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Having Everyone in the Boat May Sink it - Interest Group Involvement and Policy Reforms *

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Abstract

In many countries, governments involve interest groups at early stages of political decision-making. The idea of this is to enhance the legitimacy of the policy decision and to curb later opposition to the implementation of the policy. We show that the way and timing of interest groups involvement can be crucial for the scope and success of policy reforms. When interest groups influence both the policy choice, or legislation, and the subsequent decision on the implementation of the policy, their early involvement may lead them to oppose the reform more than if they had been excluded from the legislation stage.

JEL-Classification: D 72, D 78, H 51

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1 Introduction

In many countries, governments involve special interest groups at very early stages of the political process, either by hearing their suggestions for the contents of a new policy or even by granting them decision-making rights in the negotiation about a new policy. The idea of such an integration of special interests in the legislation stage is to "get everyone in the boat", i.e., to spread the responsibility for a policy reform over all affected groups in order to avoid later opposition against the implementation of the new policy.[1] We show that this early involvement of interest groups can have adverse consequences: When interest groups take part in the legislation stage, they might later oppose reform implementation *more*. In these cases, the strategy to facilitate reform implementation by getting everyone in the boat backfires. The chances of a successful reform can then be enhanced by excluding special interests from the legislation stage.

It is striking that in many policy areas where governments are publicly criticized far a lack of reform effort, interest groups are particularly influential. For example, in Germany in the so-called "Bündnis für Arbeit" (alliance for employment) interest groups both from the employers' and the employees' sides were invited to negotiate proposals for a reform of parts of the social security system. At the same time, the German government has been heavily criticized for its lack of initiative. The advisory board to the German Ministry of Economics and Technology has warned that the German corporatist system could be causal for this lack of labor market and health sector reforms.[2] The board sees corporatism, broadly defined as the involvement of non-governmental stakeholders (such as special interest groups) already in the process of the *design* of a new policy, as an inefficient shift of political responsibility to special interests. In the opinion of the board, this can reduce reform efforts of the government in particular when lobbies have vested interests in preserving the status quo.

These observations raise the question whether the involvement of lobbies at the legislation stage, rather than providing the cure for government inertia, might be part of the disease. In this paper, we show why the *structure* of the political process together with the *timing* of the involvement of interest groups can be a cause for a lack of policy reforms. A political decision is not a one-shot event. We can decompose the political decision-making process in at least two stages: First, in the legislation or policy choice stage, a new policy for a certain issue is designed. Then, in the policy implementation stage, the government decides on the effort that it

[1] Strictly speaking, a reform should be a new policy with far-reaching implications for the economy. Yet, in this paper, the terms reform and new policy are used interchangeably.

[2] "Aktuelle Formen des Korporatismus", Stellungnahme des Wissenschaftlichen Beirats beim Bundesministerium für Wirtschaft und Technologie, 26. and 27.5.2000 (in German).

allocates to actually implementing the new policy, e.g., to making a reform work. [3] Our model uses a stylized two-stage decision-making process with two lobbies. The policy choice stage is modelled as a modified contest between the two lobbies. In the resulting policy compromise, the lobbies' preferred policies are weighted according to their relative efforts in the contest. Rather than modelling the government's decision whether to include lobbies or not, we compare two different scenarios: In one scenario, lobbies are included in the first stage while in the other, they can lobby only in the second stage. When lobbies are not involved in the policy choice stage, the government picks its own preferred policy. How much the lobbies support the implementation of the new policy is determined by the fit of the policy compromise or the government's policy to the lobbies' preferences. The second stage is modelled as a standard common agency lobbying game about the level of implementation of the new policy. We show that if lobbies have political influence in *both* stages of the political process, this can lead to a lack of implementation compared to the case where lobbies are excluded from the policy choice.

The explanation for our result is not simply that interest groups generally prefer the status quo. Rather, the result depends on the lobbies' preferences for the new policy. Think of real world committee meetings, where the outcome usually reflects the smallest common denominator of the preferences of all groups involved: Somewhat counter-intuitively, the more weight the interest groups put on their preferred policy compared to all other alternatives in the first stage, i.e., the more extreme they are, the less they gain from being involved in the policy negotiations. The reason is that they have to agree on a compromise. When lobbies share only a small common denominator, the resulting policy compromise has a low value for them. Then, a strategy of getting all interest groups in the boat backfires as it reduces the lobbies' preferences for a policy change. When, in turn, the lobbies' utility does not decrease extremely when the policy deviates from their preferred policy, involving them in the policy choice stage makes them more interested in later supporting policy implementation than confronting them with a fixed policy chosen by the government.

There are several reasons why governments involve interest groups in the political process. One is that the government wants to extract information from the lobbies. Lobbies may be better informed than the government about the optimality or the feasibility of a policy. However, they will try to influence the legislation by communicating biased information (see, e.g.,

[3] While this two-stage structure is a feature of most political processes, it is visible particularly clearly in the structure of the US House and Senate: A policy is defined in the committees concerned with the issue. Then, the Committees on Appropriations decide on the fraction of the budget that is made available for the new policy (see, e.g., Kiewiet and Mc Cubbins, 1991).

Dewatripont and Tirole, 1999, Baron, 2003, Bennedsen and Feldman, 2001, and Grossman and Helpman, 2001, Chpt.6). The reason for lobby involvement that is most prominent in the political economy literature is the government's interest in collecting lobbying contributions. This is usually captured with the by now standard common agency approach of lobbying (Bernheim and Whinston, 1986a, 1986b, Grossman and Helpman, 1994, 2001, and Dixit, Grossman and Helpman, 1997).[4] The political science literature argues also that governments may involve lobbies in order to create legitimacy for a policy. Broscheid and Coen (2003), Greenwood (1997), and Greenwood and Ronit (1994) discuss these reasons of lobby involvement for the EU level. By making the lobbies responsible for the policy choice, the government may be able to avoid later opposition of those groups that may loose from the reform. This purpose of lobby involvement is particularly clear when lobbies are involved in very early stages of the political process.

Few authors analyze the process of policy choice with interest groups. An exception are Epstein and Nitzan (2002a, 2002b, and 2004). In their models, the policy choice is a contest between lobbies. Epstein and Nitzan (2002b) model the policy choice as a proposal by a bureaucrat that has to be approved by an elected decision-maker. Interest groups can influence the approval decision. Epstein and Nitzan (2004) show that lobbies have the incentive to restrain themselves in a policy choice contest by suggesting moderate policies in order to increase the chance that their suggestion is approved. Yet, the authors do not consider the later policy implementation. Our model makes a step further and asks for the effects of policy compromises in the legislation stage on lobbying incentives for policy implementation.

Other models endogenize the policy choice by combining a citizen-candidate model with a model of lobbying: Besley and Coate (2001) find that lobbying does not restrict the equilibrium policy space as citizens strategically choose candidates whose policy preferences offset the lobbies' influence. In contrast, Felli and Merlo (2003) find that when the politician can choose the lobbies he bargains with, the equilibrium policy space is drawn towards the median and lobbying reduces the set of feasible policy alternatives. Fredriksson and Svensson (2003) endogenize the *effectiveness* of lobbying by adding another stage after the standard common agency lobbying game: If there is political instability, the government may not stay in power long enough to implement the desired policy. When deciding on their lobbying expenditures, lobbies take the

[4] Applications of the common agency framework are numerous. See, for example, Persson and Tabellini (1994) for the provision of local public goods, Rama and Tabellini (1998) for labor market politics, and Lahiri and Raimondos-Moeller (2000) for foreign aid. Aidt (1998) analyzes environmental politics, Dixit (1996) and Marceau and Smart (2003) look at taxation issues. Kirchsteiger and Prat (2001) analyze inefficiencies of the lobbying game. Drazen and Limão (2003) show that it is optimal for the government to commit itself to a cap on transfers to special interests when both the lobbies and the government have some bargaining power.

success probability of their political pressure into account. We endogenize the lobbies' *interest* in lobbying in the second stage implementation decision by adding the policy choice stage *before* it. In contrast to the standard lobbying models where the lobbies' objectives are exogenously given, the success of a new policy depends not only on the influence of its proponents and opponents in the implementation stage. As the lobbies participate in the policy choice, it is also determined by their gains from the policy compromise. If an issue is highly contested, lobbies do not benefit much from a policy compromise. This makes them disinterested in supporting the implementation of that policy, even if their status-quo bias is relatively low.

