Electoral Politics as a
Redistributive Game

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Spatial models of electoral competition typically simplify the analysis by ignoring the question of internal constituency politics: constituencies are modeled simply as a distribution of ideal points along a set of issue dimensions. Matters related to the stability of divergent electoral coalitions have rarely been addressed. We explicitly take into account how differential rates of support by various groups in a constituency will influence candidates' campaign promises and the likelihood that stable electoral coalitions will be forged. Viewing campaign platforms as promised redistributions of welfare, we argue that the optimal strategy for risk-averse candidates will be to promise redistributions first and foremost to their reelection constituency and thereby to maintain existing political coalitions. We use evidence from the urban services literature to support our propositions.

Accounts of American electoral politics—by journalists, historians, sociologists, and political scientists—are filled with references to relatively stable group affiliations with the two major parties. In contemporary journalistic reports the identification of blacks or organized labor with the Democratic party, or of business with the Republican party, is accepted without much comment. The ethnoculturalist school of American historians emphasizes the degree to which ethnic and cultural subgroups in the nineteenth-century population formed the building blocks of the major parties' electoral coalitions (e.g., Benson, 1961; Formisano, 1971; Kleppner, 1970). One of the earliest and most influential theoretical perspectives on American voting behavior—the so-called social determinist model—offered an individual-level explanation of the group nature of electoral coalitions. Starting with the idea that citizens related to politics as members of various primary and secondary groups,

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and emphasizing the informal psychological mechanisms which enforce group conformity—on whatever matter, political or not—the social determinist model concluded that "a person thinks, politically, as he is, socially. Social characteristics determine political preference" (Lazarsfeld, Berelson and Gaudet, 1968, p. 27).

Although the social determinist model in its starkest form is no longer widely accepted, political scientists still often describe the electoral components of the Republican and Democratic parties in terms of ethnic, linguistic, cultural, religious, occupational, and racial cleavages. This tendency is evident, for example, in the theory of critical elections, which posits that "critical" or "realigning" elections periodically disrupt stable political alignments in the United States. Each realignment is pictured as introducing a new party system based upon reorganized coalitions of voters(Burnham, 1970; Key, 1955; for an exception, Brady, 1985).

Just as there seem to be relatively stable group affiliations at the national level with the two major parties, so also there appear to be stable electoral relationships between individual candidates and the groups which compose their constituencies. This point has recently been elaborated upon by Fenno (1978), who describes the kinds of relationships congressmen share with different types of constituencies within their geographic district.

A question this paper seeks to answer is why political relationships exhibit so much stability. Why do groups continue to support a given congressman (or mayor, governor, party. . .)? Why does a congressman continue to reward a given group? Why, in other words, are electoral coalitions stable?

The answers to these rather general questions undoubtedly have much to do with the group origin of candidates. A candidate's own ethnic, cultural or socioeconomic group often furnishes the initial bedrock of his support; and he may stick with them and they with him for the same reasons that social groups are cohesive to begin with: shared goals and experiences, and the kinds of primary group pressures identified by cognitive dissonance or balance theory. Presumably, however, the group origin of candidates and primary group pressures do not explain all stability in electoral coalitions. Here, we shall show that a certain degree and kind of stability is predictable even without these factors.

In order to motivate the modeling decisions made here, it is necessary first to investigate the question of coalitional stability in the context of the leading formal approach to the study of electoral competition—spatial theory. How does spatial theory pertain to the question of the stability of electoral coalitions? Presumably, the answer is that spatial stability induces stability in electoral relationships—with the same groups supporting the same candidates because of the positions they adopt.

Unfortunately, equilibrium results, at least in early spatial models, indicate that candidates will converge at the median of the distribution of voters (Downs, 1957; Davis, Hinich and Ordeshook, 1970). Thus, it is a bit hard to see lasting and divergent coalitions emerging naturally from the theory.

It therefore behooves anyone interested in explaining the existence of lasting electoral coalitions to search for additional features of elections not captured in early spatial theory. One might look to the role of primary elections (Aranson and Ordeshook, 1972), to the behavior of party activists (Aldrich, 1983), or to the personal policy beliefs of candidates (Wittman, 1973; Petry, 1982; Cox, 1984). Each of these approaches leads to non-convergent spatial equilibria; that is, the positions adopted by candidates in equilibrium do not converge (see, however, Calvert, 1985). Thus, there is at least the possibility of concluding something about the stability of coalitions based upon investigations of the stability of spatial strategies.

In this paper, we shall take a different approach. Rather than conceptualize the electoral game as one in which candidates adopt positions in a policy space, we shall view electoral politics as a redistributive game in which candidates' strategies are proposed redistributions of welfare among the various groups in their constituencies. The general notion of modeling electoral politics as a redistributive or zero-sum game has appeared in the work of Shepsle and Weingast (1981); Weingast, Shepsle and Johnsen (1981); Aranson and Ordeshook (1981a, b); Kramer (1983); Frohlich and Oppenheimer (1984); Cox, McCubbins and Sullivan (1984); and Coughlin (1985). Using this approach, the question of stability in electoral coalitions can be addressed more directly by examining which groups (in prospect) are most likely to benefit and which are most likely to suffer from candidate decisions.

