B.J.Pol.S. **34,** 611–633 *Copyright © 2004 Cambridge University Press*
DOI: 10.1017/S0007123404000213 *Printed in the United Kingdom*

Party Activists, Campaign Resources and Candidate Position Taking: Theory, Tests and Applications

WOOJIN MOON*

Electoral competition is here specified as revolving around both candidate policy positions and non-policy issues. Two candidates spend their resources on non-policy issues to sway citizens' ideological voting decisions but they are constrained by their party activists who provide them with electoral resources. In this setting, a candidate with a resource advantage converges more towards the centre, but a candidate with a resource disadvantage diverges more from the centre. This asymmetry in two candidates' incentives to converge generates the result that the two candidates do not converge towards each other. To test these theoretical results, two-stage estimation is used in this article to solve the reciprocal relationship between policy moderation and campaign resources. This analysis produces strong empirical support for the model in the context of US Senate elections between 1974 and 2000.

In this article, an electoral competition model that brings the spatial theory of voting and empirical studies together is offered. In the classic Downsian spatial model, candidates adjust their ideological positions to maximize vote share and are able to do so without important constraints. In the real world, electoral strategy is more complicated. Incumbents win votes not only by articulating ideological positions but also by advertising the non-ideological services they perform for their district and constituents, and challengers win votes by criticizing incumbents' performance on both ideological and non-ideological grounds. In addition, candidates find it difficult to adopt maximally appealing ideological positions because many of them begin their careers as activists or with the help of party activists. When candidates deviate from positions preferred by activists to gain more votes, they lose support from party activists and this loss costs them with voters as well.

The model in this article recognizes these realities. Two candidates take positions on the policy or ideological spectrum and spend their resources on non-ideological appeals to sway citizens' voting decisions, but they are constrained by their party activists who provide them with electoral resources. Party activists tend to be ideologically polarized and more willing to provide campaign resources to candidates who share their preferences, but voters reward centrist candidates. Since candidates need activist support as well as voter support, this creates a dilemma. If a candidate pleases the activists, he has more campaign resources, but he is then ideologically distant from the median voter. Candidates seek an equilibrium that optimally balances these competing pressures.

A major finding of this article is that candidates with incumbency or resource advantages adopt more moderate policy positions. In the model, if both candidates converge all the way to the centre, there is no other basis for voters to choose except on the basis of

* Department of Political Science, University of California at San Diego. An earlier version of this article was presented at the Annual Meetings of the Midwest Political Science Association, Chicago, 2002. I thank David Austen-Smith, Kathleen Bawn, Sarah Birch, Lisa Blaydes, Michael Chwe, Gary Cox, James DeNardo, Ronald Den Otter, David Epstein, Robert Franzese Jr, Tim Groseclose, Brian Lawson, Jeffrey Lewis, Ross Schaap, Michael Thies, Eric Zusman and anonymous readers for their useful comments on earlier versions. In particular, I am grateful to John Roemer, George Tsebelis and John Zaller for their valuable comments and encouragement. I am responsible for all errors.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

resources. This would obviously be good for the candidate with more resources, which is why his incentive is to converge. The incentive is the opposite for the candidate with fewer resources. If the candidate with fewer resources goes to the centre, the better endowed candidate would go to the centre as well, thus driving policy differentials to zero, in which case voters would decide entirely on the basis of resources. Obviously, this would not be good for the candidate with fewer resources. His incentive is therefore to stay far from the centre, thereby retaining a basis for appealing to at least some voters (those nearer to him on the issues). This asymmetry in the candidates' incentives generates a result in which the two candidates do not converge towards each other's position. The empirical implication of this result is that incumbents or candidates with resource advantages adopt more moderate policy positions. Incumbents enjoy resources that make them more independent of activists, and this enables them to take more moderate positions.

A novel finding that distinguishes the model in this article from other spatial models is that this one predicts that candidates diverge from each other without the assumptions that candidates have (1) their own policy preferences and (2) incomplete information about voter preferences. As Calvert shows, the standard spatial models require both of these assumptions to generate the divergence result.[1] The recent spatial models that incorporate non-policy issues to obtain the divergence result also require the two assumptions.[2] In contrast, the model in this article yields the divergence result without these assumptions. Divergence occurs as each candidate tries to optimize vote performance in response to the competing pulls of centrist voters, polarized activists and differential access to the resources of incumbency. According to the model in this article, even office-seeking candidates with complete information do not converge due to the trade-off between resources and votes.

The model in this article yields several testable predictions. The most important is that candidates are constrained both by the position of their party activists and by the position of the median voter in their constituency, and that incumbency and resources affect the trade-off between these competing pressures. Testing these predictions is, however, complicated by reciprocal causation: moderation affects resources (negatively), but resources also affect moderation (positively). In the analysis that follows, I examine US Senate elections between 1974 and 2000. I use an ordinary least squares (OLS) model for baseline purposes and a two-stage model for final results. The results strongly support theoretically derived expectations.

The article starts with a review of the literature on electoral competition with a comparison of empirical studies and spatial models. Secondly, I present an electoral

[1] Randall L. Calvert, 'Robustness of the Multidimensional Voting Model: Candidates' Motivations, Uncertainty, and Convergence', *American Journal of Political Science*, 29 (1985), 69–95.

[2] Tim Groseclose, 'A Model of Candidate Location When One Candidate Has a Valence Advantage', *American Journal of Political Science*, 45 (2001), 862–86. Groseclose's model predicts that the greater a candidate's valence advantage is, the more the candidate diverges. The model also predicts that the candidate with the valence advantage converges towards the centre only if the valence advantages are small. As the candidate's valence advantages grow bigger, the candidate will adopt an extreme position around his own ideal position. However, my analysis of senate elections does not support Groseclose's prediction. Senate candidates with valence advantages do not adopt more extreme positions when their valence advantages grow larger. They adopt more moderate policies as their valence advantages grow. Ansolabehere, Snyder and Stewart's analysis of House elections also shows that high-quality non-incumbents are more moderate than other non-incumbents. For details, see Stephen Ansolabehere, James M. Snyder Jr and Charles Stewart III, 'Candidate Positioning in US House Elections', *American Journal of Political Science*, 45 (2001), 136–59.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

competition model. Thirdly, I test the predictions of the models. In conclusion, I summarize the findings and discuss a direction for further research.

LITERATURE REVIEW

One of the most elegant theoretical results in political science is Downs's convergence result.[3] With the assumption that two candidates (or parties) with complete information compete to win an election on a one-dimensional policy space, Downs shows that the candidates converge to the ideal point of the median voter. While the standard Downsian models have contributed to the understanding of the existence and behaviour of the equilibrium, empirical findings do not agree with the convergence result. Empirical studies find divergent policy platforms among parties or candidates in mass elections.[4]

Empirical studies also disagree with the way the classic spatial models specify electoral competition in Hotelling's framework.[5] In this framework, holding the price of the two sellers' products constant, a customer's preference between two sellers is determined by the transportation cost or the distance between the customer's place and a seller's place. The only way a seller can attract more buyers is to change his or her location. Similarly, in the standard spatial model, the only way a candidate can attract more voters is to change his or her policy position. For empirical researchers, however, the ways in which candidates win extra votes are not limited to policy position adjustment. Empirical researchers have explained electoral competition in at least three different ways, and recent spatial models have attempted to incorporate the findings of the empirical researchers.

Valence Issues

According to Stokes, the factors that affect the vote are not only candidate policy (or ideological) positions, but also valence issues that 'involve the linking of the parties with some condition that is positively or negatively valued by the electorate'.[6] Among the conditions that everyone in a district might evaluate positively are federal spending in the district on highways, education and public infrastructure. Valence issues are not readily accommodated within the spatial frame, but are almost universally considered to be important determinants of election outcomes. By focusing on valence issues, politicians

[3] Anthony Downs, *An Economic Theory of Democracy* (New York: Harper and Row, 1957).

[4] John L. Sullivan and Robert E. O'Connor, 'Electoral Choice and Popular Control of Public Policy', *American Political Science Review*, 89 (1972), 1256–68; John L. Sullivan and Daniel R. Minns, 'Ideological Distance Between Candidates: An Empirical Examination', *American Journal of Political Science*, 20 (1976), 439–68; Keith T. Poole and R. S. Daniels, 'Ideology, Party, and Voting in the U.S. Congress, 1959–1980', *American Political Science Review*, 79 (1985), 373–99; Keith T. Poole and Howard Rosenthal, 'The Polarization of American Politics', *Journal of Politics*, 46 (1984), 1061–71; Keith T. Poole and Howard Rosenthal, 'US Presidential Elections 1968–80: A Spatial Analysis', *American Journal of Political Science*, 28 (1984), 282–312; Keith T. Poole and Howard Rosenthal, 'Patterns of Congressional Voting', *American Journal of Political Science*, 35 (1991), 228–78; Keith T. Poole and Howard Rosenthal, *Congress: A Political-Economic History of Roll Call Voting* (New York: Oxford University Press, 1997); Gerald C. Wright Jr, 'Policy Voting in the US Senate: Who is Represented', *Legislative Studies Quarterly*, 14 (1989), 381–98; Gerald C. Wright Jr, 'The Meaning of "Party" in Congressional Roll Call Voting' (paper prsented at the Annual Meetings of the Midwest Political Science Association, Chicago, 1994); Gerald C. Wright Jr and Michael B. Berkman, 'Candidates and Policy in United States Senate Elections', *American Political Science Review*, 80 (1986), 567–88.

