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THE POLITICS OF AMBIGUITY

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ABSTRACT

Politicians have generally two motives: they wish to hold office as long as possible and wish to implement their preferred policies. Thus they face a trade-off between the policies which maximize their choices of reelection and their most preferred policies (or the policies most preferred by the constituency which they represent). This paper analyzes this trade-off in a dynamic electoral model in which the voters are not fully informed about the preferences of the incumbent. First, we show that in general there is incomplete policy convergence: the incumbent follows a policy which is intermediate between the other party ideal policy and his own ideal policy. Second, we show that under some circumstances, the incumbent has an incentive to choose procedures which make it more difficult for voters to pinpoint his preferences with absolute precision. Thus, politicians may prefer to be ambiguous and "hide", at least up to a certain extent, their true preferences. This result holds for a wide range of parameter values and, in some range, even if voters are risk averse.

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1. Introduction

Politicians are generally motivated by two desires: they want to hold office as long as possible and have preferences over policy issues. On one hand they are selfish, in the sense that they care about their appointment *per se*, on the other hand they represent the interest of their own constituencies and, generally, different constituencies have different preferences over policy issues. Thus, politicians face a trade off between the policies which maximize their chances of reelection and the policies which are most preferred by the constituency supporting their party.

Most of the literature based upon the contribution of Downs (1957) emphasizes only the first motive. In this case when politicians are only "office motivated", one should observe complete policy convergence in a two-party system.[1] Instead, if one considers the interplay of the two motives, complete policy convergence may not be the electoral equilibrium. (Wittman (1977), (1983), Calvert (1985), Bernhard-Ingberman (1985)).

This paper analyzes the trade-off between the preferences of the party (or candidate) and its popularity in a two periods model in which voters are not fully informed about the preferences of the incumbent. Voters observe the consequences of the policy actions taken by the party in office but not the actual actions. Since policy outcomes and policy actions are positively, albeit imperfectly, correlated policy outcomes convey some information to voters about the incumbent's preferences. This asymmetry of information between voters and the policymaker allows him to strategically influence future electoral outcomes, even if voters are generally aware of his motives.

Our analysis builds upon work by Alesina (1987a, b) and Cukierman-Meltzer (1986b). Alesina (1987a) emphasizes the difference between announcements and actual policies in a finitely repeated electoral game with rational and informed voters. If voters are perfectly informed about the objectives of the two-parties, they will not believe any pre electoral policy announcements other than those which reflect the "true" preferences of the parties. Thus, the parties are locked into their "ideological position" (i.e. their most preferred policy). In this case, the unique time-consistent equilibrium implies no policy convergence: the two parties follow their most preferred policies even if they attribute an extremely low (but positive) weight to their "ideology" relatively to their "love for office". In an infinitely repeated game even ideological parties can achieve some degree of policy convergence by virtue of reputational mechanisms. (Alesina (1987b) presents an application of this model of political competition to macroeconomic policy).

In this paper we consider a more realistic situation in which the voters are not perfectly informed about the preferences of politicians. We present a two-period model. In the first period the party in office can choose between its own most preferred policy or how much to converge towards the other party's bliss point to increase its chances of reappointment. At the end of the period there are elections and in the second period the elected party follows its own most preferred policies, since there is no future.

Two sets of results are shown. First we characterize the equilibrium policy in the first period as a function of several parameters. We show that the party in office in the first period never follows its most preferred policy: it moves away from this ideological position towards the other party's ideal policy, in order to increase its chances of reappointment. In general there is incomplete convergence: the party in office in the first period, follows a policy which is intermediate between the other party's ideal policy and its own ideal policy. The distance between the incumbent bliss point and the policy which is followed in the first period is positively correlated with the weight attributed to the utility of being reappointed relatively to the weight attributed to the "ideology"; to the discount factor of the party in office (subject to some restrictions) and to the degree of "persistence" of the party's preferences, defined as the correlation of future preferences of the incumbent with current preferences.[2]

Second, we consider the choice of the level of "ambiguity" as endogenous. "Ambiguity" is defined as the "noise" between the policy outcome observed by voters and the policy instrument chosen by the policymaker. We show that, under a wide variety of circumstances, the incumbent has an incentive to choose procedures which make it more difficult for voters to pinpoint the party's preferences with absolute precision. In such cases the incumbent chooses procedures which imply some ambiguity, even if ambiguity could be completely eliminated. The reason is simple: some ambiguity enables the policymaker to exploit the trade-off between "ideology" and likelihood of reappointment. By contrast with no ambiguity, the policymaker is "locked" at his ideological position, because voters "see through" his intentions. As a result, if the policymaker can choose the degree of ambiguity, he may not choose zero ambiguity. For some parameter values, this result holds even if voters are risk averse. This leads to an interesting comparison with the results of Shepsle (1972) and McKelvey (1980).

The basic model is presented in Section 2. The optimization problem of the incumbent is solved in Section 3. Section 4 characterizes the equilibrium as a function of several variables. Section 5 considers the endogenous determination of the level of ambiguity. The last section summarizes the main results of the paper and suggests several extensions.

2. The Model

Consider a two-party system and denote the parties "x" and "y". The two parties are both "politically motivated" and "office motivated." They are "politically motivated" because they represent the interest of different constituencies, and the two parties adopt the objectives of those constituencies as their own. The parties are also "office motivated": they benefit from being in office, regardless of the policy implemented. The cases in which the incumbent is only "office motivated" or only "politically motivated" emerge as particular cases of the general model.

When the two parties are only "politically motivated" their objective functions are given by equation (1) and (2) respectively.

$$U(z) = -\frac{1}{2}\sum_{t=0}^{1} q^t(z_t-c_t)^2 \quad \text{for party } x; \tag{1}$$

where $0 < q \leq 1$;

$$V(z) = -\frac{1}{2}\sum_{t=0}^{1} q^t z_t^2 \quad \text{for party } y. \tag{2}$$

We will sometime refer to (1) and (2) as to the "ideology" of the two parties. The policy issue is represented by z; the discount factor, q, is identical for the two parties. The quadratic specification is adopted for simplicity. The two parties have different bliss points: the bliss point of party y is assumed constant over time and it is normalized to zero, with no loss of generality. The bliss point of party x, instead, is allowed to change over time to capture changes in preferences. The stochastic behavior of this bliss point is given by:

$$c_t = \bar{c} + \eta_t \qquad (3)$$

where: $\bar{c} > 0$; $\eta_t = \rho\eta_{t-1} + \varepsilon_t$; $0 < \rho \leq 1$. (4)

The random variable ε is distributed uniformly between $-b_\varepsilon$ and b_ε and has therefore zero mean. Also b_ε is such that the realization of c_t for any t is bounded to be positive. In other words, the bliss point of party x is bounded to be always to the right of party's y bliss point.[3] This assumption is made for both simplicity and realism. The "persistence" in tastes (i.e. a positive ρ) is crucial in the solution of the model because it implies that the current policy of party x contains information about the future objectives of this party. Note that the case in which a taste shock occurs only in the first period, (i.e. $\varepsilon_2 = 0$), can be handled as a special case of this model.