One way to think of the shift in strategic venue which this paper proposes is as a reflection of Mayhew's distinction between position-taking and credit-claiming (Mayhew, 1974). Spatial models are easiest to interpret when one construes the various dimensions in the policy space as what Stokes (1963) has dubbed "position" issues; and it is then quite natural to view these models as models of position-taking more or less in Mayhew's sense of the term. The model proposed here, on the other hand, focuses directly on the distribution of welfare within the constituency and is easiest to view as a commentary on distributive or particularistic politics: what Mayhew discusses mostly under the rubric of credit-claiming. There is, however, an important distinction between the notion of credit-claiming as usually conceived and the kinds of behavior our model is best suited to explore. Credit-claiming typically brings to mind a congressman cutting the ribbon to a new dam in his district, the dam being viewed as a good for the whole district (paid

for by the tax dollars of other districts). In our model we wish to focus attention on the differential impact that pork-barrel policies can have within the constituency. Which construction firms will get subcontracts on the new highway? Which engineering firms will benefit from defense contracts? Which of the qualifying groups will receive CETA jobs, or have Operation Headstart funds targeted especially to them? The focus, in other words, will be on the intra-constituency consequences of distributive and redistributive politics.

NOTATION AND ASSUMPTIONS

We begin our theoretical development with the standard assumption that participants in the political process are purposive, rational, and self-interested. This general assumption entails the following characteristics of the relevant players. *Candidates* adopt redistributive strategies that serve their electoral objectives. *Citizens* vote for political candidates that promise them greater utility. We shall also assume that subsets of citizens with relatively homogenous and intensely held preferences form collectivities for the purpose of advancing their political objectives, and we adopt the convention of labeling such collectivities *groups.*

Specifically, consider a constituency in which there are G groups, indexed $g = 1,...,G$, and denote the number of members of the gth group by n_g. Two candidates, α and β, compete for the votes of these groups by promising redistributions of welfare: $x_\alpha = (x_{\alpha 1},...,x_{\alpha G})$ and $x_\beta = (x_{\beta 1},...,x_{\beta G})$. The gth component of the vector x_α indicates the net impact on the gth group's welfare which candidate α has promised, a similar interpretation holding for x_β. It is assumed that candidates, once elected, carry out their promises.[1] The interpretation is that candidates can, by distributing patronage, or manipulating the incidence of taxation, or allocating other distributive benefits of government, essentially achieve any in a large class of redistributions of welfare. Indeed, we shall assume that utility or welfare is unrestrictedly transferable (cf. Luce and Raiffa, 1957, p. 168) and that candidate promises are subject only to two constraints. First, for each group g there is a lower bound $-b_g$ on the value of both $x_{\alpha g}$ and $x_{\beta g}$, where $b_g \geq 0$. This means that no candidate can promise to deprive any group of an infinitely great amount of welfare. Second, candidates cannot promise in aggregate more than $B \geq 0$, an exogenously given amount (e.g., a federal grant). Putting these constraints together, the feasible set of strategies, W, available to each candidate

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[1] This is the usual assumption employed in spatial models of candidate competition. It assumes candidates *can* carry out any redistribution they promise. Possibly, candidates constrain their promises to what they can deliver in order to achieve a reputation for delivering on their promises (cf. Ferejohn and Noll, 1984).

is $\{x\epsilon R^G: x_g \geqslant -b_g$ for all g and $\Sigma x_g \leqslant B\}$. If $b_g = 0$ for all g, and $B > 0$, then the game concerns the distribution of an amount B among G groups. In a later section we shall consider this special case in the context of the distribution of patronage by urban machines. If $b_g > 0$ for all g, and $B > 0$, then both distribution and redistribution are involved. If welfare increases linearly with wealth, this case might be interpreted as follows: the legislator has $B which he may distribute among the groups in his constituency (e.g., discretionary development funds of some sort); he may also transfer funds from one group to another (e.g., by changing the incidence of taxation), subject to the obvious constraint that he cannot deprive any group of more than its net wealth (b_g).

Given these constraints, candidates choose strategies in order to maximize their expected votes.[2] Thus, α chooses $x_\alpha \epsilon W$ to maximize

$$EV_\alpha(x_\alpha,x_\beta) = \sum_{g=1}^{G} n_g P_{\alpha g}(x_{\alpha g},x_{\beta g})$$

where $P_{\alpha g}(x_{\alpha g},x_{\beta g})$ is the proportion of the gth group which will support α given that α promises an amount $x_{\alpha g}$, and β promises an amount $x_{\beta g}$. The shape of the vote proportion function $P_{\alpha g}$ presumably reflects a number of factors exogenous to the model, as for example the candidates' policy stands and their ascriptive attributes (Enelow and Hinich, 1982). For the present, we shall assume that the proportion of a group voting for candidate α is determined exactly once $x_{\alpha g}$ and $x_{\beta g}$ are known. However, one might adopt a stochastic viewpoint and interpret $P_{\alpha g}(x_{\alpha g},x_{\beta g})$ to be the proportion expected to support α. We pursue this interpretation later.

