Legislating or bargaining with lobby groups?

Matthieu Glachant, Gildas de Muizon

December 2003

Abstract: Particularly in Europe, lobby groups are officially recognised a central role in policy making process. In particular, bargaining between lobby groups and with the Government is a way of designing policies in certain areas (e.g., labour issues, environmental policies, etc.). This paper develops a political economy model to investigate when bargaining is more efficient than legislation. We consider a welfare maximizing Government facing the following alternative: (i) legislating under the pressure of the lobby groups (ii) bargaining with them and thus giving them a larger influence over the contents of the policy finally adopted. We show that, when the lobby groups only influence the probability of adoption of any new legislation, bargaining is always more efficient than bargaining. By contrast, when the lobby groups are able to affect the contents of the legislation, the relative efficiency of bargaining over legislation becomes ambiguous. Depending on the strictness of the political constraints on the legislative route, bargaining can be more or less efficient than bargaining.

Key words: bargaining, legislatures, rent seeking, rent-seeking contests, lobbying, political economy, special interest groups.

JEL classification: D72
1 Introduction

Lobbying is an unavoidable attribute of policy-making processes. Therefore a key research question is how to design institutional and political structures which efficiently accommodate this reality. Particularly in Europe, special-interest groups are officially recognised a central role in certain policy areas: they are invited to define new policies through bargaining. The most obvious example is collective bargaining between unions and business associations. In many countries, these two "interest groups" officially negotiate with each other and with the government over wages or other labour contract provisions as well as over pensions, health insurance (social security), workforce training, etc. One can find such instances of negotiation in many other areas. In environmental policy, the last decade has seen a significant development of so-called environmental negotiated agreements, whereby governments and specific polluting sectors negotiate environmental protection objectives. In particular, policies aiming to reduce greenhouse gases by energy-intensive industrial sectors is essentially based on these agreements in Europe, USA, Canada or Japan (OECD, 2000).

The common feature to all these cases is that the policy adopted must satisfy the participation constraint of the special interest groups. Assuming there is an efficiency rationale behind, what could it be? An immediate answer is that bargaining with lobby groups may simply be a better solution than using the traditional political channel: passing a Law in the Congress. This may hold true because legislating does not avoid lobbying. It simply changes the way lobbies' influence is exerted. The goal of this paper is to compare the welfare properties of bargaining relative to legislation. We build two versions of a
general political economy model which differ in the way the legislative route is modelled.

The first version – the political obstruction model – stresses the fact that the major difference between the legislative route and the bargaining route is that interest groups influence the probability of adoption of the policy in the Congress whereas they affect the policy contents when bargaining. To analyse the consequences of this difference between bargaining and legislation, the political obstruction model depicts a welfare maximising Government who wants to introduce a welfare improving policy under the pressure of two lobby groups gathering the agents bearing the costs of the policy (the losers) and those who enjoy positive benefits (the winners). The Government has two options available. Firstly, as he is the agenda setter of the Congress, he can make a law proposal. In this case, the two lobby groups undertake rent-seeking activities influencing the probability of adoption of the Law proposal. Alternatively, the Government can by pass the Congress avoiding the risk that the Law will not pass and directly negotiates the contents of the policy with the lobby groups. The fact that the two options are not independent is key. The legislative option constitutes the disagreement point of the bargaining game meaning that, in case of persisting disagreement, the Government will make a Law proposal. The lobby groups thus negotiate under a legislative threat.

The second version – the political influence model – only differs from the first version in that the lobby groups are able to influence the contents of the Law proposal itself. This is modelled using the common agency framework popularised by Grossman and Helpman (1994). More specifically, we model a median Legislator under the influence of the two lobby groups making campaign contributions.

How does this paper contribute to the existing literature? One can find papers on how lobbies may influence legislatures. One can mention the literature on lobbying and legislative bargaining (Helpman and Persson, 1998) analysing how lobbying interacts with the legislative work (modelled as a bargaining process between legislators). Bennedsen and Feldmann (2001) also analyse the impacts of lobbying on different legislature designs. These papers go very deeply in the analysis of the working of the Congress in comparison with ours.

