at how this time allocation influences voters in the neighborhood of $z$.

For a voter located at $z + a$ with $0 < a < \delta$, the utilities provided by candidates $X$ and $Y$ are respectively $V_x(z + a) = \alpha - a$ and $V_y(z + a) = (1 - \epsilon)[\alpha - (\delta - a)] + \epsilon\beta$, if the $\epsilon$ time is spent on stands which only generate reservation utility ($\beta$) for the voter at $z + a$. By equating $V_x$ and $V_y$, we see that the critical point dividing the supporters between $X$ and $Y$ is

$$0 < a^* = \frac{\epsilon \alpha + (1 - \epsilon)\delta - \epsilon\beta}{2 - \epsilon}.$$
As long as $\epsilon\alpha < \delta + \epsilon\beta$, it can be shown that $a^* < \delta$ is indeed true. We shall assume that $(\epsilon, \delta)$ is chosen such that $\epsilon\alpha < \delta + \epsilon\beta$ for the remainder of the proof.

Candidate $X$’s total support from voters is now at most $\alpha - \beta + a^*$. Although candidate $Y$ may yield some marginal votes to candidate $X$ in the $[z, z + \delta]$ interval, the total support for candidate $Y$ depends on how he uses the saved $\epsilon$ proportion of time.

Suppose candidate $Y$ divides the $\epsilon$ time equally over $K$ points, as shown in Figure A1, and that these points are denoted $z_1, z_2, \ldots, z_k$. In Figure A1 we draw only three points. The $K$ policy stands should be chosen such that the $K$ tents jointly cover all originally alienated voters. This is possible, because $2(\alpha - \beta) < 1$ by assumption. By doing so, candidate $Y$ creates a lottery attractive to these alienated voters.

Suppose some voters in $[z + (\alpha - \beta), 1]$ did abstain originally and some of the $K$ tents are built evenly in $[z + (\alpha - \beta), 1]$. For a voter located at $w \in [z + \delta, 1]$, the utility from voting for the lottery provided by $Y$ then becomes

$$V_y(w) = (1 - \epsilon) \left[ \max\left\{\alpha - |z + \delta - w|, \beta\right\} \right] + \sum_{i=1}^{K} \frac{\epsilon}{K} \left[ \max\left\{\alpha - |z_i - w|, \beta\right\} \right],$$

where the summation term is the expected utility generated from the $K$ new stands. Because by choice the $K$ tents jointly cover all points in the interval between $z + (\alpha - \beta)$ and 1, $\max\left\{\alpha - |z_i - w|, \beta\right\}$ is thus strictly larger than $\beta$ for at least some $i$. Any voter $w$ in the interval $[z + (\alpha - \beta), 1]$, who would originally have abstained from voting, will now vote for candidate $Y$ because $V_y(w) > \beta$. As such, with the small loss of votes in the interval $[z, z + \delta]$, candidate $Y$ earns all support from voters in $[z + \alpha, 1]$, and hence beats $X$.

Now consider Case B: suppose that candidate $X$ originally spends 100 percent of his time at point $z$ in $[0, \alpha - \beta]$ (or in $(1 - (\alpha - \beta), 1]$). Then candidate $Y$ can easily beat $X$ by spending 100 percent of his time at $1 - (\alpha - \beta)$ (or at $\alpha - \beta$), because $Y$’s votes will be $2(\alpha - \beta)$ and $X$’s votes will be less than $2(\alpha - \beta)$.

Finally, if $2(\alpha - \beta) \geq 1$, then a candidate spending 100 percent of his time at the middle point $(1/2)$ will have all the $[0, 1]$ interval covered. The non-concavity of the utility function simply does not arise, and the conventional conclusion applies. Q.E.D.
Proof of Theorem 2:
Suppose \( p = (p_1, ..., p_n) \) is chosen by candidate \( X \) with the corresponding stands denoted \( (x_1, ..., x_n) \). To show that any strategy with three or more positive elements in \( p \) can be defeated, let us assume otherwise and prove its contradiction. Suppose candidate \( X \) spends positive time \( (p_1, p_2, p_3) \) respectively at any three stands \( (z_1, z_2, z_3) \).

For \( i, j = 1, 2, 3 \) and \( i \neq j \), let \( z_{ij} = (z_i + z_j)/2 \) (see Figure A2). Let \( I_1 = [z_1 - (\alpha - \beta), z_{12}], I_2 = [z_{12}, z_{23}], \) and \( I_3 = [z_{23}, z_3 + (\alpha - \beta)] \).\(^9\) It is evident from (4) that, since voters in region \( I_1 \) prefer \( z_1 \) to \( z_2 \) and \( z_3 \), the act of shifting time from \( p_2 \) or \( p_3 \) to \( p_1 \) will increase the intensity of candidate \( X \)'s support from voters in region \( I_1 \). Similarly, voters in region \( I_2 \) (or \( I_3 \)) will grant candidate \( X \) greater support if he shifts time from \( p_1 \) and \( p_3 \) (or \( p_1 \) and \( p_2 \)) to \( p_2 \) (or \( p_3 \)).

\[ \begin{align*}
0 & \quad z_1 - (\alpha - \beta) & \quad z_{12} & \quad z_2 & \quad z_{23} & \quad z_3 & \quad z_3 + (\alpha - \beta) & 1 \\
\end{align*} \]