The vote proportion function $P_{\alpha g}$ satisfies various assumptions. It is assumed that $P_{\alpha g}$ increases as $x_{\alpha g}$ increases, and decreases as $x_{\beta g}$ increases. We also make the technical assumption that $P_{\alpha g}$ is twice-differentiable and concave in $x_{\alpha g}$; that is, the second partial derivative of $P_{\alpha g}$ with respect to $x_{\alpha g}$ exists and is non-positive. Similarly, we assume that candidate β seeks to maximize expected votes and that the function $P_{\beta g}$, which gives the proportion of group g's total votes going to β, is twice differentiable and concave in $x_{\beta g}$. Roughly, these assumptions mean that for both candidates there are diminishing marginal returns to investment in any given group; the more that is given to a group, the smaller the incremental or marginal response (though not, of course, the total response). To simplify the analysis, which is not concerned chiefly with turnout, it is also assumed that all voters vote, so that the

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[2] Since we assume that all voters vote, maximizing votes and plurality are equivalent.

expected proportion of the gth group supporting β is $1-P_{\alpha g}(x_{\alpha g}, x_{\beta g})$, and $EV_{\alpha}(x_{\alpha}, x_{\beta}) + EV_{\beta}(x_{\alpha}, x_{\beta}) = \Sigma n_g$.

Before moving on to our results, we should emphasize that no assumption is made concerning the symmetry of $P_{\alpha g}$(or $P_{\beta g}$): it is not necessarily the case that $P_{\alpha g}(a,b) = 1-P_{\alpha g}(b,a)$ for all or any g. In other words, groups may respond differently to the two candidates.

EXISTENCE OF NASH EQUILIBRIUM

A fundamental question about the electoral game just outlined concerns the existence of an equilibrium in pure strategies. As is well known, equilibria in multidimensional spatial models of electoral competition often fail to exist. In probabilistic spatial models (see Coughlin, 1984), however, and in the redistributive model presented here, existence of equilibrium is guaranteed by the concavity assumptions. The method of proof exploiting concavity was first used in a voting model by Hinich, Ledyard, and Ordeshook (1973). An easily generalized proof is provided for a special case of the redistributive model by Coughlin (1985).

CHARACTERIZATION OF EQUILIBRIUM STRATEGIES

Given that equilibrium strategies do exist, are they such as to reinforce or promote the stability of coalitions? The answer to this question has two parts: The first is concerned with a characterization of candidates' equilibrium strategies; the second with the meaning of coalitional stability. Some insight into the nature of equilibrium strategies can be gained by considering an analogy to investment. Each group can be considered as an investment paying off in expected votes. The instantaneous rate of return to α of the gth group, as a function of $x_{\alpha g}$, is (holding $x_{\beta g}$ constant, and suppressing the α subscript on $P_{\alpha g}$):

$$r_g(x_{\alpha g}) = n_g [\partial P_g / \partial x_{\alpha g}(x_{\alpha g}, x_{\beta g})]$$

Before any funds have been distributed, the relevant rate of return is $r_g(0)$. If the candidate had only a very small amount to invest, he might promise it all to that group, say g_1, with the largest initial rate of return. As the amount to invest grew, however, enough might be promised to g_1 so that its rate of return fell (since $dr_g/dx_{\alpha g} < 0$ from the concavity of P_g) to equality with the second best original investment, in which case the candidate would invest in both these groups. In general, it can be shown that

THEOREM 1: In the redistributive electoral game, candidates will promise benefits to those groups in their constituencies with the highest electoral rates of return, and promise no or even negative

benefits (i.e., costs) to those with the lowest rates of return.
  Proof: See appendix.

Hence, the optimal promised redistribution of welfare x^* is such that
a class of "high return" groups receive benefits $(x_g{}^* > 0)$, and a class
of "low return" groups bear costs or receive nothing $(x_g{}^* \leqslant 0)$. In other
words, in this model one does not expect evenhandedness in the allocation
of patronage or other divisible governmental benefits (e.g., urban
services).
  It should be noted that this result does not necessarily say anything
about the absolute amounts which various groups are promised. It is
possible, for example, that $x_g{}^* < x_h{}^*$ for some $g < h$. That is, a given
group is not necessarily promised more than all less responsive groups.
On the other hand, a given group is assured that, if any less responsive
group benefits, then so will it. In this sense, it can be said that the most
responsive groups are taken care of first.