In addition to (1) and (2), the two parties may also attribute a positive utility to being in office, per se, irrespectively of the policies followed. We denote by h the utility of being in office per se. Also, let α be the weight given to the ideology and $(1-\alpha)$ the weight given to the utility of being in office (i.e. h).

When a party is in office it chooses a policy instrument to affect the policy outcome z. The policy instrument and the policy objective are linked by the following linear stochastic relations.

$$z_t = x_t + u_t \quad \text{if party x is in office} \qquad (5)$$

$$z_t = y_t + u_t \quad \text{if party y is in office} \qquad (6)$$

$$u_t \sim (0, \sigma_u) \qquad (7)$$

where "x" and "y" are the choices of policy instruments of the two parties when in office and u_t is distributed independently of ε_t. There is imperfect control of the policy outcome. For instance, in the case of economic policy, the economic relationship between instrument and target is generally stochastic, because the economy is subject to unexpected shocks. Since the relation between instrument and target is identical, irrespectively of which party is in office, we are implicitly assuming the same degree of "competence" for the two parties.[4] In the first part of the paper we assume that σ_u^2 is given exogenously. In Section 5 we consider the case in which σ_u^2 can be chosen by the party in office.

Elections are held at the end of period "zero" so that a "period" is defined by a term in office. There is a large number of voters with different single-peaked preferences on z. In particular, each voter has a different bliss point and votes for the party which is expected to follow the policy closest to his bliss point. Voters are assumed rational and forward-looking; thus, they form rational expectations about the policies which the two parties would follow if elected. These expectations are:

$$x_t^e = E^V(x_t/I_{t-1}) \text{ and } y_t^e = E^V(y_t/I_{t-1}) \qquad (8)$$

where $E^V(\cdot)$ represents the expectation operator based upon the information set of voters. Thus x_t^e and y_t^e are the rational expectations of the policy that party x and y would follow if elected at time t, formed on the basis of the information available to voters at the end of period (t-1) i.e., I_{t-1}. The information set of voters, I_{t-1}, includes: the functional form of the objective functions of the two parties, including q, $\bar{c}$, h, and the bliss point of party y (zero); ρ; current and past values of z (i.e., from (t-1) backward); and the distribution of the random variables u, ε, and η,. Thus, the source of asymmetric information in the model is that party x can observe directly past and current values of η, while the public cannot.

The "true" distribution of voters' bliss points is unknown. In particular, the position of the bliss point of the median voter is not known with certainty. This uncertainty about the distribution of voters' tastes is captured by the following function:

$$P_t = P_t(x_t^e, y_t^e) \qquad (9)$$

P_t is the probability of electing party x at time t as a function of the expectations of voters. Since we consider only one election, the time subscript can be dropped from the function $P(\cdot)$ with no possibility of confusion. The following restrictions are imposed on this function:

i) $P(\cdot)$ is "common knowledge".

ii) $0 \leq P(x_t^e, y_t^e) \leq 1; \qquad x_t^e, y_t^e \in R$

iii) $P(x_t^e, y_t^e)$ is continuous and differentiable everywhere, except possibly along the diagonal (i.e. for $x_t^e = y_t^e$).

iv) $\frac{\partial P}{\partial x_t^e} \equiv P_{x_t^e} < 0$ if and only if $x_t^e > y_t^e$

$\frac{\partial P}{\partial y_t^e} \equiv P_{y_t^e} > 0$ if and only if $x_t^e > y_t^e$.

Assumption iv) underscores the idea that if one party converges toward the other it increases its chances of election because it captures (probabilistically) "middle voters." This assumption implies that there is a prohibitive barrier to the entry of a third party, for any policies followed by the two existing parties.

Additional reasons which create the uncertainty about electoral outcomes may have to do with costs of voting and abstentions. If there is uncertainty about the costs of voting as perceived by different voters there is uncertainty about the number of abstentions and thus about electoral outcomes. From this source of uncertainty Ledyard (1984) derives a function similar to (10).

A particular form of the function (9) is derived from the underlying preferences of voters in the next section.

3. The Parties' Optimization Problem

In period zero, party x faces the following problem:

$$\underset{x_0}{\text{Max}}\ E^G[\ -\tfrac{\alpha}{2}(x_0+u_0-\bar{c}-\eta_0)^2+q\{P(x_1^e,\ y_1^e)[-\ \tfrac{\alpha}{2}(x_1+u_1-c_1)^2]$$

$$+\ (1-P(x_1^e,\ y_1^e))[-\ \tfrac{\alpha}{2}(y_1+u_1-c_1)^2]\ +\ P(x_1^e,\ y_1^e)(1-\alpha)h\}] \qquad (10)$$

$h > 0; \quad 0 \leq \alpha \leq 1$

In (10) E^G is the mathematical expectation operator conditional on the information set available to the party in office. The parameter α represents the weight attributed to the "ideology" versus the benefit of reappointment per se, h. Note that if $\alpha = 0$ we are in the case of a purely Downsian party that maximizes popularity; $\alpha = 1$ implies a purely "ideological" party. The model can thus account for the two extremes and all the intermediate cases.

In order to obtain a time consistent solution we solve this problem by backward induction. Suppose that party y is elected for period 1. After the elections this party solves the following problem (assuming α strictly positive):

$$\max_{y_1} -\frac{\alpha}{2} E^G (y_1 + u_1)^2 \tag{11}$$

The solution of (11) is:

$$y_1 = 0 \tag{12}$$

If party x is elected in period 1, the problem that this party solves in period 1 is:

$$\max_{x_1} -\frac{\alpha}{2} E^G(x_1 + u_1 - c_1)^2 \tag{13}$$

The solution of (13) is:

$$x_1 = c_1 \tag{14}$$

By rationality of expectations, the following holds:

$$y_1^e = 0 \tag{15}$$

$$x_1^e = E^V(x_1/I_0) = E^V(c_1/I_0) \tag{16}$$

Thus, in the last period of the game, there is no policy convergence. Since the two parties have no future, when in office they follow their most preferred policies.[5] Using (12), (14), (15), and (16), we can rewrite (10) as follows:

$$\max_{x_0} E^G[-\frac{\alpha}{2}(x_0+u_0-\bar{c}-n_0)^2 + q[P(x_1^e,0)\ [-\frac{\alpha}{2}(u_1)^2] +$$

$$+ (1-P(x_1^e,0))\ [-\frac{\alpha}{2}(u_1-c_1)^2] + P(x_1^e,0)(1-\alpha)h]] \tag{17}$$

The first order condition of this problem implies, after rearrangements:

$$x_0 = c_0 + qP_{x_1^e} \frac{\partial x_1^e}{\partial x_0} [\frac{1}{2}E^G(c_1^2) + \frac{1-\alpha}{\alpha}h] \ . \tag{18}$$

Equation (18) is rather instructive. c_0 is the "myopic ideological position": it is the policy which a completely myopic party would follow. Equation (18) shows that as long as the future is not completely discounted ($q>0$), the probability distribution of electoral outcomes is non degenerate ($P_{x_1^e} \neq 0$) and today's policy affects voters expectations of future policy ($\frac{\partial x_1^e}{\partial x_0} \neq 0$), the myopic ideological position is <u>not</u> chosen by party x.