There are other explanations for the lack of policy reforms (for surveys see Alesina, 1994, or Drazen, 1996). Alesina and Drazen (1991) explain delays in budget stabilization measures with a war of attrition among heterogeneous groups in society. In Fernandez and Rodrik (1991), uncertainty over gains and losses from a new policy creates a status-quo bias. Romer (2003) argues that undesired policy outcomes can be the result of citizens' errors in assessing the value of a policy. There are very few papers that point to interest groups as the cause for government inertia. Starting with Olson (1982), they focus on the status-quo bias of lobbies. Coate and Morris (1999) endogenize the status-quo bias in a dynamic setting. Lobbies first adjust to an initial policy and then strive to retain the benefits from that policy. In contrast, in our model, it is not the status-quo bias of lobbies alone that leads to lack of reforms. Rather, we show that if the lobbies' participation in the policy choice leads to a weak policy compromise, this reduces their interest in supporting policy implementation.

We see two main advantages in this two-stage model with interest groups: First, a two-stage setup helps to draw a more realistic picture of politics. Second, a two-stage model can highlight *structural* reasons for the failure of governments to implement new policies. In other words, the blame does not lie on the preferences of the interest groups alone. Rather, the political institutions that regulate the involvement of interest groups in the political process create lobbying incentives that promote government inertia. Persson (1998) points to the strong link between lobbying outcomes and the political institutions that set the rules for lobbying. Our model considers one particular case: In the legislation stage, interest groups are integrated in order to create legitimacy for a policy. In the later policy implementation stage, interest groups lobby by contributions.

The paper is set up as follows: In section 2, we set up our model of a two-stage political process. The discussion of the results in section 3 highlights the mechanisms of political decision-making with interest groups. In section 4, we conclude.

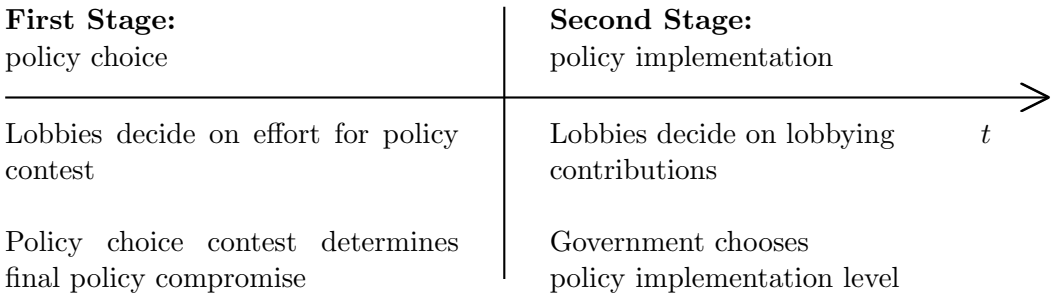
2 The Two-Stage Political Process

We model a stylized political decision-making process with two stages. The final policy outcome has two components: The political strategy, i.e., *what* is done, and the implementation level, i.e., *how well* it is done: The effort or amount of funding that is allocated to the implementation of the political strategy. For example, the political strategy would be a new law and the implementation level would then show how well the new law is enforced. The political strategy (in the following: the policy) is chosen in the first stage. We call this stage the "policy choice stage".[5] In the second stage, the policy implementation stage, the government decides how much expenditures or effort it allocates to that policy (in the following: the implementation level).

In the model, there are two interest groups. We assume that the members of these two groups have managed to overcome the problem of collective action (Olson, 1965) and were able to organize themselves in lobbies.[6] The rest of the population is not organized.[7]

In the *first stage* of the model, the lobbies decide on their effort levels for the first-stage policy choice contest. The policy choice contest determines the compromise policy that is taken as given in the *second stage*. There, the government decides on the level of policy implementation. The interest groups can influence the implementation level by offering contributions to the government. As the game is solved by backward induction, we begin with the description of the second stage. The time structure is summarized in figure 1.

Figure 1: Time Structure



[5] It can be thought of as the legislative stage. Yet, the term "legislative stage" would imply a focus on formal legislative bodies and legislative rules which we do not have in this model.

[6] Mitra (1999) and Magee (2002) model the endogenous formation of lobbies in the context of trade politics.

[7] We use this assumption as we want to show how lobbying creates distortions of the policy implementation level. If all groups of the population were represented in interest groups, the lobbying outcome could be socially efficient. Dixit, Grossman, and Helpman (1997) show that the equilibrium would be socially efficient if the whole population is organized in interest groups and if lobbies are constrained to truthful contribution schedules.

2.1 The Implementation Choice

In the second stage, the new policy is taken as given. We denote it by θ. It is either the outcome of the contest between the lobbies in stage one or the government's preferred policy if lobbies are not involved in the policy choice stage. The interest groups pressure the government to choose their preferred implementation level for the new policy.

The second stage is a two-period game of common agency, as in Dixit, Grossman, and Helpman (1997) and Grossman and Helpman (1994, 2001): In the first period, the two lobbies j and k simultaneously and non-cooperatively choose a contribution schedule $C_i(X)$, $i \in \{j, k\}$, from a set $\mathcal{C}$ of feasible schedules. $\mathcal{C}$ is assumed such as to guarantee interior solutions in equilibrium. The contribution schedules are assumed to be continuous and differentiable. They are a binding promise of a lobby to pay a certain amount of contributions in exchange for each feasible implementation level.[8] In the second period, the government chooses an implementation level X from a set $\mathcal{X}$ of feasible implementation levels, taking into account its own objectives and the contributions of the two lobbies. The expenditures X for the new policy are a part of the total tax revenue T of the government. T marks the upper bound for the expenditures for the new policy. In this section, we first describe the strategies of the interest groups. Then, we set up the objective function of the government and explain the government's strategy.

The Lobbies

The lobbies influence the government by contributions. These can range from explicit bribery to donations to the government party. The contributions are of a private nature. The government cannot use them to finance policy implementation, to lower taxes, or to give transfers to the citizens. The utility function of lobby i is given by:

$$U_i = -R_i - C_i(X) + u_i(\theta)X + s_i(T - X) \tag{1}$$

R_i is the lobby's effort in the first stage policy choice contest. This effort is sunk after the first stage and does not play a role for the second-stage lobbying choice. This means that we do not assume any budget constraints for the lobbies. The trade-off for the lobbies in the policy implementation game is the following: Both lobbies have to incur the costs of lobbying $C_i(X)$.

