Endogenous Public Policy, Politicization and Welfare

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Abstract

In the two-stage political-economic game that we study public policy is the outcome of the interaction between interest groups and a two-tier government. Implementation of a policy proposed by a bureaucrat requires approval by an elected politician. The objective function of the bureaucrat hinges on the weight assigned to social welfare relative to the rent-seeking outlays of the interest groups. This weight represents the degree of politicization of the government. Our main result is that, in contrast to common belief, increased politicization need not adversely affect the public well being.

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We are grateful to the participants of PET 2000 conference for helpful comments. We are also indebted to a referee and to an associate editor for their constructive comments.
I. Introduction

The political-economic game that we study fits representative democracies in which public policy is shaped by a two-tier government and the affected interest groups. In government there are two levels of decision making. Bureaucrats work out the details of the proposed public policy while elected politicians make the final decision on the approval or rejection of the proposed policy. Our stylized model thus captures the hierarchical nature of the decision-making process and the division of labor in government decision making between bureaucrats and politicians. It takes into account the significant role of the agenda setters as well as the important role of the actual decision makers, the politicians. The dichotomous nature of the decisions made by the politicians (approve or reject) and the dual nature of the public decision-making process that consists of certain proposals and uncertain approval of these proposals are also taken into account.

The endogenously determined public policy is part of the equilibrium outcome of the game. The other components of the equilibrium outcome are the lobbying efforts made by the interest groups trying to affect the realized policy in their favor. The game has two stages. In the first one a bureaucrat proposes a policy. In the second stage two interest groups compete for or against the approval of the proposed policy by the elected politician. The second-stage sub-game is a standard Tullock-type rent-seeking rent-avoidance contest. In this contest the interest groups compete on the benefits associated with the approval or rejection of the proposed policy, expending resources that are (partly) received by the ruling politician.

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1 Endogenous policy models usually neglect the fact that public policy is often the outcome of decisions made by, both, elected politicians and bureaucrats. See, however, Hoyt and Toma (1989), Mazza and van Winden (1999) and Swank, Letterie and van Dalen (1999) who analyze public policy determination using alternative models of two-tier decision-making bodies.

2 The professional office holder may propose a detailed policy in response to the request and possibly the guidelines of the ruling politician. In some instances the implementation of the proposed policy requires only the endorsement of the ruling politician (the relevant agent in the executive branch-the prime minister, the minister of finance, etc.). If, however, endorsement by the legislature is also required, then we have to assume that the ruling politician has a secured majority in the legislature that ensures its support in the proposed economic policy.
The bureaucrat, whose objective function reflects his and the ruling politician's preferences, is assumed to be a leading player. In this respect our approach resembles that of Appelbaum and Katz (1987) and Kohli and Singh (1999). In fact, the bureaucrat anticipates the political activity that determines whether his proposed policy is approved. That is, he is aware of the relationship between the contest outcome and the proposed policy.

The politician and the bureaucrat are not necessarily extreme rent seekers. Depending on the political culture, they can also care about the enhancement of the aggregate welfare of the interest groups. The objective function of the bureaucrat reflects his commitments to the ruling politicians, to the public and to his narrow self-interest. Indirectly, therefore, although the behavior of the politician is not modeled explicitly, his preferences take part in the determination of the proposed policy. The bureaucrat’s objective function hinges on a single parameter: the weight assigned to social welfare relative to the total rent-seeking outlays. This parameter represents the political culture or the degree of politicization of the government.

The following examples illustrate the public-policy contest that we study. A tax reform proposed by a bureaucrat may be supported by one industry and opposed by another. Existing pollution standards may be defended by the industry and challenged by an environmentalist interest group. A monopoly can face the opposition of a customers coalition fighting for appropriate regulation. Capital owners and a workers union can be engaged in a contest that determines the minimum wage, and so on. Two recent examples from U.S politics that illustrate our setting are the congressional reviews of late-term

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3 The composite utility function of our bureaucrat does not assign political influence or political power weights to the interest groups. For a survey of models where the government maximizes this latter type of composite utility function, see van Winden (1999).