Instead, if $\frac{\partial x_1^e}{\partial x_0} = 0$, i.e. there is no influence of the current policy on voters' expectations about future policy, the "myopic ideological position" is chosen regardless of the value of all the other parameters. In this particular case, each party follows its own current most preferred policy since future electoral outcomes cannot be affected by today's policy as in Alesina (1987a). However, in general x_0 is different than the myopic one period solution. In particular, if the effect of the current policy choice on voters' expectations is positive ($\partial x_1^e/\partial x_0>0$), x_0 is smaller than the myopic one period solution. The intuition is straightforward. By choosing more "moderate" policies than those it prefers the most, the right wing party appears to voters as being less extreme than it really is, increasing its chances of reelection in the next period. Essentially, the party currently in office sacrifices some of its ideology in order to obtain the benefits of better reelection prospects in the future. This is by far the most likely case. In fact, suppose that the opposite held, namely $\frac{\partial x_1^e}{\partial x_0} < 0$. This would imply that by being very extreme in the first period, party x can convince the voters that it is going to be moderate in the future and thus increase its likelihood of reappointment. This is a quite unlikely case both theoretically and empirically.

In order to obtain an explicit solution for the first order condition (18) we postulate a specific functional form for $P(x_1^e, 0)$. It is shown in part 1 of the appendix that if:

(i) voters have single peaked symmetric preferences;

(ii) voters are risk neutral;

(iii) the probability distribution of the position of the ideal point of the decisive median voter is uniform between the points $a < 0$ and $b > 0$;

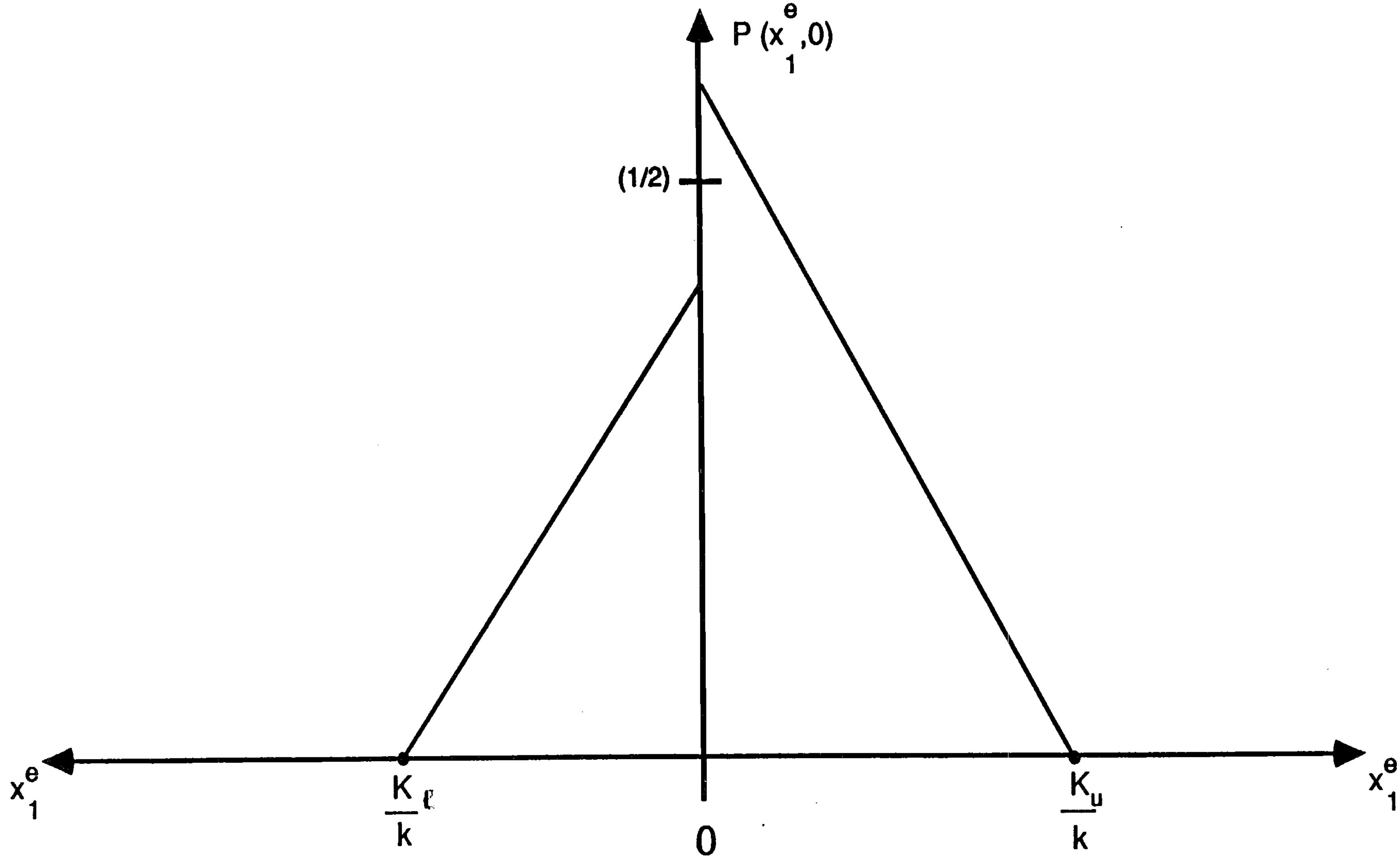
then the function $P(x_1^e, 0)$ can be written as:

$$P(x_1^e, 0) = \begin{bmatrix} K_u - k x_1^e & \frac{K_u}{k} \geq x_1^e > 0 \\ K_\ell + k x_1^e & 0 > x_1^e \geq -\frac{K_\ell}{k} \\ 1/2 & x_1^e = 0 \\ 0 & \text{elsewhere} \end{bmatrix} \tag{19}$$

where $0 < K_u, K_\ell < 1$, $k > 0$ and are known functions of a and b (see part 1 of the Appendix). Needless to say, (19) satisfies the assumptions on the function $P(x_1^e, y_1^e)$ given after equation (9) and can be represented as in Figure 1.