The lobbies' utility from the new policy outcome is taken to be multiplicative in the utility from the political strategy $u_i(\theta)$ and the implementation level X. This means that $u_i(\theta)$ is equivalent to the marginal interest for expenditures X for policy θ. Out of the remaining tax

[8] That lobbies are able to commit to their payment schedule is a common feature of all models of lobbying with common agency. In a dynamic setting, this commitment could be created by reputation effects (Aidt, 1998).

revenue $T - X$, other policies are financed. We call these policies the status-quo policies as they are not the new policy chosen in stage one. The lobbies gain the utility $s_i(T - X)$ from these policies. When implementing the new policy, the government diverts resources from other policies that are also beneficial for the lobbies. This reduces the value of the new policy for the lobbies. The parameter $s_i \geq 0$ captures the lobbies' status-quo bias or their opportunity costs from the new policy. If s_i is high, the lobby receives high gains from the status-quo policy and suffers if resources are diverted towards the new policy. Generally, the s_i do not have to be symmetric for both interest groups.[9]

The marginal utility of contributions of lobby j and equivalently for lobby k is given by:

$$\frac{\partial U_j}{\partial C_j} = -1 + u_i(\theta)\frac{\partial X(\{C_i\})}{\partial C_j} - s_i\frac{\partial X(\{C_i\})}{\partial C_j} = -1 + \pi_j\frac{\partial X(\{C_i\})}{\partial C_j} \tag{2}$$

First, the marginal costs of contributing are 1. The second term of equation 2 shows the marginal gain for a lobby of the change in X induced by a marginal increase in lobbying contributions. $\pi_i = u_i(\theta) - s_i$ denotes the marginal lobbying interest in the implementation of the policy compromise. When $\pi_i < 0$, the lobby wants less government effort for that policy as then, its status-quo bias s_i outweighs its utility u_i from the new policy. When $\pi_i > 0$, the lobby strives to increase the policy implementation level. We can see from here that the policy choice in stage one influences the lobbying incentives in stage two.

The Government

The government chooses the expenditures X for the implementation of the new policy. The government's objectives are driven by the desires to be reelected and to appropriate lobbying contributions. We do not explicitly model elections. Instead, we assume that the government maximizes its chance of winning the next elections by maximizing the utility of the representative citizen. This could also be the median voter or the aggregate of all the identical citizens. The citizens' utility function is given by:[10]

$$W(X) = u_G(\theta)X + V(T - X) + Y - T \tag{3}$$

with $V(X)$ continuous and twice differentiable, $V(0) = 0$, $V_X < 0$ and $V_{XX} < 0$. To ensure internal and unique solutions for X, we assume $lim_{X\to 0}V_X = 0$ and $lim_{X\to T}V_X = -\infty$.

The citizens' utility from the new policy outcome is multiplicative in the utility from the political strategy $u_G(\theta)$ and the implementation level X. $u_G(\theta)$ thus measures the citizens'

[9]We restrict the s_i to be positive for the convenience of exposition. Yet, all results would be preserved if we allowed for negative status-quo biases. Lobbies would then have an exogenous strong interest in the new policy.

[10]The results of our model hold for a general function $W(X)$ as long as it has a unique global maximum. However, this more specific function helps to illustrate some of the results.

marginal interest in the implementation of the new policy θ. The rest of the fixed tax revenue, $T - X$, is used for other policies. The citizens' utility from the expenditures for these policies is $V(T - X)$. The last part of the citizens' utility is their private consumption $Y - T$, where Y denotes total aggregate income.

When there is no lobbying, the government decides on a level of implementation called the no-lobby implementation level. It is useful to state the following preliminary result:

Lemma 1 *Without lobbying in stage two, the government's maximization problem has a unique global maximum $X_{nl}^*(\theta) \forall \theta$. X_{nl}^* is increasing in $u_G(\theta)$. It is given by:*

$$X_{nl}^*(\theta) = argmax W(X, \theta) = argmax[u_G(\theta)X + V(T - X) + Y - T]. \tag{4}$$

Proof. See the appendix. ■

When there is lobbying in stage two, the government cares about the political contributions from the lobbies and about the utility of the citizens. With lobbying, the government maximizes:

$$G(\{C_i\}_i, X) = \sum_{i \in \{j,k\}} C_i(X) + W(X) \tag{5}$$

Note that our setup differs slightly from Dixit, Grossman, and Helpman (1997) as the utilities of the lobbies are not included in the objective function of the government. In our model, the government maximizes a reduced form of the citizens' welfare. We choose this setup as we want to assess how the influence of lobbies distorts the policy implementation level away from the one desired by the public. While our results would still hold qualitatively., the inclusion of the lobbies' utilities in the aggregate welfare function would distract attention from this point.

2.2 The Policy Choice

In the first stage, the government has to choose a policy θ. We distinguish the scenario without lobbying and the corporatist scenario where the interest groups engage in a contest over the policy choice. Without lobbying, the government chooses the policy θ_G. It is the most preferred policy of the representative citizen, i.e., $\theta_G = argmax[u_G(\theta)]$. Lobbies remain inactive and take the policy θ_G as given in the second stage. In the second scenario, the government invites the lobbies to take part in the policy choice. We model the policy choice as a contest between the two lobbies. Each interest group has a preferred policy θ_i, $i \in \{j, k\}$ in the one-dimensional policy space, where, without loss of generality, $\theta_j < \theta_k$. The policy preferences are exogenously given and fixed, i.e., the proposed policies are not a strategic variable.[11] We assume that the

[11] In contrast, in Epstein and Nitzan (2004), the policy choice is endogenous.

government's preferred policy θ_G lies in between the lobbies' preferences: $\theta_j < \theta_G < \theta_k$. This is plausible as the government represents the general public interest. Note that except for the very special case where the government's preference is equal to the mean of the lobbies' preferences θ_G is closer to one lobby's and farther away from the other lobby's preferred policy.

Each lobby derives the utility $u_i(\theta)$ from the policy choice. These utilities are maximized at the preferred policy of the lobby and minimized at the preferred policy of the other lobby. We assume that the utilities are symmetric and are strictly decreasing with the distance of θ to the lobby's own bliss point θ_i. For simplicity, we assume that

$$\begin{aligned} u_j(\theta_j) = u_k(\theta_k) &= 1; \\ u_j(\theta_k) = u_k(\theta_j) &= 0, \quad k \neq j. \end{aligned}$$

For each lobby's utility from the government's preferred policy, $u_i(\theta_G) \in]0;1[$. Note that $u_j(\theta_G) \neq u_k(\theta_G)$ depending on which lobby's interests fit better to the government's.

What happens in the policy choice stage? The idea behind our model is that the outcome of the policy choice negotiations reflects the smallest common denominator of preferences. We use a very simple approach in order to capture this idea: The lobbies are taking part in a modified version of a Tullock-type rent-seeking contest. Each lobby exerts effort R_i. We do not have a binding budget constraint for the lobbies and assume that they are always able to cover the equilibrium first stage and second stage lobbying expenditures. Therefore, the effort costs are sunk in stage two. Yet, there is a crucial difference to a contest: The final "prize" of the contest is not the most preferred option of one of the parties, but a weighted average of these preferences. As weights, we use the probabilities of winning from a standard Tullock (1980) contest success function that relates each group's lobbying effort to the total lobbying effort. We use this setup in order to capture the notion of a policy compromise in which each of the lobbying parties has to concede partially. This seems to fit better to real world policy negotiations than a standard contest result where one of the party wins exactly its preferred outcome while the other party gets nothing. In addition, this setup avoids any time inconsistency problems that might arise due to the asymmetry between lobbies if one lobby wins while the other looses. We describe the lobbies' utility maximizing effort choice and the resulting equilibrium policy compromise in section 3.2. The compromise policy θ_C is given by:

$$\theta_C = \frac{R_k}{R_k + R_j}\theta_k + \frac{R_j}{R_k + R_j}\theta_j \tag{6}$$

It is worthwhile to discuss our assumption that whenever lobbies are included in the policy choice stage the government merely creates a compromise from the preferred policies of the two

lobbies without taking its own policy preferences into account. Our results would hold if the government would include its own preferred policy in the compromise. The compromise then would be $\theta_C = b_j\theta_j + b_k\theta_k + (1 - b_k - b_j)\theta_G$, where $b_j, b_k > 0$ and $b_j + b_k < 1$ are the weights that the government puts on the respective policy preferences. We use this assumption for the clarity of exposition. Yet, it is only important for our result that the government, when lobbies are taking part in the policy choice stage, gives some weight to the lobbies' policy preferences. We also do not give the government the choice of taking only its own policy preference in spite of having invited the lobbies. This assumption is of course crucial for the results, as otherwise, the government could always reach its preferred policy θ_G and the difference between having or not having lobbies involved in the first stage would vanish. It can be justified by the idea that before the negotiations take place, the government does not have perfect information on the exact shape of the lobbies' policy preferences. When this information is revealed only after the lobbies have been invited to the policy choice, it is to late for the government to withdraw its invitation and take its own preferred policy.