4 Our model is related to the recent literature on optimal contest design. While in that literature the designer is concerned only with aggregate rent-seeking outlays, Baye, Kovenock and de Vries (1993), Dasgupta and Nti (1998), in our setting he may have broader objectives. While in that literature the designer controls the allocation of a fixed prize between a number of contests, the sequence of contests, Gradstein and Konrad (1999), Gradstein (1998), admittance to a contest, Baye, Kovenock and de Vries (1993), the number of contestants Amegashie (1999), or the allocation of a fixed budget between private good and public good rents, Nitzan (1994), in our setting the designer controls the players’ payoffs by setting the proposed public policy.
Clinton administration actions on ergonomics and environmental regulations on land use in national forests. Both regulations were reviewed and criticized by the new Congress, and both could have been squelched. But the ergonomics regulations (a decade in the making) were overturned under the Congressional Review Act of 1996, while the environmental regulations were allowed to stand.\footnote{The explanations for these outcomes can be traced to the strength of the interest groups supporting the regulations (organized labor and the environmental lobby, respectively), that is, to their exerted efforts (fighting, lobbying or rent-seeking efforts), that depend, in turn, on the parameters of the contest and, in particular, on the contestants’ payoffs in the event that the public-policy proposal is approved or rejected.}

Our analysis focuses on the effect of changes in the degree of politicization on the proposed public policy and, in turn, on the lobbying efforts of the interest groups and on their expected welfare. The main result establishes that increased politicization, namely, a reduction in the weight assigned by the government to social welfare, need not result in reduced social welfare. In an uncertain political-economic environment, the natural intuitive claim that reduced politicization is socially advantageous is not necessarily valid. Interestingly, increased benevolence of the government can be socially undesirable.

In section II we present the public policy game and the equilibrium analysis. The contest between the interest groups is described in subsection II.A. Subsection II.B contains the equilibrium analysis of this contest. In subsection II.C we present the government: the ruling politician and the bureaucrat. The equilibrium analysis that focuses on the interrelationships between public policy, rent-seeking efforts and the degree of politicization is presented in subsection II.D. The last subsection II.E contains the welfare analysis and our main result. Section III contains a brief summary and some concluding remarks.

\footnote{We are greatfull to the referee for suggesting these examples.}
II. The Public Policy Game

In our public-policy game there are three players. The first one is a bureaucrat who proposes a policy that along with the status quo constitutes the agenda. His proposal is approved or rejected by an elected politician who often initiates the submission of the proposal and even gives the bureaucrat some general guidelines. The other players are two interest groups that are differently affected by the approval or rejection of the proposed policy. In general, one group derives a higher benefit than the other from the realization of its preferred policy. We refer to one player as the Low-Benefit (LB) player and to the other player as the High-Benefit (HB) player. The interest groups engage in a standard Tullock-type rent-seeking contest that determines the probabilities of approval and rejection of the proposed policy. Note that if the lobbying contest were decided by a deterministic rule, such as the vote-buying model of Groseclose and Snyder (1996), our results would not hold because they critically depend on the existence of uncertainty regarding the outcome of the contest between the interest groups.

We first describe the public-policy contest between the two interest groups, the low- and high-benefit players. In this contest the players make their decisions given: (a) the value of the policy instrument set by the planner, $I$ and (b) the contest success function, $(CSF)$ that specifies the probability of approval of the proposed policy corresponding to the rent-seeking efforts of the interest groups. The ruling politician affects the outcome of the contest by being responsible to the existence of the contest, and, in particular, to the specific contest success function that characterizes it. Note that although his behavior is not modeled and he is just posited to respond to the pressure of the interest groups, the politician's preferences affect the policy selected by the bureaucrat.

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6 Modeling the rent seekers as single agents presumes that they have already solved the collective action problem. The model thus applies to already formed interest groups.

7 For simplicity we assume two interest groups. The results are still valid in the more general contest with a larger number of interest groups.
because the latter’s objective function is partly determined by the politician’s preferences.  

The following figure describes the structure of the public-policy game:

Figure 1: Game Structure

1: The Bureaucrat

Sets the agenda by proposing an alternative to the status quo policy I:

2: The Interest Groups

Simultaneously select the rent-seeking and rent-avoidance expenditures

Probabilities of approval and rejection of the proposed policy and, in turn, the expected payoffs of the contestants

Expected net payoffs of the interest group

The value of the bureaucrat’s objective function that depends on the contestants’ expenditures and the sum of their expected payoffs

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8 The guidelines issued by the politician may affect the bureaucrat’s feasible set of policy proposals and therefore his chosen proposal.
A. The Contest Between the LB and HB Players