Figure 1 about here

Figure 1



Thus, the uncertainty about the distribution of voters' preferences, and in particular about the position of the median voter's bliss point, generates the uncertainty about electoral outcomes. This uncertainty disappears if and only if the expected policy of party x is so extreme that for no realization of voters' preferences party x would be elected. This is the case if $x_1^e > \frac{K_u}{k}$ (or $x_1^e < -\frac{K_e}{k}$). Also, note the discontinuity at $x_1^e = 0$. At this point the expected policy of the two parties are identical, and thus $P = \frac{1}{2}$. The discontinuity arises from the fact that when party x crosses zero it becomes the left wing party, captures the left wing electorate and loses the right wing voters. However, we have restricted the realization of party x preferences to be on the right side of zero; namely, we imposed $x_1 > 0$. Since voters know this information, it follows, by rationality, that $x_1^e > 0$ for any x_0. Thus the relevant part of equation (19) and of Figure 1, is that on the right side of zero, namely for $x_1^e > 0$.[6]

We now turn to expectation formation. Voters behave rationally and compute the optimal predictor of x_1^e, based on their observation at time zero. We restrict our attention to linear predictors, thus we consider the following predictor:

$$x_1^e = E(x_1|z_0) = f + dz_0 \tag{20}$$

where f and d are constants which are determined by the requirement that x_1^e is a minimum variance unbiased estimate of x_1 given the observation which the public has on the actual policy outcome of period zero, namely z_0. It is shown in part 2 of the appendix that the constants d and f are given by:

$$d = \frac{pb_e^2}{\frac{(qkp^2b_e^2)^2}{15}\, d^2 + (1-qkpc\bar{d})^2 b_e^2 + qkp^2b_e^2\, \bar{c} + 3s_u^2} \tag{21}$$

$$f = (1-d)\bar{c} + qk[\tfrac{1}{6}(3\bar{c}^2 + (1+p^2)b_e^2) + \tfrac{1-a}{a} h]d^2 . \tag{22}$$

Since d is the solution to a third degree polynomial and since f depends on d there is, in general, a multiplicity of solutions for f and d. But under a weak sufficient condition which is derived in part 2 of the appendix there is a unique real pair of solutions for d and f. Since the focus of the paper is not on the issue of multiplicity of equilibria we assume that this condition (equation (A15) of the appendix) is satisfied.

4. The Equilibrium

By substituting (19) and (20) into (18), the policy chosen in equilibrium by the incumbent party can be rewritten as;

$$x_0 = c_0 - [\frac{1}{2} E^G(c_1)^2 + \frac{1-\alpha}{\alpha} h]qkd \tag{23}$$

Equation (23), (22) and (21), have the following intuitively plausible implications:

1) Since d is positive, it follows (from (23)) that $x_0 < \bar{c} + \eta_0$. This verifies that party x follows a policy that is more moderate than its bliss point in order to increase its chances of reelection. Two cases are possible:

$$0 < x_0 < \bar{c} + \eta_0 \tag{24a}$$

$$x_0 \leq 0 \tag{24b}$$

Case (24a) is, in some sense, the most natural: it implies partial convergence from the bliss point of party x to zero (the bliss point of party y). Party x would trade off some "ideology" in the first period to increase the probability of reelection. However, case (24b) cannot be ruled out. Even though it is common knowledge that the bliss point of party x is always positive, the optimal policy in the first period may involve a negative x_0. By choosing a negative x_0, party x attempts to convince voters that x_1 (and c_1) will be very low next period. Thus, for instance, a "left wing" government may be even more conservative than its opponent to influence the electorate!

2) An increase in h unambiguously reduces x_0, since (from (23)):

$$\frac{\partial x_0}{\partial h} = - \frac{1-\alpha}{\alpha} qdk \ . \tag{25}$$

A higher h implies that party x is relatively more concerned with being elected per se, rather than with its "ideology." Thus, the party has an incentive to move away from its bliss point, trading off "ideology" for chances of reelection. However, note that voters will take account of this effect in computing x_1^e if they know that h has increased. Using (22) and (25) one obtains:

$$\frac{dx_1^e}{dh} = \frac{\partial f}{\partial h} + d\,\frac{\partial x_0}{\partial h} = 0. \tag{26}$$

Equation (26) shows an interesting result. Rational voters are not "fooled" by a party that becomes more eager to be reelected. If the voters know h, they take account of its effect on the party's behavior and vote accordingly. Thus party x trades-off some of its "ideology" in the first period but it does not increase its reelection, prospects since x_1^e is unaffected.[7]

3) When ρ tends to zero the weight given by the public to the policy outcome in the first period also goes to zero. That is, d tends to zero as well. Intuitively, when there is very low persistence in the incumbent's ideological position voters put a low weight on their observation of z_0 since this observation contains little information about the ideology of the incumbent in the future. As a result the incumbent has almost no incentive to deviate from his current ideological position as can be seen from (23).

4) The effects of changes in the discount factor (q), the variance of the noise (σ_u^2) and the variance in the innovation in party x's preferences (b_ε) on x_0 is ambiguous in general. Consider for instance a change in the discount factor:

$$\frac{\partial x_0}{\partial q} = -\,[\tfrac{1}{2}\,E^G(c_1^2) + \tfrac{1-\alpha}{\alpha}\,h]k\,[d + q\tfrac{\partial d}{\partial q}] \tag{27}$$

which implies that

$$\text{sign}\,(\frac{\partial x_0}{\partial q}) = -\,\text{sign}\,(d + q\,\frac{\partial d}{\partial q}). \tag{28}$$

Two effects determine the sign of $\frac{\partial x_0}{\partial q}$. On one hand party x has an incentive to converge more in period zero if q increases because it cares more about the future. (This is captured by the term $-d[\frac{1}{2} E^G(c_1^2)+ \frac{1-\alpha}{\alpha} h]k$ in (27)). However, party x also accounts for the indirect effects of q on voters' expectations, namely through d. (This effect is captured by the term $-k[\frac{1}{2} E^G(c_1^2)+ \frac{1-\alpha}{\alpha} h]q \frac{\partial d}{\partial q}$ in (27)). Due to the non linearity of d, it is impossible to sign this expression unambiguously in general. However, for sufficiently low q, the second term in (28) becomes small relatively to the first. Thus for q low $\frac{\partial x_0}{\partial q} < 0$, namely an increase in q implies that party x moves away from its "myopic ideological position" in period zero. This is the more intuitive and likely case; however we could not establish that $\partial x_0/\partial q$ is negative for all values of the parameters.

Analogous considerations hold for the effects of changes in k and σ_u^2 on x_0. The direct effect of an increase in k is to move x_0 away from party x bliss point. In fact if k increases, the trade off between "ideology and popularity" changes in such a way that it becomes more convenient to sacrifice "ideology" today in exchange for an increase in chances of reelection. The indirect and generally ambiguous effect, works through the effect of a change in k on the parameter d of the optimal voter's forecast.

5. The Optimal Degree of Ambiguity

We now turn to the endogenous determination of the degree of ambiguity. Suppose that at the beginning of the game, before it learns the realization of its "taste shock" (ε_0) in period zero, party x can choose between alternative policy procedures which imply different levels of precision in the implementation of policy. In other words, at the beginning of its term in office, before it observes ε_0, the incumbent party can set the value of σ_u^2 at any non-negative level that it sees fit. In choosing σ_u^2, party x obviously takes account of the fact that voters' expectations depend on σ_u^2.[8]

If party x chooses $\sigma_u^2 = 0$, it removes the asymmetry in information. In this case the optimal policy for party x is to follow its first period ideal policy, i.e. $x_0=c_0$. In fact, party x cannot affect voters' expectations since it has no superior information. On the other hand, if a positive σ_u^2 is chosen, party x can take advantage of the trade off between "ideology" and likelihood of reelection.