3 Lobbying in a Two-Stage Political Process: Equilibrium

In this section we derive the equilibrium of our lobbying game that involves the policy choice and the policy implementation stage. The equilibrium concept is a subgame-perfect Nash equilibrium. We solve the model by backward induction.

3.1 Stage Two

The equilibrium implementation level of stage two is part of the equilibrium of the common agency game. As is common in the literature, we restrict ourselves to "truthful" or "globally compensating" payment functions. A payment function $C_i(X)$ is truthful if for the fixed utility level $\overline{U}_i$ we have that $C_i(X) = max\{\pi_i X + s_i T - \overline{U}_i, 0\}$. With truthful payment functions, a lobby's willingness to pay for a level of policy implementation is its utility from the equilibrium implementation level net of this target utility. Generally, the truthful payment function of principal i rewards the agent for every change in the variable X exactly by the utility change of the principal, whenever payments are strictly positive.[12]

[12] As shown by Bernheim and Whinston (1986), the restriction to truthful equilibria is attractive because they are coalition-proof and efficient in the sense that the outcome of such an equilibrium maximizes the sum of payoffs of the players. Furthermore, Bernheim and Whinston have shown that each lobby's best-response correspondence to any strategy of the opponents contains a truthful strategy. Most models of special interest politics use the concept of truthful equilibria. Grossman and Helpman (2001) use the term of "compensating contribution schedules". They distinguish between locally compensating contribution schedules that define only

A truthful equilibrium of our policy implementation game is a pair of feasible optimal and truthful lobbying contribution schedules $\{C_i^*(X, \overline{U}_i)\}_{i\in\{j,k\}}$ and the optimal implementation level X^* such that X^* is the government's best response to $\{C_i^*(X, \overline{U}_i)\}_i$ and, for each lobby i, the equilibrium lobbying contribution $C_i^*(X^*, \overline{U}_i)$ and the resulting implementation choice by the government X^* are a best response to the contribution schedule of the other lobby.

Proposition 1 *For each policy θ and each combination of the lobbies' status-quo biases $\{s_i\}_{i\in\{j,k\}}$, there exists an equilibrium $\{X^*; \{C_i^*\}_i\}$ with a unique implementation level X^* and a set of truthful contribution schedules $\{C_i^*\}_i$ if and only if*

$$X^* = argmax G(\{C_i^*(X, \overline{U}_i)\}_i; X) = argmax \left[\sum_{i\in\{j,k\}} C_i^* + W(X) \right], \tag{7}$$

$$C_i^* = max\{\pi_i X^* + s_i T - \overline{U}_i; 0\}, \tag{8}$$

and $\overline{U}_i$, $i \in \{j, k\}$ such that

$$G(\{C_j^*(X^*, \overline{U}_j), C_k^*(X^*, \overline{U}_k)\}; X^*) \geq \max_{X\in\mathcal{X}} G(\{C_j^*(X, \overline{U}_j)\}; X). \tag{9}$$

Proof. See the appendix. ■

A truthful contribution schedule reflects the lobby's willingness to pay for a policy change for all positive lobbying contributions. Formally:

$$\frac{\partial C_i}{\partial X} = -\frac{\frac{\partial U_i}{\partial X}}{\frac{\partial U_i}{\partial C_i}} \tag{10}$$

$\forall X$ where $C_i(X) > 0$ given that the lobby reaches the utility level $\overline{U}_i$, and $C_i(X) = 0$ otherwise. To induce the lobby to participate in the lobbying game, $\overline{U}_i$ has to be weakly higher than the utility that the lobby could achieve without participating.[13] When the lobbies have similar interests, the policy implementation level has some characteristics of a public good: There is no rivalry in consumption as the policy does not entail redistribution among the lobbies. These mutual gains from policy implementation could induce the lobbies to free-ride on each other's lobbying contributions. In common agency models, this is excluded in truthful equilibria where each lobby contributes its utility increase of a policy change.[14]

equilibrium behavior and globally compensating contribution schedules that prescribe the same rule also for all out-of-equilibrium contributions.

[13]For example, take lobby j with $\pi_j > 0$: When it does not lobby, $U_j = \pi_j X_k^* + s_j T$ where X_k^* denotes the equilibrium policy choice when only k is contributing. If j is to participate in the lobbying game, we need that at least $\overline{U}_j = \pi_j X_k^* + s_j T$.

[14]In contrast to that standard result, Le Breton and Salanie (2003) show that free-riding can occur under asymmetric information over the politician's sensitivity to political contributions. Some readers may wonder whether a situation where lobbies have the same interests is of any relevance. Empirically, Gawande (1997) shows that the interactions between similar lobbies are the most important source of lobbying expenditures.

3.2 Stage One

We first consider the case where the lobbies take part in the policy choice stage. Each lobby chooses its effort R_i for the policy choice contest by maximizing its utility with respect to R_i, taking into account how the game in stage two will be affected by this decision. Lobby i's problem is:

$$\max_{R_i} U_i = \max_{R_i}[-R_i - C_i^*(X^*) + u_i(\theta_C)X^* + s_i(T - X^*)] \tag{11}$$

where the compromise policy θ_C is given by $\theta_C = \frac{R_k}{R_k+R_j}\theta_k + \frac{R_j}{R_k+R_j}\theta_j$.

For our purposes, we are interested in the effort levels R_i only insofar as they determine the compromise policy. As we will later only compare the resulting policy implementation levels X^* and the citizens' welfare, we do not need the equilibrium value of the lobbies' utility function. Note that X^* implicitly depends on the effort choice R_i. The reason is that the compromise policy determines the lobbies utility from the policy choice stage $u_i(\theta_C)$ which in turn determines the equilibrium lobbying effort $C_i^*(X^*)$. Via the truthful equilibrium in stage two, we have that $X^* = X^*(\sum_{i\in\{j,k\}} \pi_i(\theta_C))$ where $\pi_i = u_i(\theta_C) - s_i$. We can show that we have a unique outcome of the policy choice stage where lobbies are involved:

Proposition 2 *The compromise policy θ_C is given by $\theta_C = \frac{\theta_j+\theta_k}{2}$.*

Proof. See the appendix. ■

For the above result, it suffices to show that the two lobbies behave symmetrically in the first-stage equilibrium. Intuitively, the reason is that lobbies use truthful contribution schedules in stage two, meaning that their marginal contributions reflect the changes in their marginal utility due to a policy change. Thus, changes in the marginal utility from the implementation of the new policy, $u_i(\theta)$ are exactly compensated (see proof of proposition 2). Also, as there is no budget constraint for the lobbies, so first stage lobbying effort has no impact on the availability of second stage lobbying contributions.