With probability $0 \leq Pr_L \leq 1$ the ruling politician approves the preferred policy of the LB player. The present discounted value of this policy to this player is equal to $u_L$ and the value to the HB player is equal to $v_H$. With probability $0 \leq Pr_H \leq 1$ the ruling politician decides in favor of the other party, i.e., the HB player. In this case the present discounted values to the LB and the HB players are equal, respectively, to $v_L$ and $u_H$. Note that, in general, the above four values, viz., the players’ payoffs corresponding to the approval and rejection of the proposed policy $I \in [L, \bar{I}]$ depend on $I$. These payoffs determine the rents, the transfers and the deadweight losses associated with $I$. Government intervention may imply the creation of rents for one player only, transfers from one player to the other or the award of some rent to one player accompanied by some loss to the other. The reduction in the payoff of one agent may exceed the rent awarded to the other agent. The difference between the payoff (the rent) for one player and the loss to the other player typically represents the deadweight loss or the efficiency gain associated with the implementation of the proposed policy $I$. The deadweight loss can be negative. In such a case government intervention is justified, that is, $I$ represents some corrective policy that improves the allocation of resources in the economy. We denote by $x_L$ and $x_H$ the rent-seeking activities of the LB and the HB risk-neutral players. The expected net payoff of the LB and the HB players is given respectively by:

$$E(w_L) = Pr_L u_L(I) + Pr_H v_L(I) - x_L \quad (1)$$

and

$$E(w_H) = Pr_H u_H(I) + Pr_L v_H(I) - x_H \quad (2)$$

Henceforth, we refer to $x_i$ as the rent-seeking outlays or expenditures of player $i$. We assume that $u_i$ and $v_i$ (for $i = L, H$) are continuous and twice differentiable in $I$. Moreover it is assumed that $u_H(I) > v_H(I)$ and $u_L(I) > v_L(I)$. This assumption simply requires that for each player approval of his preferred policy is associated with a positive payoff.
The probabilities $Pr_L$ and $Pr_H$ are obtained by the contest success function. We assume that the contest is determined by Tullock’s (1980) commonly used non-discriminating rule. Player $i$’s probability of success in competing against player $j$ is given by:

$$Pr_i = Pr_i(x_i, x_j) = \frac{x_i}{x_i + x_j} \quad \forall i \neq j, \quad x_i, x_j > 0$$ (3)

It is clear from the structure of the game that both players participate in the contest with positive values of $x_i$ and that one of them wins the contest. We therefore focus on interior Nash equilibria of the contest. The conditions characterizing an interior equilibrium of the contest are:

$$\partial E(w_j) \over \partial x_j = 0, \text{ for } j = H, L.$$ (4)

The equilibrium rent-seeking outlays and the players’ probabilities of winning the contest are given by:

$$x_L^* = \frac{(n_L(I))^2 n_H(I)}{(n_H(I) + n_L(I))^2} \quad \text{and} \quad x_H^* = \frac{(n_H(I))^2 n_L(I)}{(n_H(I) + n_L(I))^2}$$

$$Pr_L^* = \frac{n_L(I)}{n_L(I) + n_H(I)} \quad \text{and} \quad Pr_H^* = \frac{n_H(I)}{n_L(I) + n_H(I)}$$ (4)

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9. We use this CSF for simplicity. The results are robust with respect to the family of CSF that satisfy: $Pr_n(x_u, x_p) = \frac{d h(x_u)}{d h(x_u) + h(x_p)}$ where $\frac{\partial h(y)}{\partial y} > 0 \forall y = x_m, x_p$.

10. The sufficient (second-order) conditions of such equilibria are:

$$\frac{\partial^2 E(w_j)}{\partial x_j^2} = \left(\frac{-2x_k}{(x_k + x_j)}\right) (u_j(I) - v_j(I)) < 0, \text{ for } k \neq j \text{ and } k, j = H, L.$$
where \( n_L = (u_L - v_L) \) and \( n_H = (u_H - v_H) \) denote the \( LB \) and the \( HB \) players’ stakes (their benefit from winning the contest). The stake can be the rent or the avoided loss. It is secured when a player wins the contest, that is, when his preferred policy is the outcome of the contest. Note that for one player this desirable outcome is associated with the approval of the proposed policy and for the other player it is associated with its rejection.

By (4) we directly obtain that the player with the higher stake invests more resources in rent-seeking activities and has a greater probability of winning the contest.\(^{11}\)

The relative probabilities of winning the contest and the relative equilibrium rent-seeking expenditures of the players are obtained from (3) and (4),

\[
\frac{\Pr_L^*}{\Pr_H^*} = \frac{x_L^*}{x_H^*} = \frac{n_L(I)}{n_H(I)}
\]

That is, in equilibrium, the players’ relative probabilities of winning the contest are equal to their relative rent-seeking expenditures and to their relative stakes.\(^{12}\)

In general, one of the rent seekers has an advantage over the other in terms of his benefit from winning the contest. Without loss of generality, we therefore assume that \( n_L < n_H \).

The following conditions play a significant role in our subsequent analysis.