[5] Harold Hotelling, 'Stability in Competition', *Economic Journal*, 39 (1929), 41–57.

[6] Donald E. Stokes, 'Spatial Models of Party Competition', *American Political Science Review*, 57 (1963), 368–77, p. 373.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

neither hurt their non-supporters nor isolate their supporters. Recognizing the significance of valence issues in electoral competition, many formal theorists have incorporated non-policy factors in their models.[7]

Campaign Resources

If a candidate is unable to raise funds for the campaign, the campaign is doomed from the start.[8] In particular, performance of congressional challengers in an electoral contest is directly related to how much campaign money they raise and spend.[9] In recognition of the role of campaign resources, empirical scholars have made extensive analyses of the effect of candidates' spending on the vote.[10] In the standard Downsian model, however, candidate vote shares are entirely determined by voter preferences and candidate policy positions. Hence, candidates' efforts to sway citizens' partisan voting decisions during campaign processes – one of the most important political processes – are left out. Noting this problem, many formal theorists have modelled electoral competition with campaign contributions.[11]

Party Activists

In the standard spatial model, it is assumed that candidates are not constrained by other forces when they change their policy positions. For empirical observers, however, this

[7] James M. Enelow and Melvin J. Hinich, 'Nonspatial Candidate Characteristics and Electoral Competition', *Journal of Politics*, 44 (1982), 115–30; Scott L. Feld and Bernard Grofman, 'Incumbency Advantage, Voter Loyalty and the Benefit of the Doubt', *Journal of Theoretical Politics*, 3 (1991), 115–37; John Londregan and Thomas Romer, 'Polarization, Incumbency, and the Personal Vote', in William A. Barnett, Melvin J. Hinich and Norman J. Schofield, eds, *Political Economy: Institutions, Competition, and Representation* (New York: Cambridge University Press, 1993), pp. 355–78; Abinash Dixit and John Londregan, 'The Determinants of Success of Special Interests in Redistributive Politics', *Journal of Politics*, 58 (1996), 1132–55; Stuart E. Macdonald and George Rabinowitz, 'Solving the Paradox of Nonconvergence: Valence, Position, and Direction in Democratic Politics', *Electoral Studies*, 17 (1998), 281–300; Stephen Ansolabehere and James M. Snyder Jr, 'Valence Politics and Equilibrium in Spatial Election Models', *Public Choice*, 103 (2000), 323–36; Tim Groseclose, 'A Model of Candidate Location When One Candidate Has a Valence Advantage', *American Journal of Political Science*, 45 (2001), 862–86.

[8] David Himes, 'Strategy and Tactics for Campaign Fund-Raising', in J. Thurber and C. Nelson, eds, *Campaigns and Elections American Style* (Boulder, Colo.: Westview Press, 1995), 62–77.

[9] Gary C. Jacobson, *The Politics of Congressional Election*, 4th edn (New York: Longman, 1997).

[10] Gary C. Jacobson, 'The Effects of Campaign Spending in Congressional Elections', *American Political Science Review*, 72 (1978), 469–91; Gary C. Jacobson, 'The Effects of Campaign Spending in House Elections: New Evidence for Old Arguments', *American Journal of Political Science*, 34 (1990), 334–62; Donald P. Green and Jonathan S. Krasno, 'Rebuttal to Jacobson's "New Evidence for Old Argument" ', *American Journal of Political Science*, 34 (1990), 363–72; Donald P. Green and Jonathan S. Krasno, 'Salvation for the Spendthrift Incumbent', *American Journal of Political Science*, 32 (1988), 844–907; Alan I. Abramowitz, 'Incumbency, Campaign Spending, and the Decline of Competition in US House Elections', *Journal of Politics*, 53 (1991), 34–56; Alan Gerber, 'Estimating the Effect of Campaign Spending on Senate Election Outcomes Using Instrumental Variables', *American Political Science Review*, 92 (1998), 401–11; Robert S. Erickson and Thomas R. Palfrey, 'Equilibria in Campaign Spending Games: Theory and Data', *American Political Science Review*, 94 (2000), 595–607.

[11] Melvin J. Hinich and Michael C. Munger, 'Political Investment, Voter Perceptions, and Candidate Strategy: An Equilibirum Spatial Analysis', in Peter C. Ordershook, ed., *Models of Strategic Choice in Politics* (Ann Arbor: The University of Michigan, 1989), pp. 49–68; David P. Baron, 'Electoral Competition with Informed and Uninformed Voters', *American Political Science Review*, 88 (1994), 33–47; David Austen-Smith, 'Campaign Contributions and Access', *American Political Science Review*, 89 (1995), 566–81; Stergios Skaperdas and Bernard Grofman, 'Modeling Negative Campaigning', *American Political Science Review*, 89 (1995), 49–61.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

assumption is not warranted. Party activists influence candidate recruitment and provide various services such as fundraising, staff assistance, registration and voter identification, advertising and media assistance, conducting research and public opinion polls, publishing newsletters, holding seminars on campaign techniques, and so on.[12] Observing such activities, Fenno points out that a candidate's policy is not free from the position of the 'primary' constituency, which provides the candidate with most of his volunteer workers and considerable financial help.[13] Since candidates pay primary attention to party activists who provide them with endorsements, campaign assistance, expertise or financial help, the candidates are constrained by these groups when they choose policy positions.[14] Therefore, 'vote totals in the general election in turn depend not only on voter preferences but also on resources furnished by these groups. Resource seeking pulls the candidates away from seemingly vote-maximizing positions in the centre of the distribution.'[15]

Formal theorists have also recognized the significance of party activism. Aranson and Ordeshook, assuming that the centres of the two parties are divergent, show that a candidate chooses a policy position between the centre of his party and the centre of the electorate.[16] Aldrich proves Aranson and Ordeshook's assumption that the 'typical' centres of the two parties are separated.[17] Aldrich and McGinnis also show that the party 'pulls' its candidate towards the party's position since the candidate faces a trade-off between votes and resources; the candidate loses resources if he alienates party activists by changing his positions in the interest of gaining more votes.[18] Facing such a trade-off, the candidate has to adopt 'the position that yields the highest probability of winning nomination *and* winning election'.[19]

Summary

Candidates not only set their policy positions in response to electoral pressures, but also try to sway citizens' partisan voting decisions by making non-policy appeals, or valence appeals, during campaigns. A successful campaign depends heavily on candidate resources, which mainly come from party activists who provide and allocate electoral resources. While candidates use the resources to attract extra votes, candidates must, in some models, respond to the issue preferences of the activists who fund them. Thus, three factors – (1) candidates' resources, (2) non-policy issues, and (3) the influence of activists

[12] Cornelius P. Cotter, James L. Gibson, John F. Bibby and Robert J. Huckshorn, *Party Organizations in American Politics* (New York: Praeger, 1984).

[13] Richard F. Fenno Jr, *Home Style: House Members in Their Districts* (New York: Harper Collins, 1978).

[14] Gerald C. Wright Jr, 'The Meaning of "Party" in Congressional Roll Call Voting' (paper presented at the Annual Meetings of the Midwest Political Science Association, Chicago, 1994); John H. Aldrich, *Why Parties? The Origin and Transformation of Political Parties in America* (Chicago: The University of Chicago Press, 1995); Eric M. Uslaner, *The Movers and the Shirkers: Representatives and Ideologues in the Senate* (Ann Arbor: The University of Michigan Press, 2002).

[15] Keith T. Poole and Howard Rosenthal, 'US Presidential Elections 1968–80: A Spatial Analysis', *American Journal of Political Science*, 28 (1984), 282–312, p. 283.

[16] Peter H. Aranson and Peter C. Ordeshook, 'Spatial Strategies for Sequential Elections', in Richard G. Niemi and Herbert F. Weisberger, eds, *Probability Models of Collective Decision Making* (Columbus, Ohio: Charles E. Merrill Co, 1972), pp. 298–331.

[17] John H. Aldrich, 'A Downsian Spatial Model with Party Activism', *American Political Science Review*, 77 (1983), 974–90.

[18] John H. Aldrich and Michael D. McGinnis, 'A Model of Party Constraints on Optimal Candidate Positions', *Mathematical and Computer Modelling*, 12 (1989), 437–50.

[19] Aldrich, 'A Downsian Spatial Model with Party Activism', p. 190.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

on candidate policy positions – are essential for the specification of a realistic model of candidate competition in mass elections. Previous empirical studies and formal models have analysed each of the factors, but no study considers all of them or integrates them into a single, coherent electoral model. The contribution made in this article is to accomplish this integration within a single model and to subject that model to rigorous empirical testing. In the next section, I begin the development of this model. Later in the article, I subject this model to empirical tests.

A RESOURCE-CONSTRAINED ELECTORAL COMPETITION MODEL

Model Specification

The basic idea of the resource-constrained election model (RECEM, hereafter) is that candidates optimize vote share by selecting issue positions subject to a resource constraint determined by activist preferences and incumbency status. Candidates can sway citizens' voting decisions by using resources provided by party activists or the resources of incumbency. Because, according to Wright and much other literature,[20] the policy preferences of party activists are more extreme than that of the general constituency, the policy position that attracts the most party support in the nomination process or in the primary election is less moderate than the position that would have the most appeal among voters in the general election. This discrepancy generates tension between appealing for party support and appealing for general election support. Implicit in my model is the idea that candidates are not highly mobile in their issue positions. In particular, they cannot appeal to activists for financial support and run in the primary on one set of positions, and then run in the general election on a different (more moderate) platform. This immobility forces candidates to face the trade-off between appealing to voters and appealing to party activists squarely.