---

1 The fact that Law is an uncertain process is definitively supported by evidence. During the last legislative term in France (1997-2002), the Government made 476 Law proposals out of which 351 were finally adopted by the Parliament, implying an average probability of adoption of 0.74.
which essentially "black-box" the legislature using convenient but rough political models. Beside these papers, there is a lot of both positive and normative works on bargaining with organised interests. But this literature is specialised, dealing with labour issues (see for instance Lindbeck and Snower, 2001), environmental policy (Segerson and Miceli, 1998), etc. To our knowledge, there is no contribution linking together both aspects. Our paper is a first step in this direction. One can finally quote a contribution by Rubin et al. (2001). They take the point of view of an interest group who wants to change the law. It has two options: lobbying the legislature or litigating for new precedent. The fact that there is a choice between two channels of influence is similar to our own paper. However, the two channels and the points of view adopted – the interest group in Rubin et al.'s paper, a welfare maximising Government in ours– are very different.

The paper is structured as follows. In section 2, the political obstruction model is presented. The possibility for lobbies to "obstruct" the adoption of a new Law in the Parliament is modelled as a contest game frequently used in the rent-seeking literature. Section 3. develops the political influence model in which the lobby groups are able to influence the contents of the legislation using a common agency approach. Section 3. concludes.

2 The political obstruction model

Consider a welfare maximising Government willing to implement a one-dimensional policy characterised by a positive variable $P$. To simplify, we assume that the policy benefit equals the policy level $P$ whereas its cost is described by a twice differentiable increasing and convex function $C(P)$. The linearity of the benefit function simplifies the analysis without altering any of the results. We further assume that $C'(0) < 1$ and $C(0) = 0$. These hypothesis imply that, for low values of $B$, the social welfare, denoted $W(P) \equiv P - C(P)$, is positive. Therefore, in the absence of political constraints, the Government would select the optimal policy level, $P^*$, defined by the condition:

$$C'(P^*) \equiv 1.$$  

We assume very clear-cut distributive impacts of the policy. One group $W$ (the "winner") enjoys the totality of the benefit $B$ whereas the totality of the cost $C(B)$ is borne by a second group $L$ (the "loser"). Both groups are assumed to be
organised in lobby groups implying that they are able to exert an influence on Congress' decision and to negotiate with the Government. The policy is thus "collective" in the sense of Baron (1994): cost and benefit are sufficiently concentrated for triggering the coalition in lobby groups of both losers and winners. One can think of environmental policy for instance in which environmental benefits and pollution abatement costs justify the existence of green and polluting industries' lobbies, of labour regulation under the influence of trade unions and employers' association. Note that the formation of the lobby groups is exogenous in the model. We simply assume that the lobby groups are constituted meaning that concerned economic agents have solved the free riding problem hindering collective action.

The Government can implement the policy through legislation. We assume that he is the agenda setter of the Congress and can thus make a Law proposal involving the policy level $P$. The adoption of the Law by the Congress is uncertain and affected by lobbying efforts. Let $\pi$ be the probability of adoption. We make the hypothesis that the proposal of legislation is subjected to a rent-seeking contest involving the two lobby groups $W$ and $L$ as popularized by the rent-seeking literature. More specifically, group $W$ and group $L$ make rent-seeking expenditures in order to influence the Congress' voting process. Expenditures may be campaign contributions (monetary or in kind), or may correspond to the cost of transmitting strategic information to the "median" legislator on the consequences of the Law proposal. Denote $w$ and $l$, the winner's and the loser's rent-seeking expenditures, respectively. These expenditures affect the probability of adoption $\pi$ via a so-called contest success function. Such functions are routinely used in the rent-seeking literature to model lobbying in noisy political environments. As to the functional form, we use a variant of the standard unit logit function pioneered by Tullock (1980):

$$
\pi(w, l) \equiv \begin{cases} 
\pi^o + (1 - \pi^o) \frac{\lambda w}{\lambda w + l}, & \text{if } w + l > 0 \\
1, & \text{if } w + l = 0 
\end{cases}
$$

(1)

where $\lambda$ is a parameter introducing a heterogeneity in lobby groups' influence technology. It is a routine assumption in the rent seeking literature. When $\lambda$

---

2 Nitzan (1994) is a comprehensive survey of the rent-seeking literature using such contest success functions.
lies in between 0 and 1, the winner is less influential than the loser whereas the contrary holds true beyond 1. $\pi^\circ$ is a parameter reflecting the responsiveness to lobbying of the Congress. It prevents the probability $\pi$ to fall below $\pi^\circ$. Put differently, whatever the intensity of lobbying, any welfare-improving policy is adopted at least with a probability $\pi^\circ$. This is a less classical assumption aiming at introducing some concern for the general interest in Congress' behavior.