(i): \( n_H' = \frac{\partial n_H}{\partial I} > 0 \) and \( n_L' = \frac{\partial n_L}{\partial I} < 0 \) for \( I \in [\underline{I}, \overline{I}] \).

(ii): \( n_H' = \frac{\partial n_H}{\partial I} < 0 \) and \( n_L' = \frac{\partial n_L}{\partial I} > 0 \) for \( I \in [\underline{I}, \overline{I}] \).

(iii): \( n_H' = \frac{\partial n_H}{\partial I} > 0 \) and \( n_L' = \frac{\partial n_L}{\partial I} > 0 \) for \( I \in [\underline{I}, \overline{I}] \).

\(^{11}\)The probability of the socially more efficient outcome of the contest is higher than the probability of the less efficient outcome. For a similar result see Baik (1994) and Nti (1998). This type of efficiency criterion has been used by Becker (1983), Ellingsen (1991), Fabella (1995) and, more recently, by Hurley (1998). The expected aggregate payoff of the players is a more plausible efficiency criterion that is examined in the sequel.

\(^{12}\)For a similar result see Nti (1998) and Epstein and Nitzan (2001).
\[(iv): \quad n'_{H} = \frac{\partial n_{H}}{\partial I} < 0 \quad \text{and} \quad n'_{L} = \frac{\partial n_{L}}{\partial I} < 0 \quad \text{for} \quad I \in [L, \bar{I}] \].

The above conditions capture the four possible combinations of public-policy effects on the stakes of the interest groups. Conditions (i) and (ii) imply that a change in the policy instrument \(I\) has opposite effects on the stakes of the two players. Condition (iii) and (iv) imply that a change in \(I\) has a similar positive (negative) effect on the stakes of the players. The following example illustrates the applicability of the model.

**Example: Public-Good Provision**

The government is considering building a park on the outskirts of a residential neighborhood. To finance the project, a general tax is levied on all the country residents who potentially benefit from the provision of the proposed park. In addition to the financial tax, the local residents living close to the park are subjected to another form of “tax”: the negative externalities (increased congestion, noise, etc.) associated with being in the vicinity of a public park attracting a large number of visitors all year round. Suppose that the government's policy instrument is the country-wide tax. We consider three possible cases:

1. The taxes collected are allocated to building the park. An increase in the lump-sum tax or in the tax rate implies an increase in the size of the park. Suppose this raises the benefit to the non-local residents, but reduces the benefit to the local residents. In this case who the LB and the HB players are is not clear. However, the larger the park, the more the non-local residents benefit from approval of the proposed tax and, in turn, from the park. The benefit to the local residents from the rejection of such a proposal increases with the tax level and, in turn, with the size of the park. Condition E(iii) holds.

2. Although increased taxes imply a larger park, we now assume that the benefit to the general public is not affected beyond a certain size. In such a case, a tax increase and, in turn, a larger park may reduce the benefit associated with the approval of the proposed tax change to the non-local residents, while increasing the net benefit associated with its
rejection to the local residents. In such a case, either condition E(i) or condition E(ii) holds.

(3) Suppose that the collected tax is used to finance the park as well as to compensate the local residents for the negative externalities. In such a case it is possible that increasing the proposed tax reduces both the benefit associated with its rejection for the local residents and with its approval for the non-local residents. Condition E(iv) may, therefore, hold.

B. Public Policy and Rent-Seeking Outlays

In equilibrium the total rent-seeking outlays are given by

$$X^* = x_L^* + x_H^* = \frac{n_L(I)n_H(I)}{n_L(I) + n_H(I)}$$

(6)

The effect of a change in the public policy instrument $I$ on the total rent-seeking outlays is ambiguous.

$$\frac{\partial X^*}{\partial I} = \frac{n_H(I)n_L(I)n_H(I)}{(n_H(I)+n_L(I))^2} \left( \eta_L + \frac{n_L(I)}{n_H(I)} \right)$$

(7)

where $\eta_j = \frac{\partial n_j}{\partial I} = n_j' \frac{I}{n_j}$ is the elasticity of player $j$'s stake with respect to a change in the proposed policy instrument $I$. By (7), we obtain general conditions that determine the effect of a change in the policy instrument on the equilibrium total rent-seeking expenditures. Specifically

Proposition 1: Let $I \in [I, \bar{I}]$. Then

i. Under (i), $\frac{\partial X^*}{\partial I} < 0$ if $-\eta_L > \frac{n_L(I)}{n_H(I)}$. 

ii. ...
ii. Under \( (ii) \), \( \frac{\partial X^*}{\partial I} < 0 \) if \( -\eta_L > \eta_H \cdot n_H(I) > n_L(I) \).

iii. Under \( (iii) \), \( \frac{\partial X^*}{\partial I} > 0 \).

iv. Under \( (iv) \), \( \frac{\partial X^*}{\partial I} < 0 \).