First, I describe the voters. I assume a continuum of citizens, characterized by their ideal points for policy. I denote a voter by his or her ideal point, $\theta \in [0,1]$. I also assume that the density of ideal points is uniform over the interval [0,1]. Next, I describe the candidates. Two candidates, L and R, compete for votes by choosing policy positions x_L and $x_R \in [0,1]$. Each of the candidates also spends his or her resources to sway voters' ideological voting decision. I denote candidate L and R's per capita spending respectively by r_L and $r_R \in \mathbf{R}$.

In order to specify candidates' resource functions, I consider two types of resource contributors.[21] The first type is benefit seekers or professionals who are motivated by patronage provided by the winning candidate. The second type is policy-motivated party activists or amateurs. Benefit seekers are less concerned with policy positions whereas party activists 'are more likely to have strong policy motivations rather than to be oriented toward winning elections just for the spoils of victory'.[22]

After distinguishing between the two types of resource contributors, I consider three

[20] Wright, 'The Meaning of "Party" in Congressional Roll Call Voting'; Aranson and Ordeshook, 'Spatial Strategies for Sequential Elections'; Aldrich, 'A Downsian Spatial Model with Party Activism'.

[21] James Q. Wilson, *The Amateur Democrat: Club Politics in Three Cities* (Chicago: University of Chicago Press, 1962); Aaron Wildavsky, 'The Goldwater Phenomenon: Parties, Politicians, and the Two-Party System', *Review of Politics*, 27 (1965), 386–413; Aldrich, *Why Parties?*

[22] Aldrich, *Why Parties?* p. 182. Cotter, Gibson, Bibby and Huckshorn also distinguish two types of party activities: 'candidate-directed' and 'institutional support' activities. The candidate-directed activity is directed towards candidates for office and the institutional support activity involves services to sustain the party organization. For details, see Cotter, Gibson, Bibby and Huckshorn, *Party Organizations in American Politics*.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

types of factors that affect the candidates' resources. First, assuming that professionals contribute resources based on the winning chance of a candidate rather than on the candidate's policy position, I consider two exogenous variables that affect professionals' resource contribution: (1) incumbency advantage, and (2) a set of non-policy factors such as wealth levels, political experience, strategic resource contributions according to electoral chances and so on. Secondly, I apply Riker and Ordeshook's calculus of voting model in order to specify the party activist resource contribution.[23] That is, I assume that party activists' resource contributions decrease (1) as the candidates deviate from their ideal position and (2) as the two candidates' policy positions become less distinct.[24] Thirdly, I assume that not only professionals but also party activists have an incentive to increase contributions even when their candidate deviates from their ideal position towards the centre based on strategic concern that the victory of their candidate with a less desirable policy is preferable to the defeat of their candidate.[25]

One simple representation of candidate L's resources is

$$r_L = \alpha + \omega_L - (x_L - \theta_L)^2 + \{(x_R - \theta_L)^2 - (x_L - \theta_L)^2\} - (x_L - 0.5)^2. \quad (1)$$

Here, r_L denotes per capita resources candidate L receives. I denote the ideal positions of candidate L and R's party activists respectively by θ_L and θ_R. Following Wright's finding that the positions of party activists are not identical, I assume that $\theta_L < \theta_R$, without loss of generality.[26] I further assume that the liberal party candidate's policies are not more conservative than the conservative party candidate's policies. That is, if $\theta_L < \theta_R$, then $x_L \leq x_R$. I assume that candidate L has an incumbency advantage, which is denoted by α. I denote resources resulting from non-policy factors such as wealth levels or political experience by ω_i for $i \in \{L, R\}$.

In Equation 1, the term $-(x_L - \theta_L)^2$ captures the assumption that candidate L's party activist resource contribution decreases as she deviates from her party activist position, and the term $\{(x_R - \theta_L)^2 - (x_L - \theta_L)^2\}$ incorporates the assumption that candidate L's party activists decrease their resource contributions as the two candidates' policies become similar.[27] Next, the term $(x_L - 0.5)^2$ captures the idea that candidate L's resources increase as she converges towards the median. (Recall that the distribution of voter preferences is uniform over the interval [0,1].)

Candidate R's resource function is similarly defined by

$$r_R = \omega_R - (x_R - \theta_R)^2 + \{(x_L - \theta_R)^2 - (x_R - \theta_R)^2\} - (x_R - 0.5)^2. \quad (2)$$

[23] William H. Riker and Peter C. Ordeshook, 'A Theory of the Calculus of Voting', *American Political Science Review*, 62 (1968), 25–42.

[24] Indeed, the effect of policy moderation on Senate candidates' campaign funds between 1974 and 2000 is *negative* and statistically significant, *controlling for opponent spending, electoral prospect*, incumbent advantage and other controlling variables. For details, see fn. 41.

[25] The idea of strategic resource contribution implicitly assumes two things: (a) policy moderation affects electoral chance positively and (b) resource contributors (not political scientists) believe that moderate candidates have a higher chance of winning. However, assumption (a) is not supported strongly by empirical data and assumption (b) has not been tested. Policy moderation explains about 2 per cent of the variation in the vote shares of Senate candidates between 1974 and 2000.

[26] Wright, 'The Meaning of "Party" in Congressional Roll Call Voting'.

[27] For details, see Otto A. Davis, Melvin J. Hinich and Peter Ordeshook, 'An Expository Development of a Mathematical Model of the Electoral Process', *American Political Science Review*, 64 (1970), 426–48.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

Next, I define the utility function of voters. Here, I assume that the candidates primarily spend their resources on advertising valence issues.[28] I further assume that the utility of a voter increases as a candidate's spending on advertising his/her merits increases.[29] In addition, I assume that the utility of a voter also increases as his ideal point and the policy position of the candidate become closer. That is, a voter values candidate i's proposal (x_i, r_i) according to

$$u(x_i, r_i; \theta) = r_i - (x_i - \theta)^2, \text{ for } i \in \{L, R\}. \tag{3}$$

A voter is indifferent between (x_L, r_L) and (x_R, r_R) if $u(x_L, r_L; \theta) = u(x_R, r_R; \theta)$, which is equivalent to

$$r_L - (x_L - \theta)^2 = r_R - (x_R - \theta)^2. \tag{4}$$

Solving for θ, we get the following equation, which defines the cutpoint, $\hat{\theta}$.

$$\hat{\theta} = \frac{(x_L + x_R)}{2} + \frac{(r_L - r_R)}{2(x_R - x_L)}. \tag{5}$$

The cutpoint is the ideal point of voters who are indifferent between (x_L, r_L) and (x_R, r_R). Voters to the left of the cutpoint vote for candidate L and voters to the right of the cutpoint vote for candidate R. If a voter's ideal policy is the same as the cutpoint, she votes by flipping a coin.

Then a voter prefers (x_L, r_L) to (x_R, r_R), if and only if

$$\begin{cases} \theta < \hat{\theta} \text{ if } x_L < x_R, \\ r_L > r_R \text{ if } x_L = x_R. \end{cases} \tag{6}$$

Each candidate has a payoff function, $0 \leq \Pi \leq 1$, which represents a candidate's vote share as a function of (x_L, x_R). When candidate L's policy position is located to the left of candidate R's, the former gets votes to the left of the cutpoint and the latter gets votes to the right of the cutpoint. When the two candidates' policy positions are the same, the candidate who spends more resources will receive all of the votes. If two candidates with the same policy positions spend the same level of resources, each candidate will get half of the votes. Candidate L's payoff function is

$$\text{if } x_L < x_R, \ \Pi_L(x_L, x_R) = \hat{\theta}, \tag{7}$$

$$\begin{cases} \text{if } x_L = x_R \text{ and } r_L > r_R, \ \Pi_L(x_L, x_R) = 1, \\ \text{if } x_L = x_R \text{ and } r_L = r_R, \ \Pi_L(x_L, x_R) = 0.5, \\ \text{if } x_L = x_R \text{ and } r_L < r_R, \ \Pi_L(x_L, x_R) = 0. \end{cases} \tag{8}$$

[28] According to Stokes and Miller, voters are not strongly motivated to ensure that the issue stances correspond to their policy preferences. See Donald E. Stokes and Warren E. Miller, 'Party Government and the Saliency of Congress', in Angus Campbell, Philip E. Converse, Warren E. Miller and Donald E. Stokes, eds, *Elections and the Political Order* (New York: Wiley, 1966), pp. 194–211. Moreover, candidates can hardly modify their policy positions during campaigns. See Aldrich, *Why Parties?* p. 190. Therefore, by focusing on advertising valence issues, politicians seek to neither hurt their non-supporters nor isolate their supporters. See Bruce Cain, John Ferejohn and Morris Fiorina, *The Personal Vote: Constituency Service and Electoral Independence* (Cambridge, Mass.: Harvard University Press, 1987).