The second option of the Government is bargaining. In fact, we consider that the negotiation takes place between the two lobby groups. The Government plays a role of facilitator without intervening directly in the negotiation. This reflects the classical situation of collective bargaining on labor issues in which employers negotiate with trade unions. To clarify the notations, we denote $B$ the policy adopted under the bargaining route. We further assume that bargaining takes place under the threat that the legislative route will be implemented in case the negotiation fails. Hence, the lobby groups negotiate with the Government under a legislative threat. This deserves two important remarks. First no agreement would be possible without the threat: the loser $L$ would never accept a policy which is costly to him. In this regard, avoiding the threat creates the gain from trade that makes the agreement possible. The second remark is that, if the threat is certain, that is if its probability of adoption is 1, an agreement cannot emerge as well. The reason is that, in this case, the Government can implement with certainty the first best policy $P^*$. 

To summarize, the decision tree below describes the political obstruction game.
We will now solve the model reasoning backward, starting with the analysis of the rent-seeking sub-game.

2.1 The rent-seeking stage

Consider any Law proposal involving a policy level $P$. What is its probability of adoption? According to Eq.(1), it is determined by the rent-seeking expenditures of the two lobby groups. Each group simultaneously and non co-
operatively selects its level of expenditures by maximizing its expected utility, taking the other’s level of expenditures as given. The corresponding maximization problem is thus:

\[
\max_w \pi(w, l) \cdot P - w \\
\max_l -\pi(w, l) \cdot C(P) - l
\]

Assuming interior solutions, the equilibrium rent-seeking expenditures are given by the first order conditions:

\[
(1 - \pi^o) \cdot P \frac{\lambda l}{(\lambda w + b)^2} = 1 \\
(1 - \pi^o) \cdot C(P) \frac{\lambda l}{(\lambda w + l)^2} = 1
\]

Algebraic manipulations of these two conditions then lead to the following levels of expenditures:

\[
w(P) = \frac{(1 - \pi^o)}{\lambda} \cdot \frac{P^2 \cdot C(P)}{(P + C(P))^2} \tag{2}
\]

\[
l(P) = \frac{(1 - \pi^o)}{\lambda} \cdot \frac{P \cdot C(P)^2}{(P + C(P))^2} \tag{3}
\]

Finally, plugging these expenditures in Eq.(1) yields the equilibrium probability of adoption of the rent-seeking game:

\[
\pi(P) = \pi^o + (1 - \pi^o) \frac{\lambda P}{\lambda P + C(P)} \tag{4}
\]

### 2.2 The agenda-setting stage

Having characterized the equilibrium probability \( \pi(P) \), we identify now the legislation that will be proposed to the Congress. The regulator takes into account the fact that adoption is uncertain; he makes a Law proposal that maximizes expected gross welfare:
\[
\max_p \pi(p) \cdot [P - C(P)].
\]  

(5)

Note that rent-seeking expenditures are not an argument in the welfare function. Here the assumption is that such expenditures are transfers between lobby groups and others (legislators, lawyers, experts, etc.). Another possible hypothesis is to consider rent-seeking as a wasteful activity, which leads to include the corresponding expenditures in the social welfare function. This alternative assumption does not change any of the results. Then the first order condition of the maximization program (5) implicitly defines the equilibrium policy denoted \(P^0\) under legislation:

\[
\pi(P^0) \cdot [1 - C'(P^0)] = -\pi'(P^0) \cdot [P^0 - C(P^0)].
\]  

(6)

We then have a very simple lemma.

**Lemma 1**  
*The equilibrium legislation \(P^0\) is strictly lower than the first best policy \(P^*\).*

Proof. First we show that \(\pi'\) is negative for all \(\lambda, \pi^0\) and \(P\). Differentiating (4) yields \(\pi'(P) = (1 - \pi^0)\lambda [C(P) - P \cdot C'(P)] / (\lambda P + C(P))^2\) which is strictly negative because \(C(P) - P \cdot C'(P) < 0\) due to the convexity of the cost function. It follows that the right-hand side of Eq.(6) is negative. Hence \(C'(P^0) < 1\), or alternatively \(C'(P^0) < C'(P^*)\). It implies \(P < P^*\). 