We define the utility level of the lobbies from the policy compromise by $u_j(\theta_C) = u_k(\theta_C) = \lambda$. Note that we assumed that the lobbies' preferences are symmetric. As the compromise policy is the mean of the lobbies' bliss points, they derive the same utility from the compromise. Yet, we did not restrict the shape of the preferences: They can be very extreme, putting a utility of 1 only on the own preferred policy and of nearly 0 on all other policies, they can be very moderate, putting a utility of 0 only on the opponent's proposal and of almost 1 on all in-between policies. The utility λ that the interest groups derive from the policy compromise, captures some characteristics of the lobbies' preferences and of the policy issue that is at stake.

A small λ means that for this issue, preferences are very extreme. A a compromise therefore yields a low value for the lobbying parties. A high λ implies that the issue is less controversial so that lobbies can benefit to some extent from the compromise. We can make the following categorization:

Lemma 2 *The lobbies' utilities from the policy compromise $u_i(\theta_C) = \lambda$ measure the extremeness of their policy preferences. We can distinguish the following two cases:*

- *Case 1: when $\lambda > \frac{1}{2}$, θ_C maximizes the lobbies' joint policy preferences $\sum_i u_i(\theta)$*
- *Case 2: when $\lambda < \frac{1}{2}$, θ_C minimizes the lobbies' joint policy preferences $\sum_i u_i(\theta)$.*

Proof. We know that $u_i(\theta)$ is increasing towards each lobby's bliss point and that u_j and u_k are symmetric. As θ_C is the mean of the lobbies' bliss points, λ can be used as a measure of the curvature of the lobbies' utilities from the policy choice. $\lambda > \frac{1}{2}$ holds when both utility functions are concave. Then, the mean policy θ_C maximizes the sum of utility values. $\lambda < \frac{1}{2}$ holds when both utility functions are convex. Then, the sum of the utility values is minimal at θ_C. ■

In the other case, when the lobbies are excluded from the first stage, the government chooses its preferred policy θ_G. Then, lobbies gain $u_i(\theta_G)$ from the policy choice stage.

3.3 Lobbying as Cause of Government Inertia?

We can now compare the overall outcomes for the case where lobbies are involved in the first stage and the case where they are excluded. This tells us under which conditions it may backfire to get everyone in the boat from the beginning. From propositions 1 and 2, we get:

Proposition 3 *When lobbies are involved in both stages of the political process, we get a unique equilibrium of the political decision-making game with a compromise policy θ_C, the policy implementation level X^*, and a set of truthful lobbying contribution schedules $\{C_i^*(X^*, \overline{U}_i)\}_{i\in\{j,k\}}$.*

Proof. The proof follows from propositions 1 and 2. ■

The purpose of this model is to point to the link between the two stages of a political decision-making process. The process of choosing a policy on the one hand and the decision on a level of policy implementation on the other hand are connected: The quality of a policy compromise and the gains that lobbies derive from this compromise directly affect the level of implementation of a policy. In addition, the status-quo biases of the lobbies play an important role. In particular for policy compromises that have a low value for lobbies, their preferences for the status-quo policies may outweigh the positive interests in the new policy.

In this section, we compare the implementation outcomes for different situations: We distinguish the cases with lobbying in both stages, the case where lobbies are only involved in the policy implementation decision but not in the policy choice stage, and the case without any lobbying. We can show that for a wide range of policy characteristics, the inclusion of lobbies in the political process leads to a reduced level of policy implementation. We use two measures for our comparison. The first is the policy implementation level X. A higher X means that a policy is implemented to a higher degree, i.e., the reform is more encompassing. Then, in order to assess the impact of lobby involvement, we also use a comparison of the welfare of our representative citizen under the different scenarios.

We first compare the policy implementation outcomes for the case where lobbies are involved in both stages and the case where lobbies are excluded from the first stage. For notation, let X_C^* be the implementation level following from the marginal gains from policy implementation $\pi_i^C = \lambda - s_i$ when lobbies are involved in the first-stage lobbying process and the policy choice is the compromise policy θ_C. As mentioned in section 2.2, the lobbying efforts in stage one are sunk. Thus, when deciding on their lobbying effort in stage two, the lobbies only consider their gains $u_i(\theta_C) = \lambda$ from the policy compromise in stage one, and their status quo biases s_i. Let X_G^* be the implementation level following from the case where lobbies are only involved in the second stage of the political process. Then, the policy that is brought to implementation is the government's preferred policy θ_G and the lobbies' marginal gains from policy implementation are $\pi_i^G = u_i(\theta_G) - s_i$. Using our previous findings, we can state:

Proposition 4 *The inclusion of lobbies in the first stage of the political process leads to reduced levels of policy implementation with respect to the case where lobbies are involved only in the second stage of the political process when the lobbies' policy preferences $u_i(\theta)$ are convex. Formally, $X_C^* < X_G^*$, if $\lambda < \frac{1}{2}$.*

Proof. See the appendix. ■

For this comparison, the status-quo biases of the lobbies cancel out as lobbies are subject to the bias in both cases. The equilibrium implementation level depends only on the sum of marginal interest in the new policy $\sum_i u_i(\theta)$. Generally, the two cases will differ as we have that $\theta_C = \frac{\theta_j + \theta_k}{2}$ and $\theta_j < \theta_G < \theta_k$. We do not look more closely at the knife-edge case where $\theta_C = \theta_G$. The sum of lobbies' utilities $\sum_i u_i(\theta)$ from the first stage policy choice is *minimized* at θ_C whenever u_i is strictly convex. This is the case when $\lambda < \frac{1}{2}$. Similarly, $\sum_i u_i(\theta)$ is *maximized* whenever u_i is strictly concave and therefore, when $\lambda > \frac{1}{2}$ (see lemma 2). The result says in essence that whenever the lobbies' utilities from the policy choice are convex, the lobbies would

be more interested in the implementation of the new policy if they were confronted with a policy chosen by the government. In this case, for the aggregate of the two lobbies, the compromise θ_C that is created when the lobbies are involved in the policy choice stage minimizes their interest in policy implementation. Any other suggestion from the government can in this case do better than that. When, on the other hand, the lobbies place a higher utility on a potential policy compromise, i.e., $\lambda \geq \frac{1}{2}$, they gain from being invited in the policy choice stage. In these cases, having lobbying in both stages of the political process will improve the implementation outcome.

The result is illustrated graphically in figure 2 (figure 2 about here).

Our result identifies general conditions under which involving lobbies too early in the political process creates the problem of a lack of policy implementation. Then, interest groups should be excluded from lobbying in the first stage and should be forced to accept the policy chosen by the government. Policy implementation can under these conditions be improved if the government does not try to get everyone in the boat to create a compromise but accepts later potential opposition to a policy reform from one of the lobbies. To have one strong supporter of a policy and one opposer of a reform might be preferable to having two lukewarm defenders.

When we compare the outcomes with lobbying with the outcome without any lobbying, the status quo biases of the lobbies play a role. We can replicate here the standard result that the status quo bias of lobbies contributes to a lack of policy reforms. For notation, let X_{nl}^* denote the policy implementation level for the case without lobbies.