[29] The difference in candidates' spending explains about 50 per cent of the variation in the vote shares of Senate candidates between 1974 and 2000, which indicates how campaign spending affects voter utilities.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

Candidate R's payoff function is

$$\Pi_R(x_L, x_R) = 1 - \Pi_L(x_L, x_R). \tag{9}$$

Candidate i's optimization problem[30] is to

$$\max_{x_i} \Pi_i(x_L, x_R). \tag{10}$$

Lastly, I define the equilibrium of the model. An electoral equilibrium of the model is the Nash equilibrium in the game played by two candidates, where the payoff functions are Π_i, $i \in \{L, R\}$. The equilibrium defined above is a policy pair (x^*_L, x^*_R) such that

$$\begin{cases} \Pi_L(x_L, x^*_R) \leq \Pi_L(x^*_L, x^*_R), \\ \Pi_R(x^*_L, x_R) \leq \Pi_R(x^*_L, x^*_R). \end{cases} \tag{11}$$

Equilibrium Results and the Electoral Mechanism of the Model

Solving the two candidates' maximization problems, we have the following solutions for the equilibrium. (For the proof, see Appendix.)

$$(x^*_L, x^*_R) = \left(\frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)} + \frac{3\theta_L + 2\theta_R}{5}, \frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)} + \frac{2\theta_L + 3\theta_R}{5}\right) \tag{12}$$

$$\Delta x^* = \frac{\Delta\theta}{5}. \tag{13}$$

Here, $\Delta\omega \equiv \omega_L - \omega_R$, $\Delta x^* \equiv x^*_R - x^*_L$, and $\Delta\theta \equiv \theta_R - \theta_L$.

From Equation 12, I derive the following propositions regarding candidates with resource advantages:

Proposition 1. As the party activists of a candidate with a resource advantage become more moderate, the candidate adopts a more moderate policy.

Proposition 2. An incumbent adopts a more moderate policy position than a non-incumbent.

Proposition 3. As a candidate's resource advantage increases, the candidate adopts a more moderate policy.

From Equation 13, I derive the following propositions regarding the two candidates' policy positions:

Proposition 1′. There exists a unique equilibrium pair of policy positions such that the two candidates are separated from each other.

Proposition 2′. The more the activists of the two parties diverge from each other, the more the candidates' equilibrium policy positions diverge from each other.

I examine the relationship between party activist positions and equilibrium policy

[30] I assume that candidates maximize votes since the candidates have incentives to win elections with a greater margin in order to 'scare off' strong challengers and to attract more campaign contributions in the next election. See Gary W. Cox and Jonathan N. Katz, 'Why Did the Incumbency Advantage in US House Elections Grow?' *American Journal of Political Science*, 40 (1996), 478–97.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

positions. Subtracting candidate L's party activist position from her equilibrium policy position, we get

$$x^*_L - \theta_L = \frac{2(\theta_R - \theta_L)}{5} + \frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)}. \quad (14)$$

Equation 14 shows that if $\alpha + \Delta\omega \geq 0$, x^*_L is always greater than θ_L (since $\theta_R > \theta_L$ by assumption). That is, if candidate L has incumbency and resource advantages over candidate R, candidate L always adopts a policy that is more moderate than her party activist position. As $\alpha + \Delta\omega$ grows, candidate L converges towards candidate R. In other words, as candidate L's incumbency and resource advantages increase, candidate L adopts a more moderate position.

Next, subtracting candidate R's party activist position from his equilibrium policy position, we get

$$\theta_R - x^*_R = \frac{2(\theta_R - \theta_L)}{5} - \frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)}. \quad (15)$$

Equation 15 shows that if $\alpha + \Delta\omega = 0$, then $\theta_R > x^*_R$. That is, when the two candidates' resources are the same, candidate R always adopts a policy that is more moderate than his party activist position. As $\alpha + \Delta\omega$ grows, however, candidate R's incentive to converge towards the centre decreases and his policy position becomes closer to his party activist position. When $\alpha + \Delta\omega > 4\,(\theta_R - \theta_L)^2/5$, candidate R has an incentive to diverge from his party activist position towards a more extreme position.

The two candidates' asymmetric incentives to converge can be explained by the electoral mechanism of the RECEM. The basic idea of the RECEM is that candidates use resources to sway citizens' partisan voting decisions. As the candidates converge towards each other and their policy positions become less distinguishable, votes become cheaper to buy and the candidates' resources become a more efficient way to win votes. Convergence benefits the candidate with the resource advantage in two ways. Not only does the candidate win more votes from convergence, but it also becomes easier for the candidate to sway voters since the two candidates' policies become less distinguishable. In contrast, the candidate with a resource disadvantage benefits less from convergence. Although the candidate with a resource disadvantage can get more votes from convergence, he gets more votes only at the expense of helping his opponent buy votes more cheaply. As the difference in the two candidates' resource levels increases, the incentive for the candidate with a resource disadvantage to diverge from the centre increases.

EMPIRICAL TESTS

There have been several empirical studies that support the results from the models in the previous section. First, Wright finds strong evidence that supports Proposition 1.[31] He shows that members of the Senate and the House of Representatives in the 98th and 100th Congresses adopted policy positions that are strongly associated with their party activists' ideology. Secondly, Wright and Berkman find that incumbents were more moderate than challengers and open-seat candidates in the 1982 Senate election (Proposition 2).[32]

[31] Wright, 'The Meaning of "Party" in Congressional Roll Call Voting'.
[32] Wright and Berkman, 'Candidates and Policy in United States Senate Elections'.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

Ansolabehere, Snyder and Stewart also show that incumbents adopted more moderate positions than open-seat candidates and open-seat candidates adopted more moderate positions than challengers in the 1996 House election. Thirdly, Ansolabehere, Snyder and Stewart find that high-quality non-incumbents are more moderate than other non-incumbents.[33] Since a candidate's quality has a positive effect on a candidate's resources,[34] their finding indirectly supports Proposition 3, which is that a candidate's policy moderation is a positive function of her resource advantage.

While these studies separately or indirectly support the results from the models, a joint test including all of the three factors (party activist positions, incumbency advantage and resource advantage) has not been performed. In particular, the effect of resource advantage on candidate policy positions has not been directly estimated. Nor has the reciprocal relationship between policy moderation and resources, as highlighted in my model, been taken into account in existing studies. In this section, I shall therefore undertake the full set of tests necessary to assess the RECEM adequately.

Data and Methods

Based on Propositions 1–3, I predict that a candidate with resource advantages adopts a more moderate policy position (1) as the ideal position of the candidate's party activists becomes more moderate, (2) if the candidate is an incumbent (α), and (3) as the candidate's resource advantages ($\Delta\omega$) increase. To test these propositions, I collected data for incumbent candidates and non-incumbent winners in Senate elections for the period between 1974 and 2000. In this period, there have been 496 contested incumbents and non-incumbent winners whose policy position data are available. To measure the degree of policy moderation, I use Poole and Rosenthal's W-NOMINATE-1 scores, which represent candidate policy positions on the liberal–conservative or left–right spectrum.[35] To measure incumbent policy positions, I use their NOMINATE scores for the election year. Since non-incumbent winners' NOMINATE scores during the election year are not available, I use their NOMINATE scores for their first year of service after the election.

For the purposes of this study, I am interested in the location of a candidate relative to the other candidates who belong to the candidate's party.[36] I subtract the average scores of all incumbents belonging to a given party in a given election year from each candidate's NOMINATE score. This procedure transforms the NOMINATE scores into the degree of a candidate's policy conservatism relative to the average of all incumbents belonging to a given party. A higher positive number indicates a more conservative Democrat or Republican. Multiplying 1 to Democrats' scores and -1 to Republicans' scores yields policy moderation scores, which I call MODERATE scores. The higher a candidate's MODERATE score is, the more moderate he or she is.[37]

[33] Ansolabehere, Snyder and Stewart, 'Candidate Positioning in US House Elections'.

[34] Green and Krasno, 'Salvation for the Spendthrift Incumbent'.

[35] Poole and Rosenthal, *Congress: A Political-Economic History of Roll Call Voting*.

[36] Here I measure policy moderation in terms of a candidate's position relative to the other members of the party. But, the RECEM specifies policy moderation in terms of the candidate's position relative to the centre of the electorate. Since the position of the median voter varies across states, the empirical test might need to control for state ideology. I deal with this issue in the next section. For details, see fn. 45.

[37] A simpler measure of candidate policy moderation is to compute a candidate's policy extremism by using the candidate's deviation from the average (or median) Senator's policy position. However, this measure does not capture a candidate's extremism relative to the other candidates who belong to the candidate's party. For example,