This lemma states that the first best policy is not attainable under the legislative route. The intuition is simple. The existence of political constraints lowers the probability of adoption. To mitigate the problem, the Government needs to make a law proposal departing from the first best optimum. This proposal is lower than \(P^*\) because of the negative sign of the marginal probability. It is ultimately rooted in the fact that increasing \(P\) leads to larger losses in marginal terms than benefits due to the convexity of the cost function. It then provides the loser with more incentives to increase rent-seeking expenditures.

### 2.3 The bargaining stage
Note that $P^o$ the equilibrium policy under legislation, corresponds to the
disagreement point of the bargaining game, which we consider now. In this
game, bargaining takes place between the two lobby groups of which payoffs
are the differences between their expected utility under legislation and their
utility in the bargaining equilibrium:

$$U_L(B) \equiv \pi(P^o) \cdot C(P^o) + l^o - C(B)$$  \hspace{1cm} (7)
$$U_W(B) \equiv B - \pi(P^o) \cdot P^o + w^o$$  \hspace{1cm} (8)

with $l^o$ and $w^o$, the equilibrium rent-seeking expenditures. Let $\Omega$\equiv \{B : U_L(B) \geq 0 \text{ and } U_W(B) \geq 0\}$. The Nash bargaining solution of game is
the solution of the following maximization problem:

$$\max_{B \in \Omega} \Pi(B) \equiv (B - \pi(P^o) \cdot P^o + w^o)(\pi(P^o) \cdot C(P^o) + l^o - C(B))$$

The following result establishes that this Nash bargaining solution exists and is
unique.

**Proposition 1**  \hspace{1cm} The bargaining game has always a unique solution
denoted $\hat{B}$.

Proof. First we show that $\Omega$ is non-empty. It is convenient to denote $B_W$ the
lowest policy that the winner is ready to accept. It is defined by
$U_W(B_W) \equiv B_W - \pi(P^o) \cdot P^o + w^o = 0$. Similarly denote $B_L$ the highest policy
the loser is willing to accept, which is defined by
$U_L(B_L) \equiv \pi(P^o) \cdot C(P^o) + l^o - C(B_L) = 0$. We will show that $B_W < B_L$. From
$U_W(B_W) = 0$, we derive that $l^o = C(P^o)(B_W - \pi(P^o) \cdot P^o) / P^o$ since
$w^o = P^o \cdot w^o / C(P^o)$. Plugging $w^o$ in $U_L(B_L) = \pi(P^o) \cdot C(P^o) + l^o
-C(B_L) = 0$, we obtain that $C(B_L) = (C(P^o) / P^o) \cdot B_W$ and thus
$C(P^o) / P^o = (C(B_L) / B_L) \cdot (B_L / B_W)$. From $B_L < P^o$ and $C^" > 0$, it follows
that $C(P^o) / P^o < C(B_L) / B_L$. Hence $B_W < B_L$ implying that $\Omega$ is non-empty.

The second step of the proof is to show that the Nash product is
strictly concave. It is straightforward since the second derivative of the Nash
product is negative: $\Pi"(B) = -C"(B) \cdot U_W(B) - 2C'(B) < 0$.
Finally, let $g$ be the function describing the utility the winner obtains for a
given utility level of the loser $u_L$. The last step of the proof consists in
establishing that $g$ is strictly decreasing and concave. We have:

\begin{align*}
\end{align*}
\[ g(\mu_L) \equiv U_W(U_L^{-1}(\mu_L)) = C^{-1}(K - \mu_L) - \pi(P^o) \cdot P^o - w^o, \]

where \( K = \pi(P^o) \cdot C(P^o) + l^o \). The first and second derivatives are respectively:

\[ \frac{dg}{d\mu_L} = C^{-1}(K - \mu_L) = -1/C'(P^o) \]

and

\[ \frac{d^2g}{d\mu_L^2} = -2/C'(P^o)^3, \]

which are both strictly negative. Therefore the Nash bargaining solution exists and is unique. \[\blacksquare\]

2.4 Efficiency comparison of the bargaining equilibrium and the legislative equilibrium

Note that \( \hat{B} \) is lower than the first best policy since \( \hat{B} \leq B_L < P^o < B^* \). But is the bargaining outcome \( \hat{B} \) more efficient than the legislative outcome? In fact, bargaining dominates legislation if:

\[ W(\hat{B}) - \pi(P^o) \cdot W(P^o) \geq 0 \tag{9} \]

Denote \( B_w \) the policy satisfying \( W(B_w) = \pi(P^o) \cdot W(P^o) \). Equation (9) is satisfied if \( B_w \) is lower than \( \hat{B} \). It is easy to show that this is the case. It leads to a proposition which includes the first key result of the paper.