STABILITY OF ELECTORAL COALITIONS

  The equilibrium strategies derived in theorem 1 describe how
candidates will structure their relationships with groups within their
constituency. In order to clarify the connection between theorem 1 and
the question of electoral stability, we shall confine attention to the
distributive case and introduce a simple classification of groups based
in part on the recent work of Fenno (1978). Let us imagine that at time
t-1, before the candidates make their decisions, each classifies groups
into three categories: (1) *support groups*: those who have consistently
supported him in the past and to whom he looks for support in the
future—what Fenno calls the reelection constituency; (2) *opposition
groups*: those who have consistently opposed him, and whom he thinks
of as "the people I can't reach with a ten-foot pole," or about whom
he says, "They won't support me anyway and they'll find more reasons
for opposing me after they've heard me" (Fenno, 1978, pp. 82, 21); and
(3) *swing groups*: those who have been neither consistently supportive
nor consistently hostile.
  Naturally, when one speaks of support and opposition groups in the
context of two-candidate competition, the presumption is that there is
a certain bipolarity to politics: the support groups of one candidate tend
to be the opposition groups of the other. This possibility is allowed for
in our model since the P_g functions are not assumed to be symmetric.
A group may be relatively responsive to promises made by one candidate,
yet at the same time be unresponsive to promises made by the other;
and the degree of responsiveness, which is fixed in the short term, may

depend on prior political experience (and ascriptive attributes of the candidates; cf. Enelow and Hinich, 1982).

We shall say that coalitional relationships are stable, or that candidate strategies are stabilizing, when candidates allocate benefits in such a fashion as to maintain the coalitional structure which obtains before their decisions are made. Operationally, a strategy will be considered more stabilizing the more benefits it directs to support groups, thus reinforcing the existing coalitional structure; and less stabilizing the more benefits it directs to swing groups, in an apparent effort to expand the electoral coalition, or to opposition groups, in an effort to alter the existing coalitional structure.

The question now is whether the pattern of allocation prescribed by theorem 1 is stabilizing or not. An immediate problem in answering this question arises in that theorem 1's conclusion refers to the counterfactual order in which groups receive benefits, rather than to the absolute levels of benefits received. In order to state a result referring to absolute levels, we need a somewhat stronger assumption ordering the groups in terms of their electoral rates of return. In particular, assume that when β plays his equilibrium strategy, $x_\beta{}^*$,

$$(A) \quad r_1(t) > \ldots > r_G(t) \text{ for all t.}$$

This assumption is stronger than that used in theorem 1 since the inequality holds for all levels of promised benefits t. Given (A), the electoral rate of return of group g will never fall below the rate of return of any group h, with $g < h$, when both groups are promised the same amount. We now have

> THEOREM 2: In the distributive electoral game ($b_g = 0$ for all g), given (A), candidate α's strategy in equilibrium will satisfy $x_{\alpha g}{}^* > x_{\alpha h}{}^*$ for all $g < h$ such that $x_{\alpha g}{}^* > 0$, and $x_{\alpha g}{}^* = x_{\alpha h}{}^*$ for all $g < h$ such that $x_{\alpha g}{}^* = 0$.
> *Proof*: See appendix.

What this theorem says is that if groups can be strongly ordered in terms of electoral responsiveness, then they can be similarly ordered in terms of the amounts they are promised by a candidate: unresponsive groups will be promised little, responsive groups relatively more.

Does such an allocational strategy promote the stability of electoral coalitions? This question will be answered in two steps. First, we shall discuss the likely responsiveness of support, swing, and opposition groups, arguing that—whatever one thinks of the relative responsiveness of support as opposed to swing groups—opposition groups are less responsive than either, and hence should receive few benefits. Second, we shall argue that candidates are generally less uncertain about the

electoral responses of support groups than they are about the responses of swing groups, and that their attitude toward risk is thus an important determinant of allocational strategies. In particular, risk-averse candidates should invest relatively more in their support groups (thus increasing stability), while risk-acceptant candidates should invest relatively more in swing groups (thus decreasing stability).

Step 1. It is in general unclear whether swing or support groups are more responsive. In the colloquial jargon of the discipline, it would seem that swing groups are sometimes defined as those which have a high responsiveness to both candidates; and conventional wisdom suggests that candidates for office will struggle to please these swing groups, perhaps even to the point of ignoring their core supporters. Further, one sometimes runs across the notion that certain support groups have no real options, and are thus fairly unresponsive (for example, the Negroes and the Democratic party). On the whole, however, there does not seem to be any clear a priori reason, based on our definition of swing and support groups, to rank swing groups uniformly ahead of (or behind) support groups.

On the other hand, it does seem fairly clear that opposition groups should be relatively unresponsive. Would conservative groups in Massachusetts respond as much as would liberal groups to benefits— even actually delivered benefits—that came their way through Ted Kennedy's good offices? Possibly, but it seems more likely that they would just chalk these benefits up to imperfections in Kennedy's control of policy, which had not allowed him fine enough control over the distribution of benefits to exclude them. Many politicians develop an adversarial relationship with certain groups in their constituencies and, in our model, these opposition groups should rarely be promised benefits. But such a strategy on the part of candidates obviously will not encourage opposition groups to become any more responsive in the future. Hence, the behavior of candidates toward opposition groups will tend to preserve the existing coalitional structure.

Step 2. What of candidates' treatment of support and swing groups? It will be useful in discussing this to examine again the investment analogy introduced earlier. The return on an investment came in the form of an increase in P_g, the proportion of the group expected to vote for the candidate. On an investment by α of $x_{\alpha g}$, for example, this proportion would increase from $P_g(0, x_{\beta g})$ to $P_g(x_{\alpha g}, x_{\beta g})$, yielding an increase in expected votes of $n_g[P_g(x_{\alpha g}, x_{\beta g}) - P_g(0, x_{\beta g})]$. We now wish simply to note that not all expected increments in P_g are created equal: some are riskier than others.