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

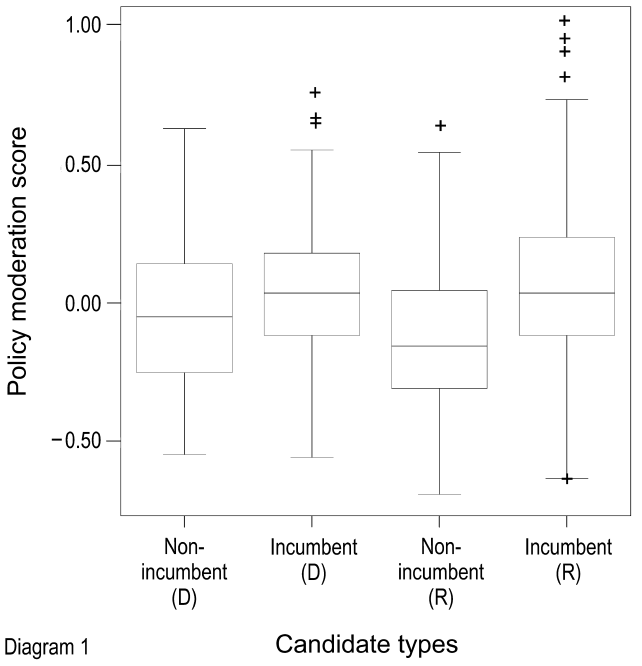


Diagram 1

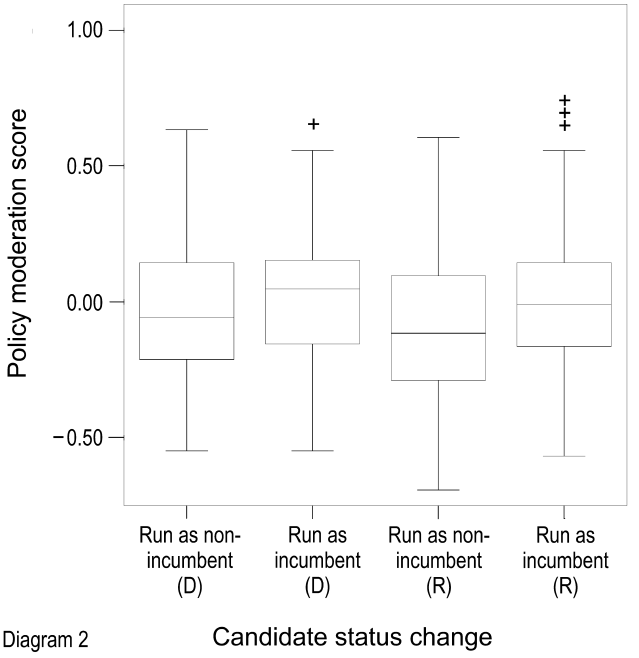


Diagram 2

Fig. 1. Distribution of policy moderation scores

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

Diagram 1 in Figure 1 displays the MODERATE scores for different types of Senate candidates between 1974 and 2000. The first and third box-plots of Diagram 1 respectively show the distribution of the MODERATE scores of Democratic and Republican non-incumbent candidates. The second and fourth box-plots respectively show the MODERATE scores of Democratic and Republican incumbents. The horizontal line in the box of each box-plot indicates the median of candidates' MODERATE scores in each category. The box-plots show that incumbents tend to adopt more moderate policy positions than non-incumbent candidates.

Diagram 2 in Figure 1 illustrates how non-incumbent winners *changed* their policy positions when they ran for the next election as incumbents. The first and third box-plots respectively show the MODERATE scores of Democratic and Republican candidates who won open seats. The second and fourth box-plots respectively show the MODERATE scores of the non-incumbent winners when they ran as incumbents in the next election. The box-plots in Diagram 2 show that the non-incumbent winners moderated their positions once they became incumbents.

Table 1 shows the results from the ANOVA tests that compare the MODERATE scores of different types of candidates and the change in non-incumbent winners' MODERATE scores. The difference in the MODERATE scores between incumbents and non-incumbents is significant at the 0.001 level. Non-incumbent winners' policy moderation in the next election is significant at the 0.01 level. Overall, the results in Table 1 support the expectation that incumbency advantage leads candidates to adopt more moderate policy positions.

To measure the positions of a candidate's party activists, I use indices of the ideology of party activists in each state compiled by the SES (*Pooled Senate Election Study 1988, 1990, 1992*).[38] I transform these indices into a measure of the relative moderation of the

TABLE 1 *The ANOVA Tests for the Difference in the MODERATE Scores*

Candidate types	Sum of squares	d.f.	Mean square	*F*-ratio	*p*
Incumbent vs. non-incumbent					
Between groups	1.894	1	1.894	22.796	0.000
Within groups	41.046	494	0.083		
Total	42.940	495			
Run as incumbent vs. run as non-incumbent					
Between groups	0.555	1	0.555	7.417	0.007
Within groups	16.984	227	0.075		
Total	17.539	228			

(F'note continued)

if the senate median is 0.5, the alternative measure treats equivalently two candidates respectively located at 0.4 and 0.6. However, if the candidate is Republican, the candidate at 0.4 is more moderate than that at 0.6 since the lower score represents less conservatism. Moreover, the alternative measure does not control for the change in deviation between the two parties' median positions across Congress. My analysis in the model focused on the causes for a candidate adopting a more moderate policy positions relative to the other same party candidates, holding constant the change in party positions across Congress.

[38] Warren E. Miller, Donald R. Kinder, Steven J. Rosenstone and the National Election Studies, *American National Election Study: Pooled Senate Election Study, 1988, 1990, 1992* [Computer file]. 2nd release (Ann Arbor: University of Michigan, Center for Political Studies [producer], IPCSR [distributor], 1993).

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

activists in each state (*PARTYM*). High scores on this variable indicate greater moderation among activists.[39] The measure for incumbency advantage (*INCUMB*) is straightforward. I code 1 for incumbent candidates and 0 for non-incumbent winners. I measure a candidate's resource advantage in terms of a candidate's extra spending. To measure candidate spending, I use the logarithm of candidate spending levels measured in real 1995 dollars in a state.[40] Then a candidate's extra spending, denoted by $\Delta SPEND$, is defined as follows:

$$\Delta SPEND = \ln \text{ (candidate spending)} - \ln \text{ (challenger spending)}.$$

An ordinary least squares (OLS) regression model predicting policy moderation is

$$MODERATE = b_0 + b_1 PARTYM + b_2 INCUMB + b_3 \Delta SPEND + e.$$

The OLS model assumes that a candidate's extra spending is exogenous. However, a caveat should be entered in this assumption. Recall from Equation 12 that resource advantages ($\Delta\omega$) that exogenously affect policy moderation are defined by the difference in the level of resources resulting from non-policy factors such as the candidate's electoral prospect, wealth level, opponent's political quality and so on. However, the differences in the candidates' actual spending ($\Delta SPEND$) in the OLS model above contain not only $\Delta\omega$ but also resources that depend on the candidates' policy positions. Since policy moderation alienates resource contributors, policy moderation has a negative effect on candidate spending.[41] Thus, using the difference in the two candidates' actual spending to estimate a candidate's resource advantage generates a simultaneity bias: policy moderation (the dependent variable) affects the difference in spending (the independent variable). Due to this negative relationship between policy moderation and spending differences, the ordinary least squares (OLS) estimate for resource advantage measured by $\Delta SPEND$ will underestimate the effect of non-policy resource advantage ($\Delta\omega$).

To correct for endogeneity bias, I estimate the effect of resource advantage on policy moderation using the two-stage least squares (2SLS) regression analysis. In the first stage, I estimate resource advantage resulting from non-policy factors by instrumental variables that are expected to affect candidate spending, but not to directly affect candidate policy positions. These include (i) a candidate's electoral prospect, and (ii) state population. Direct causal relationships between spending difference and the two instruments are straightforward. Spending advantages of candidates against strong opponents would be smaller than those of candidates against weak opponents. I use the state population as an

[39] The original variables are v1422 and v1423, which range from 0 to 100. I recode them to a 0–1 range, subtract and rescale so that higher scores indicate more moderation among party activists.

[40] To avoid problems in the few cases with no reported spending, I adopt the convention of adding $5,000 to each candidate's spending. For details, see Green and Krasno, 'Salvation for the Spendthrift Incumbent'. I use campaign spending per thousand people instead of per capita to restrict the natural logarithm of campaign spending to the range of positive values. This prevents estimated coefficients from being affected too much by the small number of large negative values when the logarithm is taken. Gerber adds the constant 0.01 to real spending per voter before taking the logarithm to prevent large negative values of the logarithms of campaign spending. The qualitative difference in estimated effects is negligible between the two methods. See Gerber, 'Estimating the Effect of Campaign Spending on Senate Election Outcomes Using Instrumental Variables'.

[41] As I mentioned in fn. 23, holding constant opponent spending, incumbent advantage, electoral prospect, opponent political experience, state population size and candidate party leadership, one unit increase in policy moderation score decreases a Senate candidate's per capita campaign fund by about 31 cents (in 1995 $). The negative effect of policy moderation on campaign funds is not only statistically, but also substantively, significant. Given that the median of Senate election campaign funds per capita is about 88 cents, one unit increase in policy moderation score results in campaign funds decreasing by about 35 per cent.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

instrument for the following reason. According to Gerber, an incumbent raises a fixed amount of money independent of his or her state population.[42] Such donations include many individual contributions from out of state and 'investor PACs' such as 'trade, membership, and health organizations, corporations, labor unions and cooperatives'. Thus, senators from small states spend more money from these sources per capita, whereas those from large states spend a smaller amount per capita.

To measure candidate electoral prospects, I use the 'the election outlook' index provided by the *Congressional Quarterly* (CQ).[43] Based on hundreds of expert observations of campaign processes, CQ divides the candidates into seven categories ('Safe Democratic, Democrat Favored, Leans Democratic, No Clear Favorite, Leans Republican, Republican Favored, and Safe Republican'). In order to operationalize CQ's outlook, I assign 3 to incumbents with 'No Clear Favorite'. I assign 7 to candidates who are rated to be safe and 1 to those whose opponents are rated to be safe. I assign the numbers from 2 to 6 to the other categories. A higher number indicates a safer candidate.

With the two instrumental variables I estimate resource advantage in the first stage.[44] A reduced form equation for the endogenous explanatory variable, $\Delta SPEND$, is

$$\Delta SPEND^* = d_0 + d_1 PARTYM + d_2 INCUMB + d_3 PROSPC + d_4 STSIZE + e,$$

where *PROSPC* is a candidate's electoral prospect and *STSIZE* is state population.