**Proposition 2** The equilibrium policy under bargaining \( \hat{B} \) is such that \( P^o < \hat{B} < P^* \). It implies that \( \hat{B} \) is always more efficient than the equilibrium legislation \( P^o \). However it fails to reach the first best level.

Proof. By definition, \( B_w - C(B_w) = \pi(P^o)P^o - \pi(P^o)C(P^o) \). Moreover, \( C(\pi(P^o) \cdot P^o) > \pi(P^o) \cdot C(P^o) \) follows from the convexity of the cost function and from the fact that \( \pi(P^o) < 1 \). As a result, we have \( W(B_w) = B_w - C(B_w) < W[\pi(P^o) \cdot P^o] \). Finally, we know that we are on upward sloping part of \( W(.) \) since \( P^o < P^* \). Hence, \( W(B_w) < W[\pi(P^o) \cdot P^o] \) implies \( B_w < \pi(P^o) \cdot P^o \). \[\blacksquare\]

Proposition 2 establishes that bargaining is always more efficient than the
legislative option in this political setting in which lobby groups affect the probability of adoption of new legislation. The result is very robust in that it does not depend on the stringency of the political constraints, as reflected by the values of $\lambda$ and $\pi^o$. In particular, it still holds true when the Congress is very weakly responsive to lobbies' pressure ($\pi^o \to 1$) or when the loser is much less efficient than the winner in influencing the Congress ($\lambda \to +\infty$).

To a certain extent, it can be viewed as a political Coase Theorem claiming the efficiency of bargaining between affected parties. Using the Coasean bargaining analogy, the legislation plays the role of the "property rights" by creating the conditions for the parties to negotiate. More precisely, the legislation identifies the starting conditions of the parties in the negotiation. However, a key difference with traditional Coasean bargaining is that bargaining takes place without side-payments between the winner and the loser.

Furthermore, in a traditional Coasean bargaining, the gains from trade between the parties involved are social efficiency gains that side-payments enable to exploit. In our model, the gains from trade for the two lobby groups are twofold. A first gain is that bargaining do not entail the rent-seeking expenditures $l^o$ and $w^o$. This is not the crucial reason since we can show that the highest level the polluter is ready to accept, $B_L$, would remain below the lowest level acceptable for the winner, $B_W$, even if $l^o$ and $w^o$ were arbitrarily set to zero. To demonstrate that, let denote $B_L'$ and $B_W'$, these hypothetical reservation levels that exclude rent-seeking costs. The key point lies in the convexity of the cost function as can be shown using Figure 2. The vertical axis represents the policy level. First, consider $B_W'$. By definition, we have $B_W' = \pi(P^o) \cdot P^o$. Then, $B_W' = \pi(P^o)P^o < C(\pi(P^o)P^o)$, that is the cost of meeting a policy level $\pi(P^o) \cdot P^o$ is lower than the benefit since $\pi(P^o) \cdot P^o$ is lower than the first best policy $P^*$ for which marginal benefit equals marginal cost. Then $C(\pi(P^o) \cdot P^o) < \pi(P^o) \cdot C(P^o)$ follows from the convexity of the cost function since $\pi(P^o) < 1$. Finally, as $B_L' = \pi(P^o) \cdot C(P^o)$, we have $B_W' < B_L'$ as represented in Figure 2. This the second gain from trade: the existence efficiency gains combined with the convexity of the cost function leads to positive payoffs for the two groups without using side-payments.
In the end, the key point lies in the influence technology of the lobby groups under the two policy approaches. They are only able to influence the probability of adoption of the legislation whereas they can directly influence the agreement policy level. The reasoning we have made using figure 2 shows that the bargaining technology always dominates the legislative one in this respect due to the convexity of the cost function and regardless of the effect of rent-seeking expenditures.

It also suggests how robust the result is. Given that it is basically determined by properties of the influence technologies, choosing other technologies will alter the results. This is what we are going to investigate in another version of the model.

3 The political influence model

This model version applies the common agency politics approach popularized by Grossman and Helpman (1994). We essentially keep the same political structure as that of the political obstruction model except that we now assume
that the lobby groups can influence the contents of the legislation discussed in the Congress. We will see that it requires that the Government is not the agenda setter in the Congress anymore.