In order to determine whether a positive value of σ_u^2 may be chosen in equilibrium, we focus on the maximum utility of party x when $\sigma_u^2=0$ and its maximum utility at a given positive σ_u^2. Those two indirect objective functions are denoted by J_{na} (where "na" stands for "non ambiguous") and by J_a (where "a" stands for ambiguous) respectively. Using (23), (3) and (4) in (10) and rearranging[9]

$$J_{na} = q\{[K_u-k[\bar{c}+\rho\varepsilon_0](c_1^2 + 2\,\frac{1-\alpha}{\alpha}\,h) - c_1^2\} \tag{29}$$

$$J_a = -(x_0-c_0)^2 + q\{[K_u-k[f+d\,x_0+du_0](c_1^2 + 2\,\frac{1-\alpha}{\alpha}h) - c_1^2\} + \\ - [u_0^2 + 2u_0\,(x_0-c_0)] \tag{30}$$

A comparison of (29) and (30) provides the basic intuition of our argument. The first and third terms in (30) represent the "costs of ambiguity". The first term captures the fact that in the ambiguous case party x does not choose its bliss point in period zero, i.e. $x_0 \neq c_0$. The third term in (30) represents the costs of imperfect control of the policy outcome in period zero. The second term represents the potential advantage of ambiguity due to the better reelection prospects it may provide. This advantage is given by the difference between the second term in (30) and J_{na}. With some ambiguity the probability of reelection is given by $K_u - k[f + dx_0 + du_0]$; with no ambiguity this probability is given by $[K_u - k[\bar{c}+\rho\varepsilon_0]]$. If the former probability is sufficiently larger than the latter, some ambiguity is preferred to no ambiguity.

We now show that this is the case for a non empty set of parameter values. It is shown in Part 3 of the appendix that the difference in the expected utility of party x with and without ambiguity (before it observes ε_0) is:

$$E(J_a-J_{na}) = qkd^2\,\{\frac{\bar{c}^2}{2}+(1+\rho^2)\,\frac{b_\varepsilon^2}{6} + \frac{1-\alpha}{a}h\}\;F$$

$$+ \frac{(qk\rho b_\varepsilon d)^2}{6} \{\bar{c}^2 + [\frac{1}{3} + \frac{(\rho b_\varepsilon)^2}{5}] b_\varepsilon^2\} + \frac{2}{3} qk\rho\bar{c}b_\varepsilon^2 \{\rho + d[1 - qk\rho\bar{c}d]\} - (1+q)\sigma_u^2 \qquad (31)$$

where $F \equiv 2\{(qk-1)\frac{\bar{c}^2}{2} + (qk - 2(1+\rho^2))\frac{b_\varepsilon^2}{6} + (qk-1)\frac{1-\alpha}{\alpha} h\} - qk$.

Using (31) the following result can be shown:

Proposition 1: There exists a non empty set of parameter values for which party x chooses a positive degree of ambiguity (i.e. $\sigma_u^2 > 0$).

Proof: It is enough to show that there exists a set of parameter values for which $E(J_a - J_{na}) > 0$. The following parameter values, among many others, are in this set.

$$q = \frac{1-\alpha}{\alpha} h = 1; \quad b_\varepsilon = 1;$$

$$\bar{c} = k = 1.5; \quad \rho = .4; \quad \sigma_u^2 = .0766$$

These parameter values also imply a unique real solution for d, since they satisfy condition (A15) in the appendix. This solution is d=0.4.

Q.E.D.

It is also fairly apparent from equations (30) and (31) which parameters values make ambiguity more or less attractive. For example, a low level of q is likely to imply that the optimal level of ambiguity is very small or even zero. In fact if q = 0 it follows that $E(J_a - J_{na}) < 0$ for any positive value of σ_u^2. In this case party x does not care at all about the future benefits of ambiguity, but it suffers today because of imprecise control of the policy instrument. In addition, under mild sufficient conditions[10] the higher is h the greater are the gains from ambiguity. Again, the intuition is clear: the more the party cares about winning the elections per se the more it is willing to bear the costs of ambiguity in exchange for an increase in its likelihood of reappointment. Equation (31) and this discussion suggest that there is a large set of parameters for which it pays the incumbent to choose imprecise policy procedures.

If the configuration of parameters is such that some ambiguity sufficiently increases the reelection prospects of the incumbent he may choose imprecise control procedures even if the median voter is risk averse. In order to demonstrate that such a case is possible we consider the case in which the expected utility of the median voter from the expected policy of party x is given by:

$$u^i = - [|x_1^e - i| + \delta V]. \tag{32}$$

i is the ideal point of the median voter and (as before) is a stochastic variable with a uniform distribution between a<0 and b>0. V is the variance of the policy of party x as perceived by the voter and is equal to the variance of z_1, given z_0; thus it is positively correlated with σ_u^2. Note that the case $\delta=0$ implies risk neutrality which is the case considered so far. If $\delta > 0$ the voter is risk averse.

Let i_c be the critical value of the ideal point of the median voter which makes both parties equally likely to be elected and assume for simplicity and no loss of generality that $x_1^e > i_c$. It is shown in part 4 of the appendix that in this case the first line of (19) which defines $P(x_1^e,0)$ has to be replaced by:

$$P(x_1^e, 0) = K_u - k(x_1^e + \delta V). \tag{33}$$

Note that for $\delta=0$ equation (33) reduces to the first line of (19). Proposition 1 and equation (33) lead to the following result:

<u>Proposition 2</u>: There exists a non empty set of parameter values for which the median voter is risk averse, $\delta>0$, and for which party x chooses a positive level of ambiguity, i.e. $\sigma_u^2>0$.

Proof: The proof is based on a continuity argument. Consider the case $\delta=0$ in which the policymaker chooses a positive σ_u^2. Proposition 1 establishes the existence of such a possibility. This implies that the probability of reelection with $\sigma_u^2 > 0$ is in such a case, sufficiently larger than the same probability for $\sigma_u^2=0$ to compensate party x for the "costs of ambiguity". By continuity, this is also true for a sufficiently small value of δ.

Q.E.D.

The intuition of this result is straightforward. If voters are risk averse, the benefit of ambiguity are reduced, but not eliminated, provided the degree of risk aversion is not too high. Thus, we have provided an example in which a rational incumbent facing risk averse voters chooses to increase the degree of ambiguity above the minimum possible.[11]

Shepsle (1972) shows that a rational incumbent would never choose to be ambiguous if voters are risk averse. His result is due to the assumption that candidates care only about being reappointed, and have no preferences over policy issues. In the context of our model this implies that, party x maximizes the probability of reappointment. In this case there is no trade off between "ideology" and "likelihood of reelection" and there are no benefits from ambiguity. This can be easily seen by imposing $\alpha=0$ in (10): thus party x' problem reduces to

$$\max_{x_0} P(x_1^e, 0) \; . \tag{34}$$

If party x faces problem (34) and voters are risk averse, the optimal degree of ambiguity is in fact zero.