In the second stage, I test the effect of resource advantage on policy moderation using the estimate for resource advantage obtained in the first stage:

$$MODERATE = c_0 + c_1 PARTYM + c_2 INCUMB + c_3 \Delta SPEND^* + e.$$

Estimation Results

Table 2 shows that the effects of two variables are, as expected, positive and statistically significant.[45] State party positions have the strongest effect on candidates' policy positions. Incumbents tend to adopt more moderate policy positions. The effect of spending advantage is statistically insignificant even though candidates with spending advantage tend to adopt more moderate policy positions. However, the coefficient for spending advantage could be underestimated due to endogeneity bias resulting from the negative effect of policy moderation on candidate spending. A formal test of endogeneity of

[42] Gerber, 'Estimating the Effect of Campaign Spending on Senate Election Outcomes Using Instrumental Variables'.

[43] Congressional Quarterly, *The Congressional Quarterly Weekly Report* (Washington, D.C.: CQ Press, 1972–2000).

[44] Since there is one endogenous explanatory variable and two true instruments (instrumental variables that are included in the first stage, but excluded from the second stage), there is one overidentifying restriction.

[45] As mentioned in fn. 36, it might be necessary to control for the variance in ideology across states. I measure the extent to which a state's ideology is moderate relative to other states' ideologies by rescaling state ideology data compiled by Wright, McIver and Erickson. For details, see Robert S. Erickson, Gerald C. Wright Jr and John McIver, 'Measuring State Partisanship and Ideology with Survey Data', *Journal of Politics*, 47 (1985), 469–89. Following the same procedure used to measure the MODERATE scores, I compute state ideology moderation scores (*STIDEO*) such that higher scores indicate more moderate state ideology. Controlling for state ideology moderation works in favour of my expectation of the direction and significance of estimates for all statistical models in this article. For example, the coefficients of the model, $MODERATE = -0.044 + 1.01\ PARTYM + 0.010 INCUMB + 0.014 \Delta SPEND + 0.447 STIDEO + e$, are all significant at least at the 0.05 level. The disadvantage of this model is, however, that Alaska and Hawaii are excluded from the data since Wright, Mclver and Erickson's data do not include these states.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

TABLE 2 *OLS Estimates Predicting Candidate Policy Moderation*

Independent variables	Expected sign	Coefficient (standard error)	Beta (p value)
State Party Moderation	+	1.106***	0.682
		(0.055)	(0.000)
Incumbency	+	0.098***	0.150
		(0.022)	(0.000)
Spending Advantage	+	0.008	0.041
		(0.007)	(0.228)
N		496	
R^2 (adjusted R^2)		0.507 (0.504)	
F-ratio		168.520***	

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$ (two-tailed).

TABLE 3 *Reduced Form Regression Estimating Candidate Resource Advantage*

Independent variables	Expected sign	Coefficient (standard error)	Beta (p value)
State Party Moderation		− 0.477	− 0.057
		(0.311)	(0.125)
Incumbency	+	0.544***	0.161
		(0.136)	(0.000)
Electoral Prospect	+	0.522***	0.492
		(0.043)	(0.000)
State Population (in millions)	−	− 0.019*	− 0.066
		(0.010)	(0.075)
N		496	
R^2 (adjusted R^2)		0.338 (0.333)	
F-ratio		62.787***	

spending advantage shows that we can reject the null hypothesis that spending difference is exogenous at the 0.05 level.[46]

Table 3 reports the reduced form estimation of spending advantage. Table 3 shows that two instrumental variables affect candidate extra spending in the expected direction. The adjusted R^2 for this first-stage model is 0.333. To check if all instruments are valid, I performed the regression-based Hausman test. The over-identification test statistic is 1.984 and the p-value is 0.371. Thus, we cannot reject the null hypothesis that the instruments were exogenous even at the 0.1 level.

[46] The test was performed using a regression-based form of the Hausman test. I first regress *ΔSPEND* on *PARTYM, INCUMB, PROSPC*, and *STSIZE*, and obtain the residuals, denoted by *RESIDL*. Then I regress *MODERATE* on *PARTYM, INCUMB*, *ΔSPEND* and *RESIDL*, and obtain the t-statistic on the effect of *RESIDL*. The t-statistic is − 2.221 and the p-value is 0.027. Thus, we reject the null hypothesis that *ΔSPEND* is exogenous at the 0.05 level. For details, see J. A. Hausman, 'Specification Tests in Econometrics', *Econometrica*, 46 (1978), 1251–71.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

TABLE 4 *2SLS Estimates Predicting Candidate Policy Moderation*

Independent variables	Expected sign	Coefficient (standard error)	Beta (p value)
State Party Moderation	+	1.113***	0.686
		(0.051)	(0.000)
Incumbency Advantage	+	0.067**	0.102
		(0.026)	(0.011)
Estimated Spending Advantage	+	0.034**	0.101
		(0.013)	(0.012)
N		496	
R^2 (adjusted R^2)		0.512 (0.509)	
F-ratio		171.861***	

Results for the second-stage model are in Table 4. The most important is that the effect of *Estimated Spending Advantage* on *Policy Moderation* in the 2SLS model is 0.034, which is about four times greater than its effect in the OLS model (0.08) in Table 3. The t-ratio for the 2SLS estimate is also about 100 per cent greater than it was for the OLS measure (2.48 versus 1.21). At the same time, the effect of incumbency on moderation remains strong. Thus, the 2SLS results provide strong evidence that having a resource advantage – either in the form of more campaign spending or perquisites of incumbency – induces greater policy moderation, as expected from the RECEM.[47]

Lastly, I test the following three fixed effect panel data models to check the robustness of the result in Table 4:

Model A:

$$MODERATE = a_0 + a_1 PARTYM + a_2 INCUMB + a_3 \Delta SPEND^* + \sum_{t=2}^{14} h_t YEAR_t + e_{it},$$

where $YEAR_t = 1$ for a given election year t and $YEAR_{it \neq 1} = 0$.

Model B:

$$MODERATE = b_0 + b_1 PARTYM + b_2 INCUMB + b_3 \Delta SPEND^* + \sum_{i=2}^{50} g_i STATE_i + e_{it},$$

where $STATE_i = 1$ for state i and $STATE_{j \neq i} = 0$.

Model C:

$$MODERATE = c_0 + c_1 PARTYM + c_2 INCUMB + c_3 \Delta SPEND^* + \sum_{i=2}^{50} g_i STATE_i + \sum_{t=2}^{14} h_t YEAR_t + e_{it}.$$

[47] Including the variable *STIDEO* in this model produces the following result: $MODERATE = -0.051 + 1.02\ PARTYM + 0.006\ INCUMB + 0.043\ \Delta SPEND^* + 0.455\ STIDEO + e$. Here, *PARTYM*, $\Delta SPEND^*$, and *STIDEO* are significant at the 0.01 level and *INCUMB* is significant at the 0.05 level.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

TABLE 5 *Fixed Effect Model Estimates Predicting Candidate Policy Moderation*

Independent variables	Model A coefficient (standard error)	Model B coefficient (standard error)	Model C coefficient (standard error)
State Party Moderation	1.114***	1.164***	1.184***
	(0.052)	(0.059)	(0.060)
Incumbency Advantage	0.059**	0.071***	0.065**
	(0.027)	(0.025)	(0.026)
Estimated Spending Advantage	0.033**	0.028**	0.026**
	(0.014)	(0.013)	(0.013)
California			0.175**
			(0.087)
Connecticut		0.212**	0.225**
		(0.085)	(0.087)
Indiana			0.172**
			(0.086)
Maine			0.186**
			(0.088)
Montana		0.287***	0.309***
		(0.088)	(0.090)
North Dakota		0.231***	0.244***
		(0.085)	(0.087)
New Mexico		0.261***	0.287***
		(0.086)	(0.088)
Oklahoma		0.207**	0.210**
		(0.087)	(0.088)
Oregon		0.299***	0.303***
		(0.092)	(0.093)
Pennsylvania		0.275***	0.282***
		(0.085)	(0.087)
South Dakota		0.243***	0.246***
		(0.084)	(0.087)
Utah			0.178**
			(0.089)
N	496	496	496
R^2 (adjusted R^2)	0.517	0.633	0.639
	(0.501)	(0.590)	(0.584)
F-ratio	32.03***	14.70***	11.68***

Note: I use Alaska and 1974 as the base state and year. I do not report estimates for election year dummies in Table 5 since none are significant at the 0.1 level. I include all forty-nine state dummies in Models B and C but report only those that are statistically significant. In these states, senate candidates diverged significantly more from their state party positions towards the centre than those in Alaska did.

Table 5 demonstrates that the positive and significant effects of the three variables in Table 4 are robust against three different panel data specifications.[48] A moderate increase (0.075) in the adjusted R^2 of Model C indicates that including forty-nine state dummies

[48] I also check the robustness of the result by testing a random effects model. The coefficients in the model, $MODERATE = -0.053 + 1.15\ PARTYM + 0.007\ INCUMB + 0.003\ \Delta SPEND^* + e$, are all significant at the 0.05 level. A fully interactive model that tests the effect of the interaction of the three independent variables on policy moderation also produces qualitatively similar results. With necessary linear transformations that

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

and thirteen election year dummies does not add explanatory power significantly. The significant decreases in *F*-ratios of the three panel data models indicate that the addition of state and (or) election year dummies significantly decreases the efficiency of the model in Table 4.