3.1 Description of the model

To model the political distortions in the Congress, we make the hypothesis that a median legislator is under the influence of the two lobby groups making campaign contributions. In fact, following Grossman and Helpman (1994), we assume that the median legislator maximizes his probability of re-election facing an implicit challenger by the maximization of a weighed sum of aggregate campaign contributions and aggregate social welfare. What we have in mind is a democratically elected legislator that during a term in Congress collects campaign contributions he will use in a later, un-modelled, election. In this situation, he is facing a tradeoff between (i) higher campaign contributions that help to convince undecided or uninformed voters but at the cost of distorting policy choices in favor of contributing groups and (ii) a higher social welfare which increases the probability of re-election, given that voters take their welfare into consideration in their choice of candidate. Hence, the legislator's utility function is

\[ V(P, w, l) = \mu \cdot w + l + a \cdot W(P) \]  \hspace{1cm} (10)

where \( w \) and \( l \) are the winner's and loser's campaign contributions, respectively, and \( a, \mu \geq 0 \) are the exogenously given weights that the Government places, respectively, on aggregate social welfare relative to campaign contributions and on the winner's contributions. The parameter \( a \) is the equivalent of \( \pi^o \) of the political obstruction model. The parameter \( \mu \) introduces an heterogeneity between lobby groups – similar to the parameter \( \lambda \) in the political obstruction model - which is not determined by differences in political stakes. Contrary to us, Grossman & Helpman (G&H) assume that contributions have the same weight whoever the contributor (\( \mu = 1 \)). The G&H assumption heavily constrains the political equilibrium in assuming equal strength of lobbies. More specifically, in the case we deal with in which all the agents affected by the policy are members of lobby groups, their model simply predicts that the equilibrium policy is the efficient one: \( P = P^* \). This is so because, in G&H model, the political distortions emerge only if some agents are not represented by lobby groups. In our setting, it would imply that we assume that either the loser or the winner are not active lobby groups. Instead, our assumption
involving the parameter $\mu$ introduces a less clear-cut heterogeneity between
the two lobby groups. Depending on the value taken by $\mu$, one group is simply
more politically influential than the other. Our assumption is not absurd when
considering non-monetary campaign contributions. Lobby groups can
contribute in kind, by working for the candidates, by communicating and
convincing citizens. These non-monetary contributions may have differential
impacts depending on who is the contributor. For instance, for a given level of
efforts, a lobby groups gathering a higher number of individuals may have a
higher capability for channeling votes than another group.

The timing of the game is as follows (see Figure 2).

- The winner and the loser bargain over a policy $B$. The Government is
  not active in the negotiation but has the possibility to veto the
  agreement. If all the parties agree, the game stops
- In case of disagreement, the Government initiates the legislative process
  but delegates agenda setting to a median Legislator who makes a Law
  proposal $P$ in the Congress.
- Each lobby group simultaneously offers the median legislator a
  campaign contribution schedule $w(P)$ or $l(P)$ which is contingent on the
  policy $P$ which the legislator will vote for in the Congress. Each lobby
  group takes the other lobby group's strategy as given.
- Then, the Legislator votes the policy and receives from each lobby
  group the contribution associated with the policy selected. Although
  this is not a one-stage game, lobby groups cannot renegade on their
  promises in the second stage

The corresponding game is depicted in Figure 2. As previously noted, the fact
that the Government is not the agenda setter is key. Otherwise, the lobby
groups would have no influence on the legislation. The reason is that the utility
of the median Legislator at the lobbying stage, $V(P) = \mu \cdot w + l + a \cdot W(P)$, is
positive for any values of $\mu, w$ and $l$. It follows that the Legislator will accept
any Law proposal made by the Government since it satisfies his participation
constraint. Under this hypothesis, the Government would thus propose the first
best policy $P^*$. 