Proposition 5 *The inclusion of lobbies in both stages of the political process leads to reduced levels of policy implementation with respect to the case without lobbying, i.e.,* $X_C^* < X_{nl}^*$ *if* $\sum_{i\in\{j,k\}} \pi_i^C < 0$. *This is true in the following cases:*

- *Case 1: when* $\sum_i s_i > 2$, $X_C^* < X_{nl}^* \; \forall \lambda \in [0;1]$
- *Case 2: when* $0 < \sum_i s_i \leq 2$, *the result depends on* λ*:*
  - *For* $\lambda < \frac{\sum_i s_i}{2}$, $X_C^* < X_{nl}^*$
  - *For* $\lambda \geq \frac{\sum_i s_i}{2}$, $X_C^* \geq X_{nl}^*$

Proof. See the appendix. ■

Whether the implementation level X_C^* is larger or smaller than the no-lobby level X_{nl}^* depends on the relation of the status-quo biases s_i and the lobbies' utilities λ from the policy compromise. The higher s_i, the lower is a lobby's marginal interest π_i^C in the implementation of the new policy.

Vice versa, for a given status-quo bias, the marginal gains π_i for a lobby from the new policy increase with λ. Each lobby k suffers from the new policy and will lobby to reduce its level of implementation whenever $\pi_i < 0$. This is in line with the observation that policies that reduce existing advantages for certain groups encounter more difficulties in implementation. In total, lobbying leads to a reduced level of implementation of the new policy already when $\sum_i \pi_i^C < 0$.

An equivalent argument holds for the comparison of the case where lobbies are only active in the second stage to the case without lobbying.

Proposition 6 *The inclusion of lobbies in the second stage of the political process leads to reduced levels of policy implementation with respect to the case without lobbying, i.e., $X_G^* < X_{nl}^*$ if and only if $\sum_{i\in\{j,k\}} \pi_i^G \leq 0$. This is true in the following cases:*

- *Case 1: when $\sum_i s_i > 2$, $X_G^* < X_{nl}^*$ $\forall\lambda \in [0;1]$*
- *Case 2: when $0 < \sum_i s_i \leq 2$, the result depends on $\sum_i u_i(\theta_G)$:*
  - *For $\sum_i u_i(\theta_G) < \sum_i s_i$, $X_G^* < X_{nl}^*$*
  - *For $\sum_i u_i(\theta_G) \geq \sum_i s_i$, $X_G^* \geq X_{nl}^*$*

Proof. See the appendix. ■

Whenever the aggregate status-quo bias of the lobbies outweighs the sum of their utilities from the new policy, lobbying induces the government to reduce the policy implementation level. The results of propositions 5 and 6 show the relation of the status-quo bias to the possibility of reaching substantial agreements on a political strategy. Consider first the case where lobbies are involved in both stages. When the lobbies' utility functions from the policy are convex, i.e., when $\lambda < \frac{1}{2}$, we have that $X_C^* < X_{nl}^*$ in more cases as $\lambda < \frac{\sum_i s_i}{2}$ can be fulfilled for lower status quo biases. Thus, in particular when the policy compromise is weak, the status quo bias determines the result and it is more likely that interest groups lobby for a low implementation of the new policy. On the other hand, in the case where lobbies are involved only in the second stage, they are more likely to oppose the new policy when their utilities are concave. Then, 2λ is the maximum of $\sum_i u_i(\theta)$. For all government policy choices $\theta_G \neq \theta_C$, $\sum_i u_i(\theta_G)$ will be lower than that. The condition $\sum_i u_i(\theta_G) < \sum_i s_i$ can then be fulfilled with lower status-quo biases. Note that this brings us back to our main result in proposition 4: Lobbying is more detrimental in both stages if the lobbies' utilities are convex and more detrimental in the second stage only if they are concave.

Another benchmark for the success of policy reforms rather than the policy implementation level X is the utility $W(X)$ of the citizens from a reform, i.e., both from the policy choice θ and the level of implementation X. Using this benchmark, we get the following result:

Proposition 7 *Lobbying always reduces the equilibrium citizens' utility $W(\theta, X^*)$ with respect to the case without lobbying.*

When we compare the case with lobbying in both stages to the case with lobbying only in the second stage, we get that for $W(\theta_C, X_C^*) < W(\theta_G, X_G^*)$ it is sufficient that $\sum_i \pi_i^G < 0$ and $\lambda < \frac{1}{2}$ or that $\sum_i \pi_i^G > 0$ and $\lambda > \frac{1}{2}$.

Proof. See the appendix. ■

We know that without lobbying $W(X)$ is maximized when the government chooses θ_G and $X_{nl}^*(\theta_G)$ accordingly as this reflects the preferences of the citizens. When lobbies are only involved in the second stage of the political process, the policy choice remains at θ_G. Then, the second stage lobbying contributions reduce the utility of the citizens: As the lobbies compensate the government for any shifts in the implementation level away from $X_{nl}^*(\theta_G)$ and the according losses in the citizen's utility $W(X)$, the government distorts the implementation level away from their preferred level $X_{nl}^*(\theta_G)$. Regardless of whether $\sum \pi_i > 0$ or $\sum \pi_i < 0$, the inefficiently high or low implementation level will always reduce the citizens' utility with respect to the case without lobbying.

When lobbies are active also in the first stage of the political process, we have an additional distortion as the first-stage policy compromise shifts the policy choice to θ_C, away from the citizens' preferred policy θ_G. Whether these two distortions reduce the citizens' equilibrium welfare level more than only the shift in the implementation level, i.e., whether lobbying in both stages is worse for the citizens than lobbying only in the second stage, depends on the lobbying impact on the implementation level. When lobbying in both stages distorts the implementation level more and also distorts the policy choice, this for sure is worse for the citizens. The proposition 7 states exactly that. For the case where the lobbies when lobbying in both stages have a less distortive impact on the policy implementation level, we cannot derive clear-cut results: Two smaller distortions could still reduce utility less than a larger one.

For two different benchmarks, we have shown that the inclusion of lobbies in the policy choice stage and in the policy implementation stage can have negative consequences: First, lobbying in the policy choice stage can reduce the policy implementation level and thus the extent to which a reform is actually implemented. Second, when we use the benchmark of the citizens' utility,

we can prove a similar result, albeit not for the same range of parameters: If the government would choose whether or not to include lobbies in the policy choice stage on the basis of the welfare of citizens, it could allow lobbies in both stages when $\sum_i \pi_i^G > 0$ and $\lambda < \frac{1}{2}$. Yet, for these parameter values, lobbying in the first stage lowers policy implementation efforts. The lack of reforms then is in the interest of the citizens. In this paper, we do not look at the choice of the government of whether or not to invite lobbies to the policy choice. Rather, the aim is to point out that there exist conditions under which the strategy to always involve interest groups early on in the political decision-making process can be a cause of, rather than a cure for, the lack of actually implemented policy reforms.

4 Conclusion and Policy Implications

We model the process of the choice and implementation of a policy with lobbying. When interest groups are involved in both stages of the political process, they have significant influence on the policy implementation outcome. It is then crucial whether the lobbies value the policy compromise or not. We have identified conditions under which the inclusion of lobbies in the first stage of the political process can lead to a lack of reforms. These conditions depend on the extremeness of the lobbies' policy preferences. The more extreme lobbies are, the less they value a compromise that is reached in the policy choice stage. If the compromise is weak from the point of view of the lobbies, they are more likely to oppose the implementation of the new policy. In these cases, the strategy of governments to get everyone in the boat in order to curb later opposition to the implementation of a policy can easily backfire. It would then be beneficial to exclude interest groups from the first stage of the decision-making process. This partial ban on corporatism would mean that the government alone designs the policy and lobbies are involved only in the decision on policy implementation. In this respect, the result of this paper calls for more transparency in the legislation process and a clearer responsibility of the government for policy choices.