On the one hand, a candidate's core supporters—composing what Fenno refers to as the primary constituency—are well-known quantities.

The candidate is in frequent and intensive contact with them and has relatively precise and accurate ideas about how they will react. On the other hand, swing groups are by definition unattached. The conventional wisdom, that this makes them "open game," is probably correct; but they are "open" to the other candidate as well. The point is not that candidates never go after swing groups—they obviously do—but rather that swing groups are riskier investments than are more well-known groups.

If the goal assumed for candidates is changed from simple maximization of expected votes (which implicitly assumes risk neutrality) to maximization of a concave function of votes (reflecting an assumption of risk aversion), then the greater riskiness of swing groups will induce an apparent conservatism on the part of candidates in terms of electoral investment, with core supporters being "over-invested" in, at least in terms of a straight expected votes calculation. For example, if a candidate received a single indivisible goodie that he could promise to the group of his choice, he would evaluate each group as a probability density function f_g over vote increments, and the decision would depend not just on the mean or expected vote increment $\mu_g = \int v f_g(v) dv$, but also on the variance $\sigma_g^2 = \int (v - \mu_g)^2 f_g(v) dv$. In certain situations the choice between groups would be straightforward. If $\mu_g \geqslant \mu_h$ and $\sigma_g^2 \leqslant \sigma_h^2$, with at least one of the inequalities being strict, then g would clearly be the superior investment. In other cases, however, the choice between two groups would be more complex. Just as in simple finance models of dollar investment, there is a trade-off between mean return and risk class for a risk-averse investor. If $\mu_g > \mu_h$ but $\sigma_g^2 > \sigma_h^2$ then the ultimate choice between g and h depends upon how this trade-off is made. The more risk-averse a candidate is, the more emphasis he will give to avoiding a high variance investment, relative to the goal of achieving a high expected return. The greater riskiness of swing groups, then, combined with the proverbial risk-averseness of incumbents, leads to the conclusion that incumbents will view their core and other supporters as better electoral investments than would be the case on a straight vote-by-vote calculation. Candidate strategies, then, can be summarized in the following proposition:

> *Proposition*: Politicians will adopt strategies in which they invest little (if at all) in opposition groups, somewhat more in swing groups, and more still in their support groups.

This proposition is consistent with Fenno's (1978) discussion of congressmen and their home styles.[3] Thus, given certain assumptions,

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[3] In discussing members' perceptions of their constituency, Fenno's observations are generally consistent with our proposition, stating, for example, "Every member has some

our theory predicts that the redistributive strategies candidates adopt in equilibrium will serve to maintain the existing coalitional structure.

This proposition stems from five basic sources:[4] (1) theorem 2, (2) the assumption that opposition groups are less responsive than either swing or support groups, (3) the assumption that candidates are risk-averse, (4) the assumption that swing groups are riskier investments than support groups, and (5) the assumption that the redistributive game is Nash. We will now examine the consequences of altering these conditions.

(1) Among other things, theorem 2 rests on the assumption that $P_{\alpha g}$ is increasing in $x_{\alpha g}$. This may not gibe with certain intuitive notions about the behavior of groups. For example, it has been suggested to us that a politician's core supporters are those who will stick with him through thick and thin. If "thick and thin" refers to the level of promised benefits, then this seems to say that $P_{\alpha g}(.,x_{\beta g})$ is a constant function for all core support groups. If this indeed is so, then core support groups will be totally unresponsive and will be given nothing (in the pure distributive case), while swing and perhaps even opposition groups will receive the bulk of investment. Hence, in our terms, the candidate's strategy will be destabilizing.

In the long run, however, it seems irrational for any group (supportive or not) to be totally unresponsive to redistributions of welfare. In a more complete model, groups would presumably be able to alter their responsiveness, and no group would choose to be simultaneously unresponsive to both candidates.

Another assumption that underpins theorem 2 also touches implicitly on the question of how group response (P_g) functions are determined. Assumption (A) asserts that groups have different levels of responsiveness to candidate α. Three points should be made. First, if groups have identical responsiveness to both candidates, then in equilibrium the distributive share going to a particular group will be directly proportional to the size of the group (Coughlin, 1985). Second, in order for the assumption that groups respond differently to the candidates to be fully justified, we would have to include groups as full gaming agents in the model. This is a task for a future paper; for present purposes, we wish simply to explore the possible consequences of differential group responsiveness.

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idea of his . . . 'lucrative territory.' During a campaign, these people will often be 'targeted' and subjected to special recruiting or activating efforts." On the other hand, Fenno points out, "A congressman's sense of the people least likely to join his reelection constituency is usually well developed. . ." and ". . . it is from these perceived never-supporters that the objects of his attacks will come" (Fenno, 1978, p. 9).