Finally, we note that our model can easily account for a different specification of "ambiguity". Thus far, we have modeled "ambiguity" as the variance of the relationship between policy instrument and policy target. Alternatively, one can define ambiguity as the variance of the information provided by the policymaker to voters regarding the realization of his ideological position. By increasing this type of ambiguity the policymaker increases voters' uncertainty without reducing the accuracy of the policy instrument in achieving the target. It can be shown that in this case the policymaker has an even stronger incentive to introduce ambiguity in the system. In fact, one of the costs of ambiguity (i.e. the reduction in the accuracy of the policy instrument) is avoided, while all the benefits of ambiguity survive.[12]

6. Conclusions

This paper analyzes the choice of an incumbent who faces rational but imperfectly informed voters. The incumbent has "ideological" preferences but is also "office motivated" because he attributes utility to being in office per se. Even though voters are fully aware of the policymakers' motivations, they are imperfectly informed about the preferences of the incumbent. Thus, the incumbent can trade off "ideology" today to increase his likelihood of being reappointed. Namely, he chooses a policy today which is more moderate than his own "true" preferences in order to influence voters' beliefs and behavior. This mechanism implies some degree of policy convergence which would not be achievable had voters been fully informed.

We show that if the incumbent can pick the level of "ambiguity", he does not always choose to eliminate it completely. In fact by choosing to be somewhat ambiguous the incumbent can improve his trade-off between ideology and likelihood of reappointment. For some parameter values this result holds even when voters are risk averse.

These results have been established in a particular model with many simplifying assumptions. These assumptions were necessary to obtain closed form and analytically tractable solutions. We believe, however, that the main qualitative results of this paper, are robust to many possible alterations of the basic structure. In particular the tendency towards political moderation when in office, and the result that it may pay the policymaker to choose imprecise policy procedures are likely to obtain with more general objective functions and a longer time horizon.

Before closing it may be instructive to compare the reason for a preference for imprecise control procedures here and in Cukierman and Meltzer (1986b). They show that it may pay central bankers to make the procedures governing the money supply process not as precise as technically feasible. The reason is that some ambiguity about their objectives enables central banks to utilize the macroeconomic short run inflation unemployment trade off to create temporary gains in employment in periods in which they care a lot about employment relatively to price stability and absorb the increases in unemployment in periods in which they are mostly concerned about price stability. In the present paper ambiguity enables the policymaker to pick the most beneficial (from his point of view) trade off between serving the interests of his constituency while in office and maintaining his chances of reelection in the face of voters with diverse preferences.

Footnotes

1. The most famous result of policy convergence in a two party system is the "median voter theorem". (Downs (1957), Black (1958)). For discussions of convergence results not at the median see Ledyard (1984), Coughlin-Nitzan (1981), Hinich (1977). For earlier work on spatial competition see McKelvey (1975), Hinich, Ledyard, Ordeshook (1972) (1973) and the references quoted there in. The present paper focuses on the result of convergence rather than on the "median voter theorem" per se.
2. Lott-Reed (1987) consider an insightful model of electoral competition with finite horizon and asymmetric information. However, unlike in the present paper, they assume that all the voters have the same preferences and that the politicians have an incentive to deviate from this "consensus". In addition they consider a "reasonable" mechanism of voters' expectation formation which is not necessarily "rational" in the usual sense. By contrast this paper embodies rational expectations. In addition, Lott-Reed (1987) consider the amount of information available to voters as being exogenous, whereas this information is determined endogenously in the present paper.
3. Assuming with no loss of generality that $c_{-1} = \bar{c}$, a sufficient condition for c_i to be positive is $\bar{c} > b_\varepsilon(1+\rho)$.
4. More generally, one party may have better control of the policy instrument than the other party. Cukierman (1985), Cukierman and Meltzer (1986a), Rogoff-Sibert (1986) and Rogoff (1987) present models in which policymakers differ in their degree of competence.
5. This result may capture the effects of "finite political lives" of individual candidates, for example an American President in his second term of office. Alesina-Spear (1987) investigates the relationship between individual candidates with finite lives and the party as an infinitely lived organization.
6. Note that in Figure 1 we have that: $\lim_{x_I^e \to 0^+} P(x_I^e, 0) > \frac{1}{2}$ and $\lim_{x_I^e \to 0^-} P(x_I^e, 0) < \frac{1}{2}$. We could have the opposite situation with no change of the results. Which of the two cases apply is a function of the distribution of voters' preferences, as shown in part 1 of the Appendix.
7. This result may rationalize why politicians always deny that they are

eager to be elected for selfish reasons. If they could convince the voter that their h is lower than it actually is, they might be able to influence more their expectations, without having to trade off much ideology in the current term of office.

8. If party x could choose σ_u^2 after the realization of the shock, in doing so it would reveal information to the voters. In this specification of the model, this would eliminate any asymmetry of information. However, in a more general setting in which additional sources of asymmetric information existed, the choice of σ_u^2 after the realization of ε_0 would not completely reveal everthing about party x.
9. J_{na} and J_a are the indirect objective functions after multiplication by $2/\alpha$. We also use the simplifying and innocuous assumption $c_{-1}=\bar{c}$.
10. (31) implies that if $F>0$ an increase in h increases the value of the difference $E(J_a-J_{na})$.
11. Needless to say, if voters are risk lovers ($\delta<0$) the benefits of ambiguity are higher relative to the case of risk neutrality.
12. It can be shown (see part 3 of the appendix) that in this case the difference $E(J_a-J_{na})$ is identical to equation (31) except for the term $(-(1+q)\sigma_u^2)$ which now does not appear.

References

Alesina, Alberto (1987a) "Macroeconomic Policy in a Two-Party System as a Repeated Game" Quarterly Journal of Economics, 102, 651-78 (August).

_________ (1987b) "Credibility and Policy Convergence in a Two-Party System with Rational Voters," unpublished, (revised August).

_________ and Stephen Spear (1987) "An Overlapping Generations Model of Political Competition" NBER working paper no. 2354.

Bernhardt, Daniel and Daniel Ingberman (1985) "Candidate Reputation and Incumbency Effect," Journal of Public Economics, 27, 47-67, (June).

Black, D. (1958) "Theory of Committees and Elections," Cambridge University Press, New York.

Calvert, Randall (1985) "Robustness of the Multidimensional Voting Model; Candidates' Motivations, Uncertainty and Convergence," American Journal of Political Science, 1056-1070, (February).

Coughlin, Peter and Shmuel Nitzan (1981) "Directional and Local Equilibria with Probabilistic Voting," Journal of Economic Theory, 24, 226-239.

Cukierman, Alex (1985): "Asymmetric Information and the Electoral Momentum of Public Opinion Polls" Unpublished Manuscript, Tel-Aviv University.

Cukierman, Alex and Allan Meltzer (1986a) "A Positive Theory of Discretionary Policy the Cost of a Democratic Government and the Benefits of a Constitution" Economic Inquiry, 26, 367-88 (July)

Cukierman, Alex and Allan Meltzer (1986b) "A Theory of Ambiguity, Credibility and Inflation Under Discretion and Asymmetric Information," Econometrica, 51, 1099-1128 (September).