**Figure A2** The Definition of Three Regions

Let \( s_j, j = 1, 2, 3, \) be the length of interval \( I_j \). Since \( s_1, s_2, \) and \( s_3 \) are three positive numbers, either one of the following three inequalities must hold: \( s_1 + s_2 > s_3 \), \( s_2 + s_3 > s_1 \), or \( s_1 + s_3 > s_2 \). Suppose the first inequality holds, i.e., \( s_1 + s_2 > s_3 \). Candidate \( Y \) can then do the following. (1) Set \( q_3 = 0 \) and use the saved time \( (p_3) \) evenly on stands 1 and 2: \( q_1 = p_1 + q_3/2 \) and \( q_2 = p_2 + q_3/2 \); and (2) set \( q_j = p_j \) in all other \( j \neq 1, 2, 3 \). By doing so, candidate \( Y \) gains support from voters in regions \( I_1 \) and \( I_2 \) and loses voters in region \( I_3 \). Since \( s_1 + s_2 > s_3 \) by assumption, there is a net...

\[^9\] If tent-\( z_i \) and tent-\( z_j \) have no intersection, then the boundaries of \( I_i \) and \( I_j \) need to be redefined, but it can be easily seen that our argument still holds.
gain and hence $Y$ wins. Similar analysis shows that $Y$ can also find a strategy to beat $X$ if either $s_2 + s_3 > s_1$ or $s_1 + s_3 > s_2$ holds. Thus, whenever $X$ spends positive time on three or more stands, $Y$ can always find a way to beat $X$. Q.E.D.

**APPENDIX 2: Establishing an Equilibrium for the Three-Stand Case**

Since much of the following analysis involves algebraic manipulation similar to that in previous sections, here we shall itemize only the possibilities and sketch the reasoning; details are available from the authors upon request.

Let $(p_1, p_2, p_3)$ and $(q_1, q_2, q_3)$ be respectively the time spent by candidate $X$ and $Y$, and suppose the minimum credible time to be spent on each stand is $\theta$.

1. By Theorem 2, in equilibrium no candidate will spend time on all three stands.

2. Suppose $X$ gives up the two extreme stands $(z_1, z_3)$, which implies $p_2 = 1$. Then $Y$ can consider the following ambiguous strategies: setting $q_1 = 0$ ($q_2, q_3 > 0$), or $q_2 = 0$ ($q_1, q_3 > 0$), or $q_3 = 0$ ($q_1, q_2 > 0$). We first consider the middle case. If $q_2 = 0$, it can be easily seen that the trade off between $q_1$ and $q_3$ does not affect $Y$’s votes, as an increase in one region will always be accompanied by an identical reduction in the other region. Thus, without loss of generality we set $q_1 = q_3 = 1/2$. Simple algebra shows that if

$$
\frac{4\gamma}{3} + \frac{4(\alpha - \beta)}{3} < 1,
$$

then the support for $Y$ will be larger than that of $X$, and hence $Y$ can win. Thus, spending 100 percent time at $z_2$ can be defeated if (7) holds. Simple analysis shows that devoting 100 percent effort at $z_2$ or $z_3$ can also be defeated.

3. In equilibrium it is impossible for any candidate to spend positive time at $z_1$ and $z_3$. Suppose otherwise, say $p_1, p_3 > 0$ and $p_2 = 0$. If, without loss of generality, $p_1 > p_3$, then $Y$ can spend $q_3 = p_3 + \epsilon$ (at $z_3$) and $q_2 = p_1 - \epsilon$ (at $z_2$). By doing so, $Y$ gains the turf around $z_2$ and $z_3$, but gives up the votes around $z_1$. Since the former is larger, $Y$ wins.

4. Suppose $p_1 = 0$, and $p_2, p_3 > 0$ (the discussion for $p_1, p_2 > 0$ is the same and is omitted). Then it must be the case that $p_3 = \theta$ and $p_2 = 1 - \theta$ (i.e., the middle
point is given the highest possible weight), otherwise $Y$ can set $q_2 = p_2 + \epsilon$ and $q_1 = p_3 - \epsilon$, grab the other end and the larger middle part, and win. Only the case that $p_3 = \theta$ makes this move by $Y$ impossible. Given $p_3 = \theta$ and $p_2 = 1 - \theta$, $Y$ can consider choosing $q_1, q_3 > 0$. Since there is no competition around $z_1$, it is to $Y$’s advantage to set $q_1$ to its lowest possibility $q_1 = \theta$, and hence $q_3 = 1 - \theta$. Straightforward algebra shows that if

$$(1 - 2\gamma) + \frac{2[(1 - \theta)\gamma - \theta(\alpha - \beta)]}{2 - 3\theta} + 2[(1 - \theta) - (1 - 2\theta)(\alpha - \beta)] < 2\gamma,$$  

(8) then $X$ cannot not be defeated this way.

5. Combining the conclusions from points 2-4 above, we see that if both equations (7) and (8) hold, and if $X$ sets $p_2, p_3 > 0$, then the only possible equilibrium is for $Y$ to choose $q_1, q_2 > 0$. If $Y$ does this, it must be the case that $q_1$ is set to its lowest possible value, such that $Y$ can devote the majority of his time to competing with $X$ at the middle stand. When $Y$ chooses $q_1 = \theta$ and $q_2 = 1 - \theta$, which is symmetric with $X$, then the two candidates are even and both get 1/2 of the votes.
REFERENCES


選舉競爭的模糊策略

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摘 要

為什麼在中位數選民定理的預測下，候選人仍會採取模糊的策略呢? 為了要合理化模糊策略，學者常假設選民是愛好風險的、候選人有自己的政策偏好、選民不知道候選人的落點、候選人不知道選民的偏好。本文要對選舉競爭的模糊策略提出另一個假說：當選民對候選人感到疏離時，他們能從體制外得到一定的保留效用。面對此類選民，我們證明候選人即有動機採擇模糊策略。但在均衡時，候選人也不會「太過模糊」；他們應該不會將競選時間花在兩組以上的政策落點上。