From our model, we see that one way to overcome the problem could be to increase the lobbies' utility from the government's compromise policy. This amounts to creating greater scope for compromise in the relevant policy area. Public discussion of an issue as well as the dissemination of objective information about it, for example, by publications by independent experts, could achieve such a change in perception. Here, the independent media could play an important role. Another problem are the lobbies' status-quo biases: Especially when the former policy has been very advantageous for them, they will not be in favor of the transfer

of government resources to a new policy. When the government is dependent on the lobbies' support for the implementation of a new policy, it could try to reduce their stakes in the old policy, for example, by creating disadvantages for groups that are opposed to change.

We have derived a result with strong policy implications: Interest groups should not be involved in the early stages of the political process where policies are defined. We have also shown that higher implementation outcomes can be achieved when lobbies are totally excluded from the political process. Yet, there is a caveat. To demand the exclusion of special interest groups from the political process seems too radical for at least the two following reasons: First, politics today are to a large extent determined by special interest groups. In almost all countries, we find large numbers of organized lobbies. Their official exclusion from the political process could lead them to use inofficial channels of influence, such as bribes. This would make the political process less transparent. Transparency can only be achieved by officially acknowledging interest groups as important political agents. Second, lobbies play other roles in the political process that we have not acknowledged in this model. An important function is that they provide information to political decision-makers. Even though lobbies have incentives to communicate biased information, lobbying can improve the allocation of information in the political decision-making process.

5 Appendix

5.1 Proof of Lemma 1

The utility function of the citizens for any given policy choice θ is defined by:

$$W(X) = u_G(\theta)X + V(T - X) + Y - T$$

The first-order condition for a maximum is:

$$\frac{\partial W}{\partial X} = u_G(\theta) + \frac{\partial V(T-X)}{\partial (T-X)} \frac{\partial (T-X)}{\partial X} = 0$$

With $\frac{\partial (T-X)}{\partial X} = -1$ and $\frac{\partial V(T-X)}{\partial (T-X)} = -\frac{\partial V(T-X)}{\partial X}$, we get that:

$$-\frac{\partial V(T-X)}{\partial X} = u_G(\theta)$$

With $V(0) = 0$, $V_X < 0$ and $V_{XX} < 0$, and $lim_{X \to 0} V_X = 0$ and $lim_{X \to T} V_X = -\infty$, this condition is fulfilled by a unique X^* for each parameter constellation.

We can also see directly from the first order condition that the maximum X^* is increasing in $u_G(\theta)$.

For a global maximum, the second order condition is:

$$\frac{\partial^2 W}{(\partial X)^2} = \frac{\partial^2 V(T-X)}{(\partial X)^2} < 0$$

This is fulfilled $\forall X$ by the assumption $V_{XX} < 0$.

5.2 Proof of Proposition 1

The proof for the existence and uniqueness of the second-stage equilibrium $(\{C_i^*\}_i; X^*)$ follows the standard proof in the literature (e.g., Grossman and Helpman, 2001, Chpt. 8). The proof evolves in several steps. Consider first the lobbies' problem. When the lobbies are constrained to use truthful contribution schedules, the marginal change of their contribution $C_i(X)$ with respect to a change in X has to reflect their marginal change in utility:

$$\frac{\partial C_i}{\partial X} = -\frac{\frac{\partial U_i}{\partial X}}{\frac{\partial U_i}{\partial C_k}} = -\frac{\pi_i}{-1} = \pi_i$$

For $\pi_i > 0$, contributions grow with a higher level of policy implementation. When $\pi_i < 0$, the lobby would like to see less policy implementation. Contributions increase with a lower X.

Using these truthful contribution schedules, it can be shown that the government's objective function $G(\{C_i(X)\}_i, X)$ has a global maximum for each parameter constellation and marginal

lobbying interests π_i. The first-order condition for the government is given by:

$$\frac{\partial G}{\partial X} = \sum_i \frac{\partial C_i}{\partial X} + \frac{\partial W(X)}{\partial X} = 0.$$

We can substitute the marginal lobbying contributions:

$$\frac{\partial W(X)}{\partial X} = -\left(\sum_i \pi_i\right)$$

With Lemma 1, $W(X)$ has a unique global maximum when there is no lobbying in the implementation stage. Call that equilibrium $X^*_{nl}(\theta)$. For any given θ, $W(X)$ is increasing for all $X < X^*_{nl}(\theta)$ and decreasing for all $X > X^*_{nl}(\theta)$.

With lobbying contributions, the first-order condition for the government is changed: For $\sum_i \pi_i > 0$, $\frac{\partial W}{\partial X}$ has to be negative in equilibrium. $\frac{\partial W}{\partial X}$ is monotonously decreasing in X for $X > X^*_{nl}$ for a given θ (see Lemma 1). Therefore, it must hold that the new equilibrium is unique and that $X^* > X^*_{nl}$. Also, when $\sum_i \pi_i < 0$, we must have that $X^* < X^*_{nl}$. Generally, for a given θ the equilibrium implementation level increases with $\sum_i \pi_i$.

For our aim of comparing the equilibrium implementation levels, it suffices to show that the equilibrium yields unique implementation levels. For this, we have used that with truthful contribution schedules, the marginal lobbying contributions are uniquely defined. This follows from stage one of our game. For the results of our model, we do not need the exact values of the government's utility and the lobbies' equilibrium contributions. For the sake of completeness, we show how to pin down the equilibrium lobbying contributions, given that the lobbies participate in the second-stage lobbying game. Condition 9 states that each lobby has to contribute so much that the government is at least as well off when all lobbies contribute as when one of the lobbies does not contribute. From this, together with condition 8, we get the conditions for the lobbies' equilibrium utilities $\overline{U}_i$ and their equilibrium lobbying contributions C^*_i. Condition 9 of proposition 1 is:

$$G(\{C^*_j(X^*, \overline{U}_j), C^*_k(X^*, \overline{U}_k)\}; X^*) \geq \max_{X \in \mathcal{X}} G(\{C^*_j(X, \overline{U}_j)\}; X)$$

The first-order condition for the government's problem with one lobby is:

$$\frac{\partial W(X)}{\partial X} = -\pi_j$$

Following the argument made above, we get a unique policy implementation level X^*_j for the case where only one lobby is active and contributes $C^*_j(X^*_j, \overline{U}_j)$. This also gives us the government payoff for this case, given the lobbying contribution by lobby j, i.e.:

$$G^*_j = G(\{C^*_j(X^*_j, \overline{U}_j); X^*\}) = W(X^*_j) + C^*_j(X^*_j, \overline{U}_j)$$

Each lobby has to give the government at least that payoff G_j^*, $j \neq k$. In equilibrium, condition 9 has to be binding. From this, we get two equations with the equilibrium contribution schedules:

$$\sum_i C_i^* + W(X^*) = C_j^*(X_j^*) + W(X_j^*)$$

and similarly for lobby k. The set of equilibrium lobbying contributions is constrained by the requirement of truthful equilibria where each lobby has to get at least the fixed utility level $\overline{U}_i$. Condition 8 requires that the contribution schedules fulfill:

$$C_i^* = max\{\pi_i X^* + s_i T - \overline{U}_i, 0\}$$

Using these two conditions together gives us $\overline{U}_j$ and C_j^* and symmetrically $\overline{U}_k$ and C_k^*:

$$\overline{U}_j = W(X^*) - W(X_k^*) + \pi_j X^* + s_j T + \pi_k (X^* - X_k^*)$$

and:

$$C_j^* = W(X_k^*) - W(X^*) - \pi_k (X^* - X_k^*)$$

With the help of condition 9, it can be shown that the lobbies contribute a positive amount in equilibrium, i.e., $C_i^* > 0$ (see also Grossman and Helpman, 1994, pp. 845). If the lobbies are to participate in the second stage, we need that $\overline{U}_j$ is at least as much as what lobby j would get if it did not lobby. This gives us the participation condition for lobby j:

$$\overline{U}_j = W(X^*) - W(X_k^*) + \pi_j X^* + s_j T + \pi_k (X^* - X_k^*) \geq \pi_j X_k^* + s_j T$$

or:

$$W(X^*) - W(X_k^*) + (\pi_j + \pi_k)(X^* - X_k^*) \geq 0$$

and symmetrically for lobby k. The loss of the citizens' welfare due to lobbying also of lobby j has to be small enough to be compensated by the lobbies' payments.