Downs, Anthony (1957) An Economic Theory of Democracy, Harper and Row, New York.

Hinich, Melvin, (1977) "Equilibrium in Spatial Voting: The Median Voter Result is an Artifact", Journal of Economic Theory, 16, 208-219.

_________, John Ledyard and Peter Ordeshook, (1973) "A Theory of Electoral Equilibrium: A Spatial Analysis Based on the Theory of Games," Journal of Politics, 35, 134-193.

_________, _________ and _________ (1972) "Non-voting and the Existence of Equilibrium Under Majority Rule", Journal of Economic Theory, 14, 144-153.

Ledyard, John (1984) "The Pure Theory of Large Two-Candidate Elections," Public Choice, 473-490, (August).

Lott, John and Robert Reed (1987) "Shirking and Sorting in a Political Market with Finite Lived Politicians", unpublished.

McKelvey, Richard (1975) "Policy Related Voting and Electoral Equilibrium", Econometrica, 43, 815-863.

_________ (1980) "Ambiguity in Spatial Models of Policy Formation" Public Choice, 35, 384-402.

Rogoff, Kenneth (1987) "Equilibrium Political Budget Cycles", unpublished, August.

_________ and Anne Sibert (1986) "Equilibrium Political Business Cycles" NBER working paper no. 1838, (March).

Shepsle, Kenneth (1972) "The Strategy of Ambiguity: Uncertainty and Electoral Competition," The American Political Science Review, 66, 555-568 (June).

Wittman, Donald (1977) "Candidates with Policy Preferences: A Dynamic Model", Journal of Economic Theory, 86-103, (January).

_________ (1983) "Candidate Motivation: A Synthesis of Alternatives," American Political Science Review, 142-157, (March).

Appendix

1. Derivation of the Probability Function, $P(x_1^e,0)$, from Voter's Preferences

We make the following assumptions:

1. All voters have single peaked symmetric preferences
2. All voters are risk neutral so that only the distance between the ideal point of a voter and the expected position of the candidates matters for his voting decision.

Assumptions 1 and 2 imply that the median voter decides the outcome of the elections.

3. The position of the ideal point of the median voter is stochastic and has the following distribution:

$$i \sim U(a,b) \quad a < 0, \quad b > 0 \tag{A1}$$

where i is the position of the median voter in the issue space and U stands for the uniform distribution.

By choosing x_0 as in (23), the incumbent determines x_1^e. If the median voter has an ideal point greater than $\frac{x_1^e}{2}$ he votes for party x and party x is reappointed, otherwise the challenger is elected. Thus, from (A1) it follows that if $x_1^e > 0$ we obtain:

$$P(x_1^e,0) = \frac{b}{b-a} - \int_0^{x_1^e/2} \frac{di}{b-a} = \frac{b}{b-a} - \frac{x_1^e}{2(b-a)}, \quad x_1^e > 0. \tag{A2}$$

which is the first part of equation (19) with $K_u = b/(b-a)$ and $k = 1/2(b-a)$.

If x_1^e is to the left of zero the probability that the incumbent is reelected is equal to the probability mass of voters with ideal points to the left of $x_1^e/2$. Hence

$$P(x_1^e,0) = \int_a^{x_1^e/2} \frac{di}{b-a} = \frac{x_1^e}{2(b-a)} - \frac{a}{b-a}, \quad x_1^e < 0 \tag{A3}$$

which is the second part of equation (19) with $K_\ell = -a/(b-a)$ and $k = 1/2(b-a)$.

If $x_I^e = 0$ the two candidates are equally likely to be elected so $P(x_I^e,0) = 1/2$. Finally it is easy to check from (A2) and (A3) that for $x_I^e \leq 2a$ or $x_I^e \geq 2b$ (or $x_I^e < K_u/k$ and $x_I^e < -K_\ell/k$) the probability or reelection of the incumbent is zero.

Q.E.D.

2. <u>Derivation of the Optimal Predictor in Equations (20) through (22)</u>.

Let us define

$$V \equiv E[(x_1 - (f+dz_0))|z_0]^2. \tag{A4}$$

The parameters f and d are chosen so as to minimize V. Since $c_{-1} = \bar{c}$ it follows that:

$$\eta_0 = \varepsilon_0 \quad ; \quad \eta_1 = \rho\varepsilon_0 + \varepsilon_1 \tag{A5}$$

$c_{-1}=\bar{c}$ in conjunction with (3), (4), (A5) and the fact that ε_t is uniform imply that:

$$E^G(c_1)^2 = E[(\bar{c}+\rho\varepsilon_0+\varepsilon_1)^2|\varepsilon_0] = \bar{c}^2 + b_\varepsilon^2/3 + \rho^2\varepsilon_0^2+2\rho\bar{c}\varepsilon_0. \tag{A6}$$

Using (5), (23), (A5) and (A6) in (A4), d and f are determined by the following minimization problem

$$\min_{d,f} E[(\bar{c}+\rho\varepsilon_0+\varepsilon_1-f-d[A+B\varepsilon_0-D\varepsilon_0^2 + u_0])^2|z_0] \tag{A7}$$

where

$$A \equiv \bar{c}-qk[\frac{1}{6}(3\bar{c}^2+b_\varepsilon^2)+ \frac{1-\alpha}{\alpha} h]d \qquad \text{(a)}$$

$$B \equiv 1-qk\rho\bar{c}d \qquad \text{(b)} \quad \text{(A8)}$$

$$D \equiv \frac{1}{2} qk\rho^2 d. \qquad \text{(c)}$$

The first order necessary conditions for the minimum problem in (A7) (noting that $x_1 = \bar{c} + \rho\varepsilon_0 + \varepsilon_1$) are:

$$E[(-f+\bar{c}+\rho\varepsilon_0+\varepsilon_1-d[A+B\varepsilon_0-D\varepsilon_0^2+u_0])|z_0] = 0 \qquad \text{(a)}$$

$$E[\{\rho\varepsilon_0+\varepsilon_1-[\tfrac{D}{3}b_\varepsilon^2 + B\varepsilon_0-D\varepsilon_0^2+u_0]d\}(A+B\varepsilon_0-D\varepsilon_0^2+u_0)|z_0]=0. \qquad \text{(b)}$$

(A9)

Since ε_t is distributed uniformly with upper and lower bounds of b_ε and $-b_\varepsilon$ respectively it follows that:

$$E\varepsilon_t^2 = b_\varepsilon^2/2; \quad E\varepsilon_t^3 = 0; \quad E\varepsilon_t^4 = b_\varepsilon^4/5. \qquad \text{(A10)}$$

Equations (21) and (22) in the text are obtained by using (A8) and (A10) in (A9) and by rearranging.