Notice that, by Proposition 1(i), \( -\eta_L > \eta_H \) is a sufficient condition for the total rent-seeking outlays to be inversely related to \( I \) and, by Proposition 1(ii), \( -\eta_L < \eta_H \) is a sufficient condition for the total rent-seeking outlays to be inversely related to \( I \).

C. The Government: Bureaucrats and Politicians

The government in this study consists of the ruling politician and the bureaucrat. The latter proposes the policy instrument \( I \), \( I \in [L, I] \), which is then approved or rejected by the ruling politician. When working out a policy proposal the bureaucrat anticipates the political activity that determines whether his proposal is approved. He thus takes into account the relationship between his proposed policy and the equilibrium outcome in the rent-seeking contest between the \( LB \) and \( HB \) players. From his point of view this relationship is conceived as a political constraint. His action is affected by his commitments to the ruling politician and to the public interest. These commitments are represented by his specific objective function that may allow complete independence of the ruling politician (complete dedication to the enhancement of social welfare), complete dependence on the ruling politician and intermediate cases of mixed commitments to the ruling politician and to the public interest. His objective function \( G(.) \) depends therefore on the total rent-seeking outlays and on the expected net payoffs of the interest groups,

\[ ^{13} \text{In our model the bureaucrat does not have a second chance in the sense that he can only once present a public policy proposal, and the ruling politician approves or rejects this proposal with no option of amendment. We do not allow the possibility of a repeated game in which the bureaucrat can change the proposed policy after it is rejected by the ruling politician.} \]
Social welfare depends on the sum of the interest groups’ rent-seeking rent-avoidance outlays and on their expected net payoffs. The sum of these payoffs is referred to as social welfare. Our definition of social welfare is plausible provided that the active interest groups represent all relevant interests in society. The total rent-seeking outlays \((x_L + x_H)\) represent either transfers to the ruling politician or wasteful resources. The ruling politician’s utility is increasing in the fraction of the rent-seeking outlays transferred to him. His utility may also depend on social welfare being either benevolent or a realistic politician who wishes to be reelected.¹⁴

Let us denote by \(E(w^*_L)\) and \(E(w^*_H)\) the equilibrium expected payoffs of the \(LB\) and \(HB\) players. That is, \(E(w^*_L)\) and \(E(w^*_H)\) are the players’ equilibrium expected payoffs when their rent-seeking expenditures are disregarded, \(E(w^*_L) = E(w^*_L) - x^*_L\) and \(E(w^*_H) = E(w^*_H) - x^*_H\). Usually, to some extent the bureaucrat is committed to the ruling politician as well as to the enhancement of social welfare. We assume that his objective function is of the following additive form that reflects these mixed commitments.

\[
G(.) = \alpha \cdot g\left( E(w^*_L) + E(w^*_H) \right) + (1 - 2\alpha) \cdot f\left( x^*_H + x^*_L \right)
\]

were \(0 \leq \alpha \leq 1\).

The weight \((1-2\alpha)\) determines whether the second expression in the bureaucrat’s objective function is a positive or a negative welfare component. A negative weight implies that the total rent-seeking outlays are considered as wasteful resources. \(g(.)\) and \(f(.)\) are monotone increasing functions that specify the utility components corresponding to the aggregate expected payoff of the public and to the total rent-seeking outlays. The bureaucrat’s mixed commitments to the public and to the ruling politician that depend on

¹⁴Another shortcoming of our definition of social welfare is its disregard of various possible general-equilibrium type effects on social welfare of the equilibrium outcome in our contest. For example, the resources expended in the public-policy contest may effect the outcome in other contests that our two interest groups and other interest groups may care about. In order to focus our discussion, we assume that the impact on social welfare of such general-equilibrium type effects is negligible.
the political culture are thus represented by $\alpha$. The term $(1-2\alpha)$ represents the degree of politicization of the government. The weight $\alpha$ reflects the allocation of the contestants’ expenditures between wasteful resources, non-wasteful resources transferred to the incumbent ruling politician and non-wasteful resources transferred to the bureaucrat. It also reflects the commitments of the ruling politician to the public interest and to his narrow self-interest, namely, to collecting the contestants’ rent-seeking expenditures. Finally, it also reflects the commitments of the bureaucrat to the public interest, to the ruling politician and to his narrow interest of controlling resources expended by the contestants. The objective function $G(.)$ can represent a broad spectrum of political cultures, namely patterns of mixed commitments of bureaucrats and politicians as well as allocations of the total rent-seeking outlays between the wasteful and non-wasteful components.