[4] The basic result we derive is seemingly consistent with an analysis of candidate-group interaction as an assurance problem (cf. Runge, 1984).

Third, even without actually constructing a model in which groups play a more explicit decision-making role, it is fairly clear that any such model could yield differential group responsiveness in equilibrium only in certain ways. In particular, as noted above, no rational group would choose, if it could help it, to be simultaneously unresponsive to both candidates.

Another assumption underpinning theorem 2 is the concavity of the P_g functions. A plausible alternative assumption might be that P_g is not concave over the entire range of prospective distributions but, rather, is convex over some range as well. As it turns out, if existence is granted, the proof of theorem 2 does not require any other assumption about the P_g functions than that embodied in condition (A).[5]

(2) If opposition groups are no less responsive than swing and support groups, then theorem 2 would predict that they may be promised some distributive benefits. Although it may be rare for opposition groups to satisfy this condition, examples can perhaps be found. In 1932, for example, black Americans were traditionally an opposition group for the Democratic party, yet Roosevelt bid for their support.

(3) If candidates are risk-acceptant as opposed to risk-averse then they may adopt less stabilizing strategies—i.e., invest more in swing groups. Challengers may plausibly be more risk-acceptant, and hence we should find them willing to gamble on attracting swing groups to their cause. Certainly one finds challengers in general more willing than incumbents to take risks on policy positions.

(4) If swing groups are generally not perceived as riskier investments by candidates, then preceding arguments do not hold. One no longer

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[5] The proof can be modified as follows. Suppose that $x_\alpha{}^*$ is optimal and there exists $g < h$ such that $x_{\alpha g}{}^* \cdot x_{\alpha h}{}^*$. Consider the strategy x_α, equal to $x_\alpha{}^*$ except that $x_{\alpha g} = x_{\alpha h}{}^*$ and $x_{\alpha h} = x_{\alpha g}{}^*$. Then

$$\Delta EV_\alpha = EV_\alpha(x_\alpha{}^*, x_\beta{}^*) - EV_\alpha(x_\alpha, x_\beta{}^*)$$
$$= [n_g P_g(x_{\alpha g}{}^*, x_{\beta g}{}^*) - n_h P_h(x_{\alpha g}{}^*, x_{\beta g}{}^*)]$$
$$- [n_g P_g(x_{\alpha h}{}^*, x_{\beta h}{}^*) - n_h P_h(x_{\alpha h}{}^*, x_{\beta h}{}^*)]$$

The sign of this expression can be evaluated by examining the function

$$F(t) = n_g P_g(t, x_{\beta g}{}^*) - n_h P_h(t, x_{\beta h}{}^*)$$

Note that

$$F'(t) = r_g(t) - r_h(t) > 0 \text{ for all } t$$

so that F is a strictly increasing function. If $x_{\alpha g}{}^* < x_{\alpha h}{}^*$ then $\Delta EV_\alpha < 0$, contradicting the optimality of $x_\alpha{}^*$. If $x_{\alpha g}{}^* = x_{\alpha h}{}^*$ and $x_{\alpha g}{}^* > 0$ then $r_g(x_{\alpha g}{}^*) = r_h(x_{\alpha h}{}^*)$ from the Kuhn-Tucker conditions, a contradiction of (A). QED.

expects risk-averse candidates to adopt any more stabilizing strategies than risk-acceptant candidates.

(5) We have used the concept of Nash equilibrium in analyzing the game between candidates. The Nash assumption, that candidates take the actions of their opponents as given in developing their own strategies, has the virtue of being standard and simple. There are, however, other ways to model candidate competition. For example, one might assume that a particular candidate, say α, moves first in the competition for votes, anticipating the response of his opponent. Candidate α in this case would be called a Stackleberg leader and candidate β a Stackleberg follower (cf. Friedman, 1983). The appropriate solution concept would now no longer be Nash, but rather Stackleberg equilibrium. Kramer (1983) has investigated the Stackleberg case in a model similar to ours and finds that, although the Stackleberg follower behaves as described by our proposition, the leader behaves rather differently.

URBAN POLITICS, PATRONAGE, AND SERVICE DELIVERY

In this section, we consider some specific applications of the ideas developed so far to the allocation of political patronage and the delivery of urban services. The first of these applications, where a fixed number of jobs are to be allocated among the various groups in the electorate, can be modeled as the special case of pure distribution. Hence, it should be encompassed by theorem 2.

Empirically, theorem 2 indicates that one ought to see the closest supporters of risk-averse candidates being promised the lion's share of whatever benefits may accrue from election. Although we think that this is certainly not an unreasonable conclusion, it is still a bit difficult to nail down when candidate strategies are interpreted as promises. Elsewhere (Cox, McCubbins, and Sullivan, 1984; McCubbins and Sullivan, 1984), theorem 2 is interpreted in terms of an incumbent candidate's actual delivery of distributive benefits; we propose now to use this interpretation in considering the distribution of patronage by an incumbent.