SUMMARY AND DISCUSSION

Throughout the House impeachment and Senate trial of President Clinton over his involvement with Monica Lewinsky, public opinion polls consistently showed that most Americans – including moderate and swing voters – did not want to see the president removed from office. Yet the Republican-led Congress pressed ahead. Some, as journalistic accounts suggested, were afraid of challenges from their right flanks in party primaries. Even Republicans in marginal districts faced strong pressures from party activists to ignore the polls and go after Clinton. As reported in the *Washington Post*, 'the effort to impeach the president reinforced the image of party leaders catering to conservative Republican activists at the expense of reaching out to moderate and independent voters who will be decisive in the major contested elections less than two years from now'.[49] Observing a more general pattern of ideological polarization in Congress during the 1980s and 1990s, Jacobson noted that Congress is more polarized than the public and that this polarization seems to reflect the pressures of the activists in each party.[50]

This article develops and empirically tests a formal model of the political dynamics underlying these phenomena. The basic claim of this model, which I called the Resource-Constrained Election Model, is that candidates are dependent on party activists for the resources they need to run for office, that these activists tend to be strong ideologues of either the right or the left, and that the activists, in effect, pull candidates away from the preferences of centrist swing voters. Due to this party pressure, candidates cannot, as a simple Downsian analysis would expect, reliably gain popular votes by becoming more moderate. They do tend to gain some popular vote share from moderation, but they also tend to lose vote share due to loss of resources, making it possible to detect the real effects of moderation through the kind of 2SLS analysis I have conducted in this article.

Incumbency helps politicians free themselves from dependence on activists. Incumbency gives candidates access to resources – such as district projects and services to individual constituents – that increase support among voters.[51] This resource advantage of incumbents over challengers enables incumbents to become more moderate, which then enables them to win still greater voter support. The RECEM captures these dynamics by specifying electoral competition as a game involving party activists, candidate resources and valence issues.

A major finding of this article is that candidates with incumbency or resource advantages adopt more moderate policy positions. While previous spatial models and empirical studies

(F'note continued)
convert negative values of each variable to positive values, the coefficients in the model, $MODERATE = 0.832(PARTYM)^{1.095} \cdot (INCUMB)^{0.077} \cdot (\Delta SPEND^*)^{0.052}$, are all significant at the 0.01 level.

[49] *Washington Post* (10 January 1999).

[50] Gary C. Jacobson, 'Party Polarization in National Politics: The Electoral Connection', in Jon R. Bond and Richard Fleisher, eds, *Polarized Politics: Congress and the President in a Partisan Era* (Washington, D.C.: CQ Press, 2000), pp. 9–30.

[51] Morris P. Fiorina, 'The Case of the Vanishing Marginals: The Bureaucracy Did It', *American Political Science Review*, 71 (1977), 177–81.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

find similar results, what distinguishes this study from the previous studies is that it provides an unambiguous explanation for the mechanism of asymmetric policy convergence in the context of a model with realistic assumptions about the basic forces at work. In particular, the RECEM shows that as candidates converge towards each other and their policy positions become less distinguishable, votes become cheaper to buy, and candidates' resources become a more efficient way to win votes. Since the candidate with more resources has an advantage when he tries to 'buy' votes, he has the stronger incentive to converge.

A feature that distinguishes the RECEM from other spatial models is that candidates diverge without the assumptions that (1) candidates have their own policy preferences and (2) they have incomplete information about voter preferences. As Calvert shows, the standard spatial models require both of these assumptions to generate the divergence result.[52] The recent spatial models that incorporate non-policy issues to obtain the divergence result also require the two assumptions.[53] In contrast, the model in this article yields the divergence result without these assumptions. It instead relies on the more empirically warranted assumptions that (1) candidates are constrained by their parties and (2) the party activist positions are not identical. With these assumptions, the RECEM shows that even office-seeking candidates with complete information do not converge to the ideological centre due to the trade-off between resources and votes.

The RECEM explains some seemingly conflicting empirical findings. Empirical researchers have found that policy moderation increases popular vote share, but they found that competing candidates nonetheless adopt distinctive policy positions.[54] Given these two different findings, it is puzzling why candidates' do not converge more towards the centre if they can win more votes by doing so. Wright, in an unpublished 1994 paper, proposes a solution to this puzzle, arguing that although candidates can win more votes by policy moderation, they are limited in their ability to converge towards the centre due to reliance on resources provided by party activists. The RECEM supports this idea with a formal elaboration of the relationship between policy moderation and votes in the context of a realistic spatial model. The empirical tests of this model go beyond existing empirical analysis by using an appropriate 2SLS model empirically to validate the claim concerning the constraining effect of party activists.

Lastly, I discuss the scope of applicability and generalizability of the RECEM. The RECEM specifies electoral competition between two parties under a single-member district plurality system and I tested the results derived from the RECEM in the context of US Senate elections. But how do we explain electoral competition in a country such as Britain where party discipline is stronger and voters are less tolerant of pork-barrel politics?[55] In addition, how can the RECEM apply to electoral competition among multiple

[52] Calvert, 'Robustness of the Multidimensional Voting Model'.

[53] Groseclose, 'A Model of Candidate Location When One Candidate Has a Valence Advantage'.

[54] Wright and Berkman, 'Candidates and Policy in United States Senate Elections'; Robert S. Erikson and Gerald C. Wright, 'Voters, Issues and Candidates in Congressional Elections', in Lawrence Dodd and Bruce Oppenheimer, eds, *Congress Reconsidered*, 5th edn (Washington, D.C.: CQ Press, 1993), pp. 91–114.

[55] I thank Sarah Birch for raising this important issue. For the literature dealing with the effect of campaigning in Britain, see Dennis Kavanagh, *Constituency Electioneering in Britain* (London: Longmans, 1970); J. M. Bochel and D. T. Denver, 'Canvassing, Turnout and Party Support: An Experiment', *British Journal of Political Science*, 1 (1971), 257–69; J. M. Bochel and D. T. Denver, 'The Impact of the Campaign on the Results of Local Government Elections', *British Journal of Political Science*, 2 (1972), 239–60; R. J. Johnston, 'Campaign Expenditure and the Efficacy of Advertising at the 1974 General Election in England', *Political Studies*, 27 (1979),

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

parties? I think that the RECEM can be generalized into a more global model without perturbing its essential theoretical framework.

The key idea behind the RECEM is that electoral competition is a type of producer–consumer transaction. Electoral competition involves, like market transactions, producers (parties or candidates), consumers (voters), products (policy proposals and non-policy services), transaction mediums (votes), advertising (campaigns) and institutional regulations for transactions (electoral laws, campaign finance laws and so on). Unlike market transactions where producers fund their advertising costs, however, politicians primarily depend on party activists who provide them with financial and human resources. I believe that this feature also characterizes electoral competition in countries with strong party discipline and loyalty such as Britain or New Zealand.[56]

The next question to be raised is how to incorporate exogenous factors such as party discipline or party loyalty into the model. In the RECEM, three factors affect voter utility. More specifically, voter utility increases (1) as his or her ideal point and his candidate's position become closer, (2) his candidate's non-policy merits increase, and (3) as the value of the non-policy merits advertised by party activists increases. One can generalize the RECEM by parameterizing the ways these three factors affect voter utility: (1) the extent to which voter utility decreases as his or her candidate deviates from the voter's ideal position, (2) voter sensitivity to non-policy issues, and (3) the extent to which party activists withhold their support when their candidate's position deviates from their position.[57] Comparative statics analysing the effects of these parameters on candidates' policy

(F'note continued)

114–19; R. J. Johnston, *Money, and Votes: Constituency Campaign Spending and Electoral Results* (London: Croom Helm, 1987); C. J. Pattie and R. J. Johnston, 'The Impact of Spending on Party Constituency Campaigns at Recent British General Elections', *Party Politics*, 1 (1995), 261–73; R. J. Johnston and C. J. Pattie, 'The Strength of Party Identification Among the British Electorate: An Exploration', *Electoral Studies*, 15 (1996), 143–55; R. J. Johnston and C. J. Pattie, 'Where's the Difference? Decomposing the Impact of Local Election Campaigns in Great Britan', *Electoral Studies*, 16 (1997), 165–74; David Denver and Gordon Hands, 'Challengers, Incumbents and the Impact of Constituency Campaigning in Britain', *Electoral Studies*, 16 (1997), 175–93.

[56] Noting the significance of non-policy issues and campaigning in Britain, Cain, Ferejohn and Fiorina point out that 'national forces such as party loyalty and executive performance play a much larger role' in Britain than in America, but this does not mean that the British believe that constituency services are insignificant. See Cain, Ferejohn and Fiorina, *The Personal Vote*, p. 77. Anagnoson also observes that 'the standard pattern of close constituency relationship' exists in New Zealand where 'the party system is among the strongest'. See Theodore Anagnoson, 'Home Style in New Zealand', *Legislative Studies Quarterly*, 8 (1983), 157–75, p. 171.

[57] One can specify this generalized model in a simplest form: $u(x_i, \omega_i, \theta_i; \theta) = -\beta(x_i - \theta)^2 + \gamma\omega_i, -\lambda(x_i - \theta_i)^2$, where θ, x_i, ω_i, and θ_i, denote a voter's ideal policy position, candidate i's policy position, exogenous non-policy merits, and the candidate's party activist position, respectively. The standard spatial models deal only with the first term (policy issues) of the utility function. If electoral competition revolves around transactions of policy issues only, the relationships between political producers and their consumer are partisan, ideological and programmatic. The second term captures valence issues and the way this term affects voter utility is monotonic increasing, which is similar to the way economic products affect consumer utility. If electoral competition revolves around transactions of valence issues only, electoral competition is distributive and particularistic. Politicians cultivate personal votes and this tendency results in money politics and the undersupply of important collective goods. The third term captures the effect of advertisement and party activism. Spatial models without this term specify electoral competition without parties and campaign processes.