To illustrate the general applicability of the assumed objective function, we consider several special cases where $\alpha$ ranges between 0 and 1:

- When $\alpha = 1$ ($1-2\alpha = -1$) the bureaucrat is committed to the public interest, and the completely wasteful rent-seeking outlays are conceived as total loss to society.
- When $\alpha = 0.5$ ($1-2\alpha = 0$) the bureaucrat is again totally committed to the public interest. He disregards, however, the total rent-seeking outlays because they constitute a transfer from the LB and the HB players to the government which is redistributed back to the public.
- When $\alpha = 1/3$ ($1-2\alpha = 1/3$) the non-wasteful rent-seeking outlays are transferred to the government and the bureaucrat assigns equal weights to his utility components depending on the rent-seeking outlays and on the aggregate expected payoff of the interest groups.
- When $\alpha = 0$ ($1-2\alpha = 1$), the objective of the bureaucrat is to maximize the rent-seeking outlays disregarding social welfare. This objective function represents an

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15 Note that since $E(w_i^*) = E(w_i^*) + x_i^*$, if $f(y) = g(y) = y$, then (8) can be rewritten as

$$ G(.)=\alpha(E(w_L^*) + E(w_H^*)) + (1-\alpha)(x_L^* + x_H^*) $$

In this case $\alpha$ and $(1-\alpha)$ are the weights assigned, respectively, to the expected social welfare and to the total rent-seeking outlays.
extreme political culture where the bureaucrat is totally committed to his and/or to the ruling politician’s narrow interest of controlling the resources expended by the rent seekers.

All other intermediate cases are obtained when \( 0 < \alpha < 1, \quad \alpha \neq 1/2, \quad \alpha \neq 1/3 \).

When the rent-seeking activities positively affect the bureaucrat’s objective function, \( 0 < \alpha < 0.5 \). When the rent-seeking activities negatively affect the bureaucrat’s objective function, \( 0.5 < \alpha < 1 \).

D. Politicization and Welfare

When making the decision regarding the optimal level of the policy instrument, the bureaucrat maximizes \( G(.) \) taking into account the equilibrium rent-seeking outlays corresponding to the different levels of his control variable \( I \). The first-order condition that characterizes an interior solution of his problem is: \(^{16}\)

\[
\frac{\partial G(.)}{\partial I} = \alpha \frac{\partial g\left(\overline{E}(w_L^*) + \overline{E}(w_H^*)\right)}{\partial I} + (1-2\alpha) \frac{\partial f\left(x_L^* + x_H^*\right)}{\partial I} = 0
\]

or,

\[
\frac{\partial g\left(\overline{E}(w_L^*) + \overline{E}(w_H^*)\right) \partial \left(\overline{E}(w_L^*) + \overline{E}(w_H^*)\right)}{\partial \left(\overline{E}(w_L^*) + \overline{E}(w_H^*)\right) \partial I} = - \frac{(1-2\alpha)}{\alpha} \frac{\partial f\left(x_L^* + x_H^*\right) \partial \left(x_L^* + x_H^*\right)}{\partial I}
\]

\[
= - \frac{(1-2\alpha)}{\alpha} \frac{\partial f\left(x_L^* + x_H^*\right) \partial \left(x_L^* + x_H^*\right)}{\partial I}
\]

\(^{16}\text{By the second-order condition,} \quad \frac{\partial^2 G(.)}{\partial I^2} = \alpha \frac{\partial^2 g\left(\overline{E}(w_L^*) + \overline{E}(w_H^*)\right)}{\partial I^2} + (1-2\alpha) \frac{\partial^2 f\left(x^*\right)}{\partial I^2} < 0.\]
Given that in our two-stage game the bureaucrat is a leading player, we refer to 
\( (x_L^*, x_H^*, I^*) \) as the Stackelberg-Nash equilibrium of the public-policy game. The interior 
equilibrium is given by (4) and the solution of (10).