If the incumbent (mayor, governor, or boss) is risk-averse, one should find that his core supporters receive more of the available patronage than is their due on a strict vote-by-vote accounting. What does one actually find? A recent study of the allocation of 675 CETA jobs in New Haven by the Barbieri machine found that "jobs were indeed thickly clustered in the heavily Italian East Side wards which were the core of the machine," and that, "in terms of a straight vote calculation, the machine's 'core wards' were actually over-rewarded" (Johnston, 1979, pp. 387, 389). This kind of finding is echoed elsewhere. The Chicago machine in the early and mid-twentieth century gave the Irish a

"disproportionate share of the patronage jobs" (Rakove, 1975, p. 34).
The Irish did well in San Francisco, too, securing a "disproportionate
share of public sector resources—especially public jobs . . ." (Erie, 1978,
p. 284). In general, Holden argues that patronage is distributed according
to two conservative rules: "Hold what you've got!" and "Take care of
your own!" (Holden, 1973, pp. 96-7). Interestingly, some researchers have
found the tendency to over-reward core supporters puzzling, and have
tended to interpret it as evidence of inefficiency or sub-optimality in
the distribution of patronage (Johnston, 1979; Holden, 1973). From our
perspective, it is a straightforward and optimal response of politicans
who are risk-averse.

Patronage is the most visible and obviously redistributive strategy
employed by politicians. There is widespread belief that other activities
of local governments are also unequally and specifically targeted. In
particular, many believe that the benefits of urban government flow
mainly to the rich and away from the poor—indeed, that receipt of
benefits from urban services increases monotonically with income
(Antunes and Plumlee, 1978; Jones and Kaufman, 1974; Merget and
Berger, 1982; Peterson, 1981). Although there is some evidence for this
proposition (Levy et al., 1974; Jones and Kaufman, 1974), most researchers
have not discovered a monotone relationship between level of services
and income (Antunes and Plumlee, 1978; Jones, 1978; Jones et al., 1980;
Lineberry, 1977; Lineberry and Sharkansky, 1974; Mladenka, 1980, 1981).
Instead they typically find a curvilinear relation between allocation of
urban service and income, with both poor and rich neighborhoods
receiving less (in some relative sense) than middle-class areas. Most
interpret this to mean that the distribution of urban services is highly
bureaucratized. Allocation decisions are insulated by the sheer inertia
of bureaucratic procedure from political influences and consequently
distributed fairly equitably.

We interpret this evidence somewhat differently. First, poor people
do receive less. It is not hard to account for the low level of urban
services in poor neighborhoods: poor people don't vote, and hence are
not a part of any candidate's core constituency. Second, many of the
urban services examined in this literature—parks, buses, fire departments,
public schools, and so forth—are arguably inferior goods. That is, the
demand for them decreases as income increases: the rich do not spend
Sundays in the park or travel by bus or send their children to public
schools, and they prefer to buy fire insurance privately rather than publicly
provide fire departments (Miller, 1981). Thus, the finding that wealthy
neighborhoods receive fewer of these sorts of urban services is
understandable as well. Finally, the core support groups for most
politicians come from the middle class. Thus, it is not anomalous to

find that middle-income neighborhoods receive the highest level of urban services.

In testing our theory, what sorts of expectations would we have with respect to urban service delivery? Our expectations will hinge on the properties of the urban services. Capital goods such as parks, fire departments, hospitals, public libraries, public housing, jails, museums and so forth are both durable—lasting a long time—and relatively difficult to target finely (i.e., to direct the benefits of the service to individuals). That they are durable means that changes over time in the control of local expenditures may spread these goods equitably through the city, even if any single decision was politically targeted. That they are difficult to target finely means that it is difficult to provide middle-class Republicans with an art museum without also providing middle-class Democrats with one. Thus, capital goods do not easily meet the basic requirements of our model—that the politicans be able to effect any in a wide range of distributions of welfare among the politically relevant groups in the constituencies.

Local services that are not finely targetable may also fail to meet the conditions of our theory. If the city maintains a park, for example, the benefits of maintenance accrue to all users—a group that is defined chiefly in geographic terms. Only when geographic and political groups coincide, as they of course sometimes do, does our theory apply. Other urban services—such as police, fire protection, garbage collection, street maintenance and snow-plowing—are more targetable. We would expect, on this ground, that politicans might be tempted to use these services politically, and there is anecdotal evidence that they do. There are other features of these services, however, that may militate against their being used politically. For example, jobs in fire, police, garbage, and street-clearing bureaucracies may be politically useful in themselves. Any curtailment of service might require a curtailment of employment and hence of patronage.

The kinds of governmental benefits most likely to be dealt with in a manner consonant with our theory are those that, like patronage, are finely targetable. The incidence of local taxation, the issuance of zoning variances, the granting of permits and licenses, and certain kinds of specific regulatory ordinances would seem to be the policies to which our theory is most readily applicable.

We would also expect that whenever the delivery of urban services is through administrative agencies, politicans would seek to design the procedures and rules governing decision making within the bureaucracy in order to bias the distribution of services to their support groups (cf. McCubbins, 1985). Rich (1978) and Merget and Berger (1982) recognized the possibility of institutional bias in service delivery, and Jones (1981)

found that the bureaucracy's decision rules had distributional consequences.