\textbf{Figure 2:} The decision tree of the political influence game
3.2 The lobbying sub game

We reason backward, starting the resolution by the lobbying sub-game. The equilibrium legislative policy $P^o$ and the campaign contributions $\{w^o, l^o\}$ are determined as a sub-game perfect Nash equilibrium of the lobbying game. The derivation of the political equilibrium follows closely Grossman and Helpman (1994) is left out for ease of exposition. The key point of the resolution is that, in equilibrium, assuming that contributions are differentiable, they are locally truthful around the equilibrium policy $P^o$. Hence, each lobby group formulates its contribution schedule so that the marginal change in the contribution for a small change in policy equals the impact on lobby group's utility of the policy change. Hence, we have:

$$w'(P^o) = -C'(P^o) \quad \text{and} \quad l'(P^o) = 1$$

In the following, we need to know the contributions since they enter in the lobby groups' payoffs in the bargaining game. A problem is that local truthfulness is not sufficient to compute these contributions. There exists an
infinity of schedules satisfying this property. To solve the problem, we need the stronger assumption that the contribution schedules are globally truthful, meaning that the difference in two contributions for different policy options "compensates" the interest for its different evaluations of these two options. The implications related to local truthfulness and global truthfulness - which is equivalent to the term locally and globally compensating - are extensively discussed in the Grossman & Helpman's book (pp 265-279, 2001). They are left out here and we simply consider the result, that is, given global truthfulness, the equilibrium legislation is the solution of the following optimization problem:

\[
\max_P \mu \cdot P - C(P) + a \cdot W(P),
\]

Hence, the median Legislator behaves as if he was maximizing a weighed sum of the aggregate social welfare and of the utilities of the lobby groups. From (11) follows a lemma that identifies the legislation in equilibrium.

**Lemma 1** Let \( P^0 \) be the equilibrium legislation. It is implicitly defined by

\[
C'(P^0) = \mu + a
\]

We observe that, unsurprisingly, \( P^0 \) is strictly higher than the first best \( P^* \) when \( \mu > 1 \), that is when the influence of the winner on the Legislator is strongest. Also, the impact of \( \mu \) decreases with the weight \( a \) that the legislator places on social welfare. For instance, if \( a \rightarrow +\infty \), then \( P^0 \rightarrow P^* \).

The next step is to calculate the equilibrium contributions of the two lobby groups. We derive them in two steps, beginning with the winner's contribution \( w^0 \). His contribution is determined relative to the policy that the Legislator would set in the absence of his contribution. Indeed, this is the policy that the winner must guard against. This policy, which we denote \( P_{-w} \), is the solution of the maximization program:

\[
\max_P -C(P) + a \cdot W(P)
\]

It is thus implicitly defined by the first order condition:

\[
C'(P_{-w}) \equiv a/(1 + a).
\]

Second, the winner must give a sufficient contribution to ensure that the Legislator chooses the equilibrium policy \( P^0 \) and not the policy \( P_{-w} \). This
requirement pins down the size of \( w^o \). More precisely, the winner willing to minimize \( w^o \) will offer the Legislator a contribution that makes him indifferent between \( P^o \) associated with the contributions \( w^o \) and \( l^o \) and the policy \( P_{-W} \) associated with \( w = 0 \) and \( l^o \):

\[
V(P_{-W}, l^o, w = 0) = V(P^o, l^o, w^o)
\]

(13)

Similarly, the policy set by the Legislator if there is no contribution by the loser is the solution of:

\[
\max_P \mu \cdot P + a \cdot W(P),
\]

implying that this policy, denoted \( P_{-L} \), is defined by:

\[
C'(P_{-L}) = (\mu + a) / a.
\]

(14)

Then the loser gives the contribution which is sufficient to ensure that the Legislator is indifferent between the equilibrium policy \( P^o \) and the policy \( P_{-L} \):

\[
V(P_{-L}, l = 0, w^o) = V(P^o, l^o, w^o)
\]

(15)

Rearranging (13) and (15) yields the equilibrium contribution:

\[
w^o = \max \left\{ 0, \left( a / \mu \right) \left[ W(P_{-W}) - W(P^o) \right] \right\}
\]

(16)

\[
l^o = \max \left\{ 0, a \cdot \left[ W(P_{-L}) - W(P^o) \right] \right\}
\]

(17)

3.2 The bargaining sub game

Having identified the equilibrium legislation and contributions \( P^o, w^o \) and \( l^o \), we now characterize the bargaining outcome. The bargaining parties’ payoffs are:

\[
U_L(B) \equiv C(P^o) + l^o - C(B)
\]

\[
U_W(B) \equiv B - P^o + w^o
\]