The parameters β, γ, and λ respectively capture how fast a voter's utility decreases as his or her candidate deviates from his or her ideal position, the voter's sensitivity to non-policy merits and the extent to which party activists withhold their support when their candidate deviates from them. Thus, we can analyse different voting behaviours and electoral outcomes across countries in terms of these parameters. In the RECEM that I present in this article, I held constant the parameters to one in order to simplify the model.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

positions would offer predictions regarding cross-national variations in equilibrium policy positions.

One can also generalize the RECEM into a model that specifies electoral competition among more than two candidates under a single-member plurality system (or multi-party competition under the party-list proportional representation systems). For example, I have elsewhere analysed electoral competition between three parties based on the same theoretical framework.[58] That model yields a three-party equilibrium that pre-existing Downsian spatial models had been unable to derive. The model predicts that the interior (centrist) party is not 'squeezed' by peripheral (extremist) parties as previous Downsian models predict.[59] Instead, the interior party has a strategic advantage because it can sway both moderate leftist and rightist voters with its valence advantages, whereas peripheral parties can buy only centrist voters close to their positions. In this setting, as the centre party's valence advantages increase, the peripheral parties diverge from the centre to make the interior party's valence advantages less effective for swaying leftist or rightist voters. This finding confirms Sartori's thesis that the existence of a centre party (or parties) contains the centripetal forces of the political system.[60] In sum, the theoretical framework of the RECEM can be applied to generate models that are more general than the two-party competition model in this article.

APPENDIX: PROOF OF THE EQUILIBRIUM SOLUTION

First, I examine the necessary conditions for the existence of equilibrium. When $x_L < x_R$,

$$\Pi_L = \hat{\theta} = \frac{(x_L + x_R)}{2} + \frac{(r_L - r_R)}{2(x_R - x_L)} \text{ and } \Pi_R = 1 - \frac{(x_L + x_R)}{2} - \frac{(r_L - r_R)}{2(x_R - x_L)}.$$

A direct substitution of each candidate's resource constraint in each of the two candidates' payoff functions converts a constrained maximization to an unconstrained one:

$$\Pi_L = \frac{\alpha + \Delta\omega - 5x^2{}_L + 5x^2{}_R - \theta^2{}_L + \theta^2{}_R + x_L\,(1 + 4\theta_L + 2\theta_R) - 2x_R(1 + 2\theta_L + 4\theta_R)}{2(x_R - x_L)} \tag{A.1}$$

$$\Pi_R = 1 - \frac{\alpha + \Delta\omega - 5x^2{}_L + 5x^2{}_R - \theta^2{}_L + \theta^2{}_R + x_L\,(1 + 4\theta_L + 2\theta_R) - 2x_R\,(1 + 2\theta_L + 4\theta_R)}{2(x_R - x_L)}. \tag{A.2}$$

The first order conditions are

$$\frac{\partial \Pi_L}{\partial x_L} = \frac{\alpha + \Delta\omega + 5(x_R - x_L)^2 - \theta^2{}_L + \theta^2{}_R + 2x_R\,(\theta_L - \theta_R)}{2(x_R - x_L)^2} = 0 \text{ and} \tag{A.3}$$

$$\frac{\partial \Pi_R}{\partial x_R} = \frac{\alpha + \Delta\omega - 5(x_R - x_L)^2 - \theta^2{}_L + \theta^2{}_R + 2x_L\,(\theta_L - \theta_R)}{2(x_R - x_L)^2} = 0. \tag{A.4}$$

Solving (A.3) and (A.4) simultaneously, we get

$$(x^*{}_L,\, x^*{}_R) = \left(\frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)} + \frac{3\theta_L + 2\theta_R}{5},\, \frac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)} + \frac{2\theta_L + 3\theta_R}{5}\right). \tag{A.5}$$

[58] Woojin Moon, 'Strategic (Dis)Advantages of the Centrist Party in Position Taking: Downsian versus Political Transaction Models' (unpublished paper, Department of Political Science, University of California, San Diego, 2003).

[59] B. C. Eaton and Richard G. Lipsey, 'The Principle of Minimum Differentiation Reconsidered: Some New Developments in the Theory of Spatial Competition', *Review of Economic Studies*, 42 (1975), 27–49.

[60] Giovanni Sartori, *Parties and Party Systems: A Framework for Analysis* (New York: Cambridge University Press, 1976).

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

Next, I examine the sufficient conditions for the existence of equilibrium. First, check the concavity of $\hat{\theta}$ with respect to x_L

$$\frac{\partial^2\hat{\theta}}{(\partial x_L)^2} = \left(\frac{\alpha + \Delta\omega + 2x_R(\theta_L - \theta_R) - \theta^2{}_L + \theta^2{}_R}{(x_R - x_L)^3}\right). \tag{A.6}$$

At the critical point $(x^*{}_L, x^*{}_R)$,

$$\frac{\partial^2\hat{\theta}}{(\partial x_L)^2} = -\frac{25}{(\theta_R - \theta_L)} < 0. \tag{A.7}$$

Next, check the concavity of $\hat{\theta}$ with respect to x_R,

$$\frac{\partial^2\hat{\theta}}{(\partial x_R)^2} = -\left(\frac{\alpha + \Delta\omega + 2x_R(\theta_L - \theta_R) - \theta^2{}_L + \theta^2{}_R}{(x_R - x_L)^3}\right). \tag{A.8}$$

At the critical point $(x^*{}_L, x^*{}_R)$,

$$\frac{\partial^2\hat{\theta}}{(\partial x_R)^2} = -\frac{25}{(\theta_R - \theta_L)} < 0. \tag{A.9}$$

Thus, the sufficient conditions are satisfied. Q.E.D.

Formal Propositions and Proofs

Proposition 1
An environment is $E = \langle\alpha,\theta_L,\theta_R,\omega_L,\omega_R\rangle$. Given $E_1 = \langle\alpha,\theta'_L,\theta_R,\omega_L,\omega_R\rangle$ and $E_2 = \langle\alpha,\theta''_L,\theta_R,\omega_L,\omega_R\rangle$, let (x'_L,x'_R) be the NE in E_1 and (x''_L,x''_R) be the NE in E_2. If $\theta'_L < \theta''_L$, then $x''_L > x'_L$.

Proof: $x^*{}_L = \dfrac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)} + \dfrac{3\theta_L + 2\theta_R}{5}$. Since $\dfrac{\partial x^*{}_L}{\partial\theta_L} = \dfrac{3}{5} + \dfrac{\alpha + \Delta\omega}{2(\theta_R - \theta_L)^2} > 0$, $x''_L > x'_L$.

Proposition 2
Given $E_1 = \langle\alpha',\theta_L,\theta_R,\omega_L,\omega_R\rangle$ and $E_2 = \langle\alpha'',\theta_L,\theta_R,\omega_L,\omega_R\rangle$, let (x'_L,x'_R) be the NE in E_1 and (x''_L,x''_R) be the NE in E_2. If $\alpha' = 0$ and $\alpha'' > 0$, $x''_L > x'_L$.

Proof: Since $x''_L - x'_L = \dfrac{\alpha''}{2(\theta_R - \theta_L)} > 0$, $x''_L > x'_L$.

Proposition 3
Given $E_1 = \langle\alpha,\theta_L,\theta_R,\omega'_L,\omega'_R\rangle$ and $E_2 = \langle\alpha,\theta_L,\theta_R,\omega''_L,\omega''_R\rangle$, let (x'_L,x'_R) be the NE in E_1 and (x''_L,x''_R) be the NE in E_2. Let $\omega'_L - \omega'_R \equiv \Delta\omega'$ and $\omega''_L - \omega''_R \equiv \Delta\omega''$. If $\Delta\omega' < \Delta\omega''$, then $x''_L > x'_L$.

Proof: Since $\dfrac{\partial x^*{}_L}{\partial\Delta\omega} = \dfrac{1}{2(\theta_R - \theta_L)} > 0$, $x''_L > x'_L$.

Proposition 1′
An environment is $E = \langle\alpha,\theta_L,\theta_R,\omega_L,\omega_R\rangle$, If $(x^*{}_L, x^*{}_R)$ is an equilibrium pair in E, $x^*{}_L < x^*{}_R$.

Proof: The uniqueness of the equilibrium pair is shown by the concavities of the two candidates' payoff functions in the proof above. Since $x^*{}_R - x^*{}_L = \dfrac{\theta_R - \theta_L}{5} > 0$, $x^*{}_L < x^*{}_R$.

Proposition 2′
Given $E_1 = \langle\alpha,\theta'_L,\theta'_R,\omega_L,\omega_R\rangle$ and $E_2 = \langle\alpha,\theta''_L,\theta''_R,\omega_L,\omega_R\rangle$, let (x'_L,x'_R) be the NE in E_1 and (x''_L,x''_R) be the NE in E_2. If $\theta'_R - \theta'_L < \theta''_R - \theta''_L$, then $x'_R - x'_L < x''_R - x''_L$.

Proof: It follows directly from $x^*{}_R - x^*{}_L = \dfrac{\theta_R - \theta_L}{5}$.

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press

https://doi.org/10.1017/S0007123404000213 Published online by Cambridge University Press