Insofar as politicans can design the rules by which bureaucratic decisions are made, they can also (at least indirectly) influence the set of citizens that bring demands or complaints before the bureaucracy for redress. If representation before the bureaucracy has distributional consequences, we would expect politicans to design the rules, and provide extra-governmental means (e.g., party organizations) to promote access to decision making on the part of their supporters (cf. Weingast, 1984; McCubbins and Schwartz, 1984). Indeed, though not conclusively supporting these propositions, Aberbach and Walker (1970) and Mladenka (1981) found that citizen contacts with the bureaucracy are not equitably distributed. Fox (1974), Jones (1981), Lipsky (1970), Parenti (1970), and Sjoberg et al. (1966) found that parties and precinct organizations also favored certain groups in translating citizen demands to the bureaucracy.

CONCLUSION

This paper has investigated the stability of electoral coalitions from the point of view of a redistributive conception of electoral politics. Most recent theoretical research on electoral competition assumes that candidates compete by taking positions on a number of issues of public policy. This traditional spatial or position-taking model deals only indirectly with the distributive side of electoral politics—for example, the pork barrel, casework and credit-claiming. The approach taken here emphasizes these latter features of electoral politics and is based on a structure in which candidates compete by promising direct redistributions of welfare among the various groups in their constituency. Electoral politics, in other words, is viewed as a two-person redistributive game. After noting the existence of a Nash equilibrium for this game and characterizing equilibrium strategies, we show that a candidate's attitude toward risk will affect the stability of his coalitation relationships. In particular, we argue that risk-averse candidates will tend to over-invest in their closest supporters (from the point of view of maximizing their expected vote), just as risk-averse investors will tend to over-invest in low-risk securities (from the point of view of maximizing the expected value of their portfolios). Thus, the core groups of a given candidate's or party's coalition will tend to get locked in and the fluidity of electoral coalitions which might be expected from a vote-maximizing standpoint will be mitigated.

It should be noted that our analysis has focused exclusively on the decision making of candidates. A similar partial equilibrium argument

can be made concerning groups. If one views candidates as givens of the analysis, groups can be viewed as investing effort, contributions, and votes in the hope of a return in distributive (or other) policy. Risk aversion on the part of groups should then in a similar fashion make for coalitional stability.

It should also be noted that our analysis is static and depends upon assumptions regarding adjustments. Implicitly, we have assumed a retrospective adjustment process;[6] the proportion of a group voting for a given candidate depends not just upon promised benefits, but also upon past delivery of benefits. Obviously, further research on the question of coalitional stability and redistributive politics ought to include the deveopment of a comprehensive model which includes both candidates and groups as gaming agents in repeated interactions.

APPENDIX

Proof of Theorem 1:   We shall consider the special case in which there is strict inequality betweeen the groups' electoral rates of return:

$$r_1(0) > r_2(0) > ... > r_G(0)$$

From the Kuhn-Tucker theorem, we know that (dropping the α and β subscripts):

(1) $r_g(x_g^*) = r_h(x_h^*) = t$ for all g,h such that $-b_g < x_g^*$ and $-b_h < x_h^*$.

(2) $r_g(x_g^*) \leqslant t$ for all g such that $x_g^* = -b_g$.

Consequently, $x_g^* > 0$ and $h < g$ implies $x_h^* > 0$. For, suppose not. Then $x_g^* > 0$ and, for some $h < g$, $x_h^* \leqslant 0$. Since $x_g^* > 0$, from (1) we know $r_g(x_g^*) = t$. It is also the case that $r_h(x_h^*) \leqslant t$, implying $r_g(x_g^*) \geqslant r_h(x_h^*)$. But since P_g is concave in x_g and P_h concave in x_h, $r_g(x_g^*) \leqslant r_g(0) < r_h(0) \leqslant r_h(x_h^*)$, a contradiction. A similar argument shows that $x_g^* < 0$ and $h > g$ implies $x_g^* < 0$. QED.

Proof of Theorem 2:   From the Kuhn-Tucker theorem, we know that

(1) $r_g(x_g^*) = r_h(x_h^*) = t$ for all g,h such that $x_g^*, x_h^* > 0$.

(2) $r_g(x_g^*) \leqslant t$ for all g such that $x_g^* = 0$.

Now, suppose $g < h$ and $x_g^* > 0$. Clearly if $x_h^* = 0$, then $x_g^* > x_h^*$. If $x_h^* > 0$, then $r_g(x_g^*) = r_h(x_h^*)$, implying [in light of (A) and $dr_g/dx_g < 0$] that $x_g^* > x_h^*$. Similarly, suppose $g < h$ and $x_g^* = 0$. If $x_h^* > 0$, then $r_h(x_h^*) = t \geqslant r_g(x_g^*)$ by (1) and (2), contradicting (A) and $dr_g/dx_g < 0$. Thus, $x_h^* = 0$. QED.

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[6] For our comparative static results (i.e., theorems 1 and 2), we do not need to assume anything about the adjustment process; we merely need to assert that the dynamic process is stable.

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