To examine the welfare effect of a change in the degree of politicization of the
government, let us first examine the effect of a change in the parameter \( \alpha \) on the
equilibrium policy proposal \( I^* \). It can be verified that 
\[
\frac{\partial I^*}{\partial \alpha} = \frac{-\partial^2 G(.)}{\partial I \partial \alpha} \frac{\partial I}{\partial I^2}.
\]
By the second-order condition, \( \frac{\partial^2 G(.)}{\partial I^2} < 0 \). Using the first-order conditions, we therefore get

that the derivative \( \frac{\partial I^*}{\partial \alpha} \) and the derivative \( \frac{\partial X^*}{\partial I} \) have opposite signs. To sum up,

**Proposition 2:** (a) 
\[
\text{Sign} \left( \frac{\partial I^*}{\partial \alpha} \right) = - \text{Sign} \left( \frac{\partial X^*}{\partial I} \right)
\]

(b) \( \frac{\partial X^*}{\partial \alpha} < 0 \)

Using proposition 1, we can directly specify the conditions that determine the sign of
\( \left( \frac{\partial I^*}{\partial \alpha} \right) \). The above proposition emphasizes the critical significance of the sensitivity of
\( X^* \) to variations in public-policy in determining the sensitivity of the optimal policy \( I^* \) to
the parameter \( \alpha \). In any event, increased politicization (a decline in \( \alpha \)) induces larger
rent-seeking outlays.
Assuming that the rent-seeking outlays are wasted resources, the expected social welfare in equilibrium is given by:

\[ E(U^*) = \bar{E}(w_L^*) + \bar{E}(w_H^*) - X^* \]  

(12)

The sensitivity of \( E(U^*) \) to a change in the policy instrument \( I \) is given by:

\[
\frac{\partial E(U^*)}{\partial I^*} = \frac{\partial (\bar{E}(w_L^*) + \bar{E}(w_H^*))}{\partial (I^*)} \frac{\partial X^*}{\partial I^*}
\]

(13)

By (10) we get that

\[
\frac{\partial E(U^*)}{\partial I^*} = \frac{(1 - 2\alpha)}{\alpha} \frac{\partial f}{\partial X^*} \frac{\partial X^*}{\partial I^*} \frac{\partial X^*}{\partial I^*} - \frac{\partial X^*}{\partial I^*}
\]

(14)

We thus obtain

**Lemma 1:**

If \( \alpha > 1/2 \) and \(- (1 - 2\alpha) \frac{\partial f}{\partial X^*} > \alpha \frac{\partial g}{\partial (\bar{E}(w_L^*) + \bar{E}(w_H^*))} \),

\[
\text{Sign} \frac{\partial E(U^*)}{\partial I^*} = \text{Sign} \frac{\partial X^*}{\partial I^*}
\]

Otherwise,

\[
\text{Sign} \frac{\partial E(U^*)}{\partial I^*} = - \text{Sign} \frac{\partial X^*}{\partial I^*}
\]

\[ \text{The results of this subsection are still valid under the assumption that some of the rent-seeking} \]

\[ \text{outlays are wasted resources.} \]
The effect of a change in the policy instrument on the expected social welfare is ambiguous. By lemma 1 and proposition 1, the welfare effect of $I$ depends on the degree of politicization $(1-2\alpha)$, the functions $f(.)$ and $g(.)$, and the stakes $n_L(I)$ and $n_H(I)$. The first three parameters, $\alpha$, $f$ and $g$, determine whether the sign of the welfare effect of a change in $I$ is equal to the sign of the rent-seeking effect of such a change. The last two parameters, the stakes, determine the sign of the rent-seeking effect of a change in $I$. If the two conditions in Lemma 1 are satisfied, then the signs of the effects of a change in the policy instrument $I$ on the expected social welfare and on the total rent-seeking outlays are equal. Otherwise the two effects have different signs.

Let us finally examine the effect of a change in the weight $\alpha$ on the expected social welfare. Since

$$\frac{\partial E(U^*)}{\partial \alpha} = \frac{\partial E(U^*)}{\partial I^*} \frac{\partial I^*}{\partial \alpha}$$

we get that

$$\text{Sign} \left( \frac{\partial E(U^*)}{\partial \alpha} \right) = \text{Sign} \left( \frac{\partial E(U^*)}{\partial I^*} \right) \text{Sign} \left( \frac{\partial I^*}{\partial \alpha} \right).$$

By lemma 1 and proposition 2, we obtain

**Proposition 3:**

If $\alpha > 1/2$ and

$$-(1-2\alpha) \frac{\partial f(.)}{\partial X} > \alpha \frac{\partial g(.)}{\partial E(w^*_L) + E(w^*_H)},$$