Let \( \Gamma \equiv \left\{ B : U_L(B) \geq 0 \text{ and } U_W(B) \geq 0 \right\} \). We keep the notations of the political obstruction model by denoting \( B_W \) the lowest policy acceptable by the winner and \( B_L \) the strictest policy acceptable by the loser. It follows that \( \Gamma = \left\{ B : B_W \leq B_L \right\} \). It is immediate that \( B_W \leq B_L \). The reason is that \( B_W = P^o - w^o \) implies that \( B_W \leq P^o \) and thus \( C(B_W) \leq C(P^o) \). As \( l^o \) is
positive, $C(B_W) \leq C(P^\circ) + \ell^\circ$. Hence $C(B_W) \leq C(B_L) \Rightarrow B_W \leq B_L$. It follows that $\Gamma$ is non-empty. The bargaining equilibrium is defined by the Nash product as follows:

$$\max_{B \in \Gamma} \Psi(B) \equiv (B - P^\circ + w^\circ)(C(P^\circ) + \ell^\circ - C(B)),$$

which has a unique solution $\hat{B}$ satisfying:

$$C(P^\circ) + \ell^\circ - C(B) = C'(B) \cdot (B - P^\circ + w^\circ).$$

Hence, we are able to write down the following proposition.

**Proposition 3** In the political influence model, the lobby groups systematically reach an agreement when bargaining.

It should be noted that, contrary to the political obstruction model, avoiding the lobbying costs (campaign contributions) is the only driver of the agreement. In the case contributions would be set arbitrarily to zero, no agreement will emerge.

### 3.3 Efficiency comparison of bargaining and legislation

Will the Government veto this agreement? It depends on the sign of his payoff in equilibrium which can be written as:

$$U_G(\hat{B}) \equiv W(\hat{B}) - W(P^\circ)$$

In fact, it can be shown that the answer is ambiguous depending on the values of $\mu$ and $a$. We consider two particular cases below.

**$\mu = 0$**

It corresponds to a case in which the winner has no influence on the legislative process. From Lemma 1 follows that $C'(P^\circ) = a / 1 + a$ which is lower than 1 implying that $P^\circ$ is lower than $P^*$. Furthermore, plugging $\mu = 0$ in (12) and (14) leads to $P_w = P^\circ$ and $P_L = P^*$. In turn, given (16) and (17), it implies $w^\circ = 0$ and $\ell^\circ = a[W(P^*) - W(P^\circ)]$ and finally:

$$C(B_L) = C(P^\circ) + a[W(P^*) - W(P^\circ)]$$

(18)
These equations define the boundary of the bargaining set. Equation (18) suggests that depending on the value of \( a \) and of the convexity of the cost function, \( B_L \) can be lower than \( P^* \) (which is a sufficient condition for bargaining to be more efficient than the legislation) or much higher (implying that bargaining is the least efficient option).

\[ B_W = P^o \quad (19) \]

\( \mu = 1 \)

In this case, the lobby groups' contributions are given the same weight by the Legislator. This cancels any political distortions under the legislative route and thus \( P^o = P^* \). It follows that legislation is the best solution.

The analysis of the other cases remains to be completed. At this stage, we have simply shown that the relative efficiency of bargaining relative to legislation is ambiguous.

4 Conclusion

We have developed a model enabling to investigate the welfare properties of bargaining between lobby groups versus legislation in a politically constrained world. In the first version – the political obstruction model - the lobby groups are simply able to influence the probability of adoption of any new legislation. In this setting, we establish what can be called a political Coase Theorem which claims that an agreement between the lobby groups will systematically emerge and that the agreed policy is always more efficient than a legislation even when the political constraints are extremely lax (that is when the Congress is very weakly responsive to lobbying, \( \pi^o \to 1 \), or when the loser is much less efficient than the winner in influencing the Congress: \( \lambda \to +\infty \)).

In the second version – the political influence model – the Government is no longer the agenda setter in the Congress. This implies that lobby groups are able to influence the contents of the legislation itself. In this new setting, agreements continue to emerge systematically. However, their efficiency becomes ambiguous. Depending on parameters reflecting the intensity and the nature of the political constraints, bargaining can be more or less efficient than legislation.

In the end, this paper stresses that the efficiency of bargaining relative to the
legislation is not only determined by the intensity of the political constraints over the legislative route but by their nature. In particular, when these constraints only affect the probability of adoption of a legislation, bargaining is more efficient. The paper is clearly exploratory in that we model very roughly what in the end determines our results: the political constraints surrounding the legislative process. In particular, in both versions of the model, we essentially consider the Congress as a black box without considering the way the different legislators interact in legislative processes. A few papers have attempted to elaborate political economy model of legislatures (for instance, Bennedsen and Feldmann, 2001). The use of these models can certainly be a basis for future research on these issues.

References


