Public Choice : (e) Minimum Differentiation of Political Parties

In most jurisdictions, laws are decided not directly by voters, but by elected representatives. And in many of these jurisdictions, the elected representatives belong to political parties. How does this complication affect the choices which get made?

In one, very simple, model of political parties, the answer is "nothing changes".

This result is usually referred to as Hotelling's principle of minimum differentiation, after the economist who first proposed the model and its consequences. [Hotelling's original model was not actually a model of political parties, but it has been used widely since then to analyze political parties, as well as numerous other phenomena.]

The key assumptions are :

(1) The election issues are **one–dimensional**. The different policies which parties can support can be represented as points along a line. Voters differ in which policy they prefer. But they all have **single–peaked** preferences over these policies. That is, if my most preferred policy is at some point x along the line, but all political parties choose policies which are to the right of x, then I will vote for the party which has chosen the furthest left policy.

(2) Parties can **commit** to a policy (or voters believe that they can). If a party announces that its policy is some point on the line, then voters believe that the party will actually implement its announced policy if elected.

(3) There are only 2 political parties.

(4) Parties care only about maximizing the number of votes which they get.

(5) Parties know exactly the preferences of the voters.

(6) Voters always vote.

(Assumptions 2, 4, and 5 are actually not that crucial. They can be modified, without altering significantly the basic result.)

Suppose, for example, that the possible policies which parties can choose are numbers between 0 and 100. (These might be income tax rates, or they might be levels of support for some military programme, where 100 means "extremely strong support" and 0 means "strong opposition". So each voter has her own most–preferred policy in the interval $[0, 100]$. Let m be the median of these most–preferred policies. That means that if we had, for example, 999 voters, and we numbered them in order of how far right their preferred policy was (so that voter #1 had the preferred policy closest to 0, and voter #999 the preferred policy closest to 100), then m would be the preferred policy of voter #500. In general, if there were an odd number $2N + 1$ of voters, the median of the preferred policies is the policy m such that there are at least $N + 1$ voters at or to the right of m,

and at least $N + 1$ voters at or to the left of m.

Now suppose that 1 party has chosen a policy p_1 as its platform. What should the other party do if it wants (as per assumption #4 above) to maximize the number of votes that it gets? That depends on where p_1 is. What if p_1 were to the left of the median preferred policy m? Then party #2 would lose the election if it picks its own policy p_2 further left than p_1. If $p_2 < p_1 < m$, then every voter whose preferred policy were p_1, or to the right of p_1 would vote for party #1. Why? Voters' preferences are single–peaked (as per assumption #1). If my preferred policy is P, with $P > p_1 > p_2$, then I will vote for policy p_1 : I regard both parties' policies as too far to the left, so that I will always vote for the rightmost of the two. The fact that p_1 is to the left of m means that more than half the voters have preferred policies at p_1 or further right.

So if party 1 picks a left–of–centre policy at p_1, party 2 would lose if it chooses a policy which is even further left. Party 2 can win only if it picks a policy $p_2 > p_1$.

So suppose now that party 1 picks a left–of–centre policy p_1, and party 2 picks a policy which is further right. So we have $p_1 < p_2$. Could either party increase its vote by changing its policy?

Result A : If $p_1 < p_2$, then party 1 can increase its vote total by moving (slightly) to the right, and party 2 can increase its vote total by moving (slightly) to the left.

[The only reason for the "slightly" in this statement is to prevent parties from moving so far that they "leapfrogged" each other : small moves (by either party) keep p_1 to the left of p_2.]

PROOF : What would happen if party #2 moved its position a little to the left? The move would not please voters on the right. Someone with a preferred policy P such that $p_1 < p_2 < P$ already regards both parties to as being too far to the left. But she still regards party 2 as the lesser of two evils : with single–peaked preferences, she finds "a little to the left" as better than "a lot to the left". [Of course, if both parties are far away from her preferred policy, she might be so frustrated that she would not bother to vote. But assumption #6 above rules out that sort of behaviour.]

So moving left will lose party 2 no votes on the right. It will gain them a few votes, from people whose preferred policies are between p_1 and p_2. If my preferred policy P were between p_1 and p_2, then I might find each party's policy equally attractive : one party is too far left for me, the other too far right. A move left by party 2 moves its policy closer to my own most preferred policy. So moving left by party 2 will lose it no votes on the right, and will gain it a few votes from people whose preferred policy is between p_1 and p_2.

Party 1 faces similar incentives. It already has the votes of all the extreme–left voters : anyone whose preferred policy P is to the left of p_1 will vote for party 1 as long as p_1 stays to the left of p_2. If party 1 moves right a little, it loses no votes on the left, and gains a few in the centre, people who previously were close to indifferent between parties will now prefer party #1 if it moves right a little.

Result B : If both parties have chosen policies near each other, near some point p, then the

rightmost of the two parties will win the election if $p < m$, and the leftmost of the two parties will win the election if $p > m$.