efforts are not wasted.
Increased politicization is usually considered harmful to social welfare. Indeed, under certainty conditions the more politicized the government, the less efficient is the outcome of its intervention. In our uncertain political-economic environment, the two conditions stated in Proposition 3 ensure that increased politicization (a decline in $\alpha$) is socially advantageous. Such a decline increases the wasteful resources expended by the interest groups. This increase that negatively affects the expected payoff of the interest groups is more than counterbalanced by the corresponding increase in the gross expected payoff. The intuition behind this possibility of welfare-enhancing increased politicization is as follows. The first condition, $\alpha > 1/2$, implies that $(1-2\alpha) < 0$, that is, the rent-seeking outlays $X^*$ have a negative net impact on the bureaucrat’s objective function. The second condition, $-\left(1 - 2\alpha\right) \frac{\partial f()}{\partial X^*} > \frac{\partial g()}{\partial \left(E(w_H^*) + E(w_L^*)\right)}$, ensures that, in equilibrium, the marginal effect of a change in the rent-seeking outlays on the bureaucrat’s objective function is larger than the marginal effect of a change in the gross expected welfare of the interest groups. A decline in $\alpha$ results in a change in the optimal $I$. Given the above second condition, to satisfy the first order condition (10), the required increase in the gross expected welfare of the interest groups must be larger than the resulting increase in the rent-seeking outlays. By definition, see (12), this means that the expected social welfare is increased. The increase in the degree of politicization $(1-\alpha)$ changes the proposed policy $I$ and the stakes $n_H$ and $n_L$ and, by Proposition 2 (b), increases $X^*$. The change in the rent-seeking outlays of the interest groups, $x_H$ and $x_L$, also affects their
probabilities of winning the contest. The increase in $X^*$ reduces the expected social welfare. However, when the above two conditions are satisfied, the changes in the winning probabilities and in the stakes of the interest groups increase the gross expected payoff of one group or of both groups such that the increase in the gross expected welfare of the interest groups exceeds the increase in their rent-seeking outlays and, therefore, the expected social welfare increases.

IV. Concluding Remarks

Public policy has different implications for different interest groups. Consequently, such groups make efforts to influence the policy. The resources expended by the interest groups that try to influence the proposed policy in their favor are referred to as rent-seeking outlays. The complex public-policy decision-making process typically involves two stages: (i) the proposal of public policy by bureaucrats (professional office holders, regulators, economic planners, etc.) possibly in response to the initiative and some guidelines of the ruling politicians and (ii) the approval or rejection of the proposed policy by the elected politicians. The politician issuing the guidelines may assign similar or different weights to social welfare and to the aggregate outlays of the contestants relative to the bureaucrat. Certainly, there is legislative impact on the bureaucrat’s choices (there exists a large political science literature on bureaucratic discretion, see Epstein and O’Halloran, 1999 and references therein). In our model the guidelines, that are not endogenous, may constrain the bureaucrat’s feasible set of policy proposals. Given that set, we examine the effects of a change in the level of politicization of the government.

The political pressures exerted by the interest groups are directed to the ruling politicians. These politicians as well as the bureaucrats are, in general, concerned with social welfare (the public interest), but also with a narrow self-interest, viz., collecting the rent-seeking outlays expended by the interest groups. In this paper we use a stylized political-economic model of endogenous public-policy determination to study the welfare
implications of a change in the degree of politicization of the government. Our main result is that in an uncertain political-economic environment reduced politicization is not necessarily welfare enhancing. The conditions giving rise to this possibility are stated in Proposition 3. The first condition requires that the rent-seeking outlays adversely affect the objective function of the bureaucrat. The second condition requires that the negative effect of a marginal change in the rent-seeking outlays on the objective function is stronger than the positive effect of a marginal change in the expected gross payoff of the interest groups \(^{18}\). The welfare effect of transforming a rent-seeking contest to a rent-seeking rent-avoidance contest by introducing an interest group that opposes the award of the rent is ambiguous (see Baik (1999), Ellingsen (1991) and Schmidt (1992) in which this result is established in the context of monopoly regulation). Our main result implies that a marginal change in the political culture, namely, a marginal change in the degree of politicization of the government, has ambiguous welfare implications. This finding implies that the frequently raised claims regarding the “evil” of politicization should be taken with care.

\(^{18}\) In our model the lobbying efforts of the interest groups are directed to the politicians and not to the bureaucrat. Alternatively, the interest groups can lobby the bureaucrat directly in order to influence his proposed policy. In general, the interest groups may wish to influence both the proposed policy and the probability of its approval and therefore allocate their lobbying efforts between the bureaucrat and the ruling politician. In such alternative lobbying models, as long as the proposed policy or the approval of the proposed policy remain uncertain from the viewpoint of the interest groups, the main result of the present study is basically preserved. Uncertainty regarding the contest outcome together with appropriate mixed commitments of the bureaucrat to the ruling politician and to the enhancement of social welfare are the two key characteristics necessary for the derivation of the main result of this paper.
References