Since d appears on both the right hand and the left hand sides of equation (21) this equation does not provide an explicit solution for d. Rearranging (21) we obtain

$$d^3 + a_2d^2 + a_1d + a_0 = 0 \qquad \text{(A11)}$$

where

$$a_2 \equiv -\frac{2\bar{c}}{qk\rho H}; \quad a_1 \equiv \frac{b_\varepsilon^2(1+qk(\rho b_\varepsilon)^2\bar{c}) + 3\sigma_u^2}{(qk\rho b_\varepsilon)^2H}; \quad a_0 \equiv -\frac{1}{(qk)^2\rho H} \qquad \text{(A12)}$$

$$H \equiv \frac{1}{15}(\rho b_\varepsilon)^2 + \bar{c}^2. \qquad \text{(A13)}$$

Since (A11) is a cubic equation in d there are, in general, three solutions for d and three corresponding solutions (through (22)) for f. Let

$$r \equiv \frac{1}{6}(a_1a_2 - 3a_0) - \frac{a_2^3}{27} \qquad \text{(a)}$$

and (A14)

$$M \equiv [3qk(\rho b_\varepsilon)^2\bar{c} + 9\sigma_u^2/b_\varepsilon^2-1]\,\bar{c}+ \tfrac{3}{5}qk(\rho b_\varepsilon)^4. \qquad \text{(b)}$$

If the following conditions holds

$$r^2 + \{\frac{3/5\rho^2(b_\varepsilon^2+3\sigma_u^2) + \bar{c}M}{9(qk\rho H)^2}\}^3 > 0 \tag{A15}$$

two of the roots of (A11) are complex and only one is real. Since we require the optimal predictor in (20) to be real only the real solution for d (and the corresponding real solution for f from (22)) is relevant. We assume that the condition in (A15) is satisfied. A sufficient but not necessary condition for (A15) is $M > 0$.

3. Derivation of the Expected Difference Between the Incumbent's Objective Function with Ambiguous and Unambiguous Implementation of Policy

Subtracting (29) from (30) and simplifying we obtain:

$$J_a - J_{na} = -\ [(x_0-c_0)^2+u_0^2 + 2(x_0-c_0)u_0+q(u_1^2+2u_1c_1)$$
$$+ kdq(c_1^2+2\ \frac{1-\alpha}{\alpha}\ h)u_0]+qk[\bar{c}+\rho\varepsilon_0-f-dx_0](c_1^2+2\ \frac{1-\alpha}{\alpha}\ h). \tag{A16}$$

Taking the unconditional expected value of (A16) we obtain:

$$E(J_a-J_{na}) = -\ [E(x_0-c_0)^2+(1+q)\sigma_u^2]+qkE[\bar{c}+\rho\varepsilon_0-f-dx_0](c_1^2+2\ \frac{1-\alpha}{\alpha}\ h). \tag{A17}$$

Using (22) and (23) it follows that:

$$\bar{c}+\rho\varepsilon_0-f-dx_0 = (d^2/2)(F+qk)+\tfrac{1}{2}qk(\rho d)^2\varepsilon_0^2-d(1-\rho qkd\bar{c})\varepsilon_0 \tag{A18}$$

where

$$F \equiv 2[(qk-1)\ \frac{\bar{c}^2}{2} + (qk-2(1+\rho^2))\ \frac{b_\varepsilon^2}{6} + (qk-1)\ \frac{1-\alpha}{\alpha}\ h]-qk. \tag{A19}$$

Using (3) and (4) and the assumption $c_{-1} = \bar{c}$ it follows that:

$$c_1 = \bar{c} + \rho\varepsilon_0 + \varepsilon_1. \tag{A20}$$

Using (23) and the fact that $c_0 = \bar{c} + \varepsilon_0$ one obtains:

$$(x_0-c_0)^2 = (qkd)^2[\ \frac{\bar{c}^2}{2} + \frac{b_\varepsilon^2}{6} + \frac{1-\alpha}{\alpha}\ h + \frac{\rho^2}{2}\ \varepsilon_0^2 + \rho\bar{c}\varepsilon_0]. \tag{A21}$$

Here use has been made of the fact that since ε is uniform and symmetric around zero its variance is $b_\varepsilon^2/3$. Substituting (A18), (A20) and (A21) into (A17), rearranging, and noting that the third and fourth moments of ε are zero and $\frac{b_\varepsilon^4}{5}$ respectively, we obtain:

$$E(J_a-J_{na}) = qkd^2\ \{\frac{\bar{c}^2}{2} + (1+\rho^2)\ \frac{b_\varepsilon^2}{6} + \frac{1-\alpha}{\alpha}\ h\}F$$

$$+ \frac{(qk\rho b_\varepsilon d)^2}{6}\{\bar{c}^2 + [\frac{1}{3} + \frac{(\rho b_\varepsilon)^2}{5}]b_\varepsilon^2\} + \frac{2}{3}\ qk\rho\bar{c}b_\varepsilon^2\{\rho + d[1-qk\rho\bar{c}d]\} - (1+q)\sigma_u^2 \tag{A22}$$

which is equation (31) in the text.

In the case in which policy implementation is precise but the policymaker does not precisely reveal the policies that he follows the terms u_0^2 and u_1^2 in (A16) are identically zero. As a consequence the term $-(1+q)\sigma_u^2$ in (A22) vanishes. Obviously the preference for ambiguity is stronger in this case since $E(J_a-J_{na})$ in (A22) is more likely to be positive when $\sigma_u^2 = 0$ than when $\sigma_u^2 > 0$.

4. The Case of Risk Averse Voters

We show, with an example, that even in the case of risk averse voters, the incumbent may choose a positive degree of ambiguity.

Assume that the expected utility which the median voter (with ideal point i) obtains if party x is reappointed is

$$u^i = -\ [|x_I^e - i\ | + \delta V]. \tag{A23}$$

In (A23) V is the variance of the policy action of party x in period 1, conditional on the observation of z_0. Clearly $V = 0$ if $\sigma_u^2 = 0$ and V is increasing in σ_u^2. If $\delta = 0$ the median voter is risk neutral: this is the case developed in Appendix 1 and used in the text. If $\delta > 0$ ($\delta < 0$) the median voter is risk averse (risk lover). Note that, since there is no uncertainty about the position of the challenger, the expected utility for the median voter, if this challenger is elected is $-|i|$. Thus the median voter votes for the incumbent if

$$|i| - [|x_I^e - i| + \delta V] > 0. \tag{A24}$$

Let i_c be a value of i such that

$$|i_c| - [|x_I^e - i_c| + \delta V] = 0 \tag{A25}$$

Let us also assume that $x_I^e > i_c$; then (A25) implies

$$i_c = 1/2(x_I^e + \delta V) \tag{A26}$$

Thus, for any realization of i above i_c party x is elected, otherwise, party y is elected. From equation (A1) (part 1 of the appendix) it follows that:

$$P(x_I^e, 0) = \frac{b-i_c}{b-a} . \tag{A27}$$

Using (A26) in (A27) and noting the definitions of K_u and K that follow equation (A2) we obtain:

$$P(x_I^e, 0) = K_u - k(x_I^e + \delta V). \tag{A28}$$