PROOF : Suppose that both parties are to the left of my preferred policy. Then, since preferences are single–peaked, I will vote for the rightmost of the two. If both policies are to the left of m, then more than half the people feel this way. That is, $p < m$ implies that more than half the people [those whose preferred policies are at m, or to the right of m] regard them both as too far left, and will vote for the rightmost of the two.

Similarly, if both parties' policies are to the right of my preferred policy, then I will vote for the leftmost of the two. If they both have positions to the right of m, then more than half the voters will feel that way.

An immediate implication of results A and B is that there can be only one possible equilibrium, when parties choose their policies. An equilibrium here — as it is elsewhere in economics — is a situation in which neither party wants to change what it is doing, given its rival's choice of position. So if $p_1 < p_2 < m$, party 1 would lose the election, according to result B. It would want to change its policy, to, for example, one just to the right of party #1, which would enable it to win the election. If $p_1 < m < p_2$, then each party can gain votes, simply by moving towards the centre.

Because of results A and B, the only situation in which neither party can gain an advantage by shifting its position, is the situation in which both parties have chosen positions right beside each other, at the preferred policy m of the median voter.

Summarizing the result :

RESULT : The only equilibrium situation in this model of political parties is one in which both parties' positions are almost the same, both parties choosing the policy "right next to" the median of the voters' preferred policies.

This result is an example of Hotelling's **principle of minimum differentiation** : similar models have been used to explain firms' choice of location of stores, and their choices of product characteristics.

The main applicability of the result in public choice is that, in some sense, political parties do not matter for the choice of policy. If this group of voters had a direct democracy, in which all the voters were members of the legislature, then the median voter theorem suggests that the policy which would emerge from the legislature would be the median of the voters' preferred policies. Now, if, more realistically, the legislature was elected, and candidates for election belonged to political parties, the result will be the same. Each party will choose a policy very close to the median of the voters' preferred policies.

To some observers, political parties in many representative democracies seem to choose very similar political platforms. It sometimes seems as if there parties are trying to move towards the centre, trying to avoid being perceived as extremist. The principle of minimum differentiation

provides an explanation of this observation.

But how accurate is that observation? And how robust is the theoretical result? The result depended on the 6 assumptions presented at the beginning of this note. Some of the assumptions are not that crucial.

For example, it was assumed that parties had no ideology of their own, but cared only about getting as many votes as possible. (That was assumption 4.) That assumption can be relaxed considerably. Suppose instead that each party had a pretty strong ideology. Party 1 wants a position on the left side of the line, and party 2 wants a policy on the right. Nonetheless, parties realize that, in order to implement their policies, they must first get elected. So party 1 may want to take a position on the left, but not so far left that it will lose. And party 2 wants to take a position on the right, but not so far right as to lose. If these are the attitudes of the parties (and if the other 5 assumptions still hold), then the principle of minimum differentiation will still result. If either party were far from the centre, then the party which was losing the election would have to move toward the centre, in order to be elected. And this process would again lead to only one possible equilibrium : party 1 just to the left of centre, party 2 just to the right of centre, and the two parties splitting the votes pretty well evenly.

But some of the other results are crucial. For example, suppose that the set of policies has more than 1 dimension, contrary to assumption 1. (All the other 5 assumptions continue to hold.) Then, in general, there will be **no** equilibrium at all. Whatever position party 1 takes, party 2 can react by finding a policy which defeats it. But then party 1 can find a new position which defeats party 2. And so on. Just like the cycling result, under direct democracy, obtained for multi–dimensional issues in part 4 of this section, more than one dimension may preclude the existence of a stable outcome.

The assumption that there are only 2 parties (assumption 3) turns out to be crucial as well. Suppose that there were three parties (but that assumptions 1,2,4,5, and 6 continued to hold). Then (again) there is **no** equilibrium. That is, if two of the parties are satisfied with their positions, then the third party will want to change its position, in order to have a chance at winning.

The non–existence of an equilibrium turns out to be a problem only when there are three parties (if assumptions 1,2,4, 5 and 6 hold). If there were 4 parties, then, again, there would be an equilibrium. But it would not involve all parties choosing a position at the centre. It would not involve any parties choosing positions at the centre. In this case, the equilibrium has two parties picking a position one–quarter of the way along the line. That is, they pick similar policies, policies for which 25% of the voters prefer something to the left,and 75% prefer something to the right. The other two parties each pick policies similar to each other, but at a position three–quarters of the way along the line.

So the principle of minimum differentiation depends crucially on there being only two parties. In many constituencies, there are only two parties with a serious chance of winning. In the United States, that is true everywhere. In Canada, it is true in many areas : for example, in most of the "905" area, the Conservatives and Liberals get nearly all the votes ; in some areas of Quebec

it's the NDP and the Bloc Québecois ; in some inner city Toronto districts, it's the NDP and the Liberals ; in parts of Saskatchewan, it's the NDP and the Conservatives. But there are lots of areas in many countries (including Canada), in which three, four or more parties are involved seriously. And the model presented here should not apply when there are more than 2 parties.

So the principle of minimum differentiation has strong implications for the results of two–party elections. But it does depend on some strong assumptions.