5.3 Proof of Proposition 2

When choosing the equilibrium effort level R_i, the two lobbies simultaneously maximize

$$U_i = -R_i - C_i^*(X^*) + u_i(\theta_C) X^* + s_i (T - X^*)$$

where

$$\theta_C = \frac{R_k}{R_k + R_j} \theta_k + \frac{R_j}{R_k + R_j} \theta_j$$

We have that X^* implicitly depends on the effort choice R_i as R_i determines θ_C and $\sum_{i\in\{j,k\}} u_i(\theta_C)$ together with the s_i in turn determines X^* (see proposition 1). Thus, the first-order condition for lobby i's maximization problem is:

$$\begin{aligned}\frac{\partial U_i}{\partial R_i} &= -1 - \frac{\partial C_i^*(X^*)}{\partial X^*}\frac{\partial X^*}{\partial \sum u_i(\theta_C)}\frac{\partial \sum u_i(\theta_C)}{\partial \theta_C}\frac{\partial \theta_C}{\partial R_i} \\ &\quad + \frac{\partial \sum u_i(\theta_C)}{\partial \theta_C}\frac{\partial \theta_C}{\partial R_i}X^* + (u_i(\theta_C) - s_i)\frac{\partial X^*}{\partial \sum u_i(\theta_C)}\frac{\partial \sum u_i(\theta_C)}{\partial \theta_C}\frac{\partial \theta_C}{\partial R_i} = 0\end{aligned}$$

where $X^* = X^*(\sum_{i\in\{j,k\}} \pi_i) = X^*(\sum_{i\in\{j,k\}}[u_i(\theta_C) - s_i])$.

As in a truthful equilibrium, the lobbies have truthful contribution schedules, we can substitute $\frac{\partial C_i^*(X^*)}{\partial X^*}$ by $\pi_i = u_i(\theta_C) - s_i$ (see proposition 1). Then, the first-order condition reduces to:

$$\frac{\partial U_i}{\partial R_i} = -1 + \frac{\partial \sum u_i(\theta_C)}{\partial \theta_C}\frac{\partial \theta_C}{\partial R_i}X^* = 0$$

and finally

$$\frac{\partial \sum u_i(\theta_C)}{\partial \theta_C}\frac{\partial \theta_C}{\partial R_i} = \frac{1}{X^*}$$

As $X^* = X^*(\sum_{i\in\{j,k\}} \pi_i) = X^*(\sum_{i\in\{j,k\}}[u_i(\theta_C) - s_i])$, the first-order conditions are symmetric for the two lobbies. They will thus in equilibrium choose the same first-stage effort levels: $R_j^* = R_k^*$. This immediately determines $\theta_C = \frac{\theta_j+\theta_k}{2}$.

5.4 Proof of Proposition 4

From proposition 1, we have the first order condition for the government when lobbies are active in both stages of the political process given as:

$$u_G(\theta_C) - \frac{\partial V(T-X)}{\partial X} = -\sum_i \pi_i^C$$

Similarly, the first order condition for the government when lobbies are only active in the second stage is:

$$u_G(\theta_G) - \frac{\partial V(T-X)}{\partial X} = -\sum_i \pi_i^G$$

With respect to proposition 1, we now have two parameters to consider, namely $u_G(\theta)$ and π_i. Both change when θ_C is replaced with θ_G.

First, in lemma 1, we have seen that without lobbying, the implementation level X^* that maximizes the citizens' welfare function is increasing in $u_G(\theta)$. By assumption, $u_G(\theta)$ is maximized for θ_G. Therefore, for $\sum_i \pi_i^C = \sum_i \pi_i^G$ we have that $X_C^* < X_G^*$. We also know from proposition 1 that the equilibrium implementation level X^* is increasing in $\sum_i \pi_i$. Thus, if we

now find under which conditions $\sum_i \pi_i^C < \sum_i \pi_i^G$, we have identified a sufficient condition for $X_C^* < X_G^*$. We can write

$$\sum_i \pi_i^C < \sum_i \pi_i^G \Leftrightarrow \sum_i u_i(\theta_C) - \sum_i s_i < \sum_i u_i(\theta_G) - \sum_i s_i$$

This reduces to:

$$2u_i(\theta_C) < \sum_i u_i(\theta_G)$$

where $u_i(\theta_C) = \lambda$. Consider now our result in lemma 2. From there, we have that when $\lambda < \frac{1}{2}$, θ_C minimizes the lobbies' joint policy preferences (Case 2). This means that for $\lambda < \frac{1}{2}$, $\sum_i u_i(\theta_G)$ must be larger than $\sum_i u_i(\theta_C)$ $\forall \theta_G \neq \theta_C$. Then, we have that $\sum_i \pi_i^C < \sum_i \pi_i^G$ and $X_C^* < X_G^*$.

5.5 Proof of Proposition 5

To prove that $X_C^* < X_{nl}^*$ if $\sum_{i\in\{j,k\}} \pi_i^C < 0$ is similar to the proof in proposition 4: The first-order condition for the status-quo level of policy implementation X_{nl}^* is:

$$u_G(\theta_G) - \frac{\partial V(T-X)}{\partial X} = 0$$

Similarly, the first order condition for the government when lobbies are active in both stages is:

$$u_G(\theta_C) - \frac{\partial V(T-X)}{\partial X} = -\sum_i \pi_i^C$$

Again, we know from lemma 1 that without lobbying, the implementation level X^* that maximizes the citizens' welfare function is increasing in $u_G(\theta)$. By assumption, $u_G(\theta)$ is maximized for θ_G. We also know from proposition 1 that the equilibrium implementation level X^* is increasing in $\sum_i \pi_i$. Thus, if we now find under which conditions $\sum_i \pi_i^C < 0$, we have identified a sufficient condition for $X_C^* < X_{nl}^*$.

We can write

$$\sum_i \pi_i^C < 0 \Leftrightarrow \sum_i u_i(\theta_C) - \sum_i s_i < 0 \Leftrightarrow 2\lambda < \sum_i s_i$$

We can write this as $\lambda < \frac{\sum_i s_i}{2}$ and have our condition for $X_C^* < X_{nl}^*$ for the case where $0 < \sum_i s_i \leq 2$. Note that 2λ can never be larger than 2. This means that for $\sum_i s_i > 2$, we always have that $\sum_i \pi_i^C < 0$.

5.6 Proof of Proposition 6

To show that $X_C^* < X_{nl}^*$ if $\sum_{i\in\{j,k\}} \pi_i^C < 0$ is similar to the proof in proposition 4: The first-order condition for the status-quo level of policy implementation X_{nl}^* is:

$$u_G(\theta_G) - \frac{\partial V(T-X)}{\partial X} = 0$$

Similarly, the first order condition for the government when lobbies are active only in the second stage of the political process is:

$$u_G(\theta_G) - \frac{\partial V(T-X)}{\partial X} = -\sum_i \pi_i^G$$

Here, we do not have to care about the changes in the citizens' welfare function as we always have the policy θ_G. Thus, the condition that $\sum_i \pi_i^G < 0$ is both necessary and sufficient for $X_G^* < X_{nl}^*$.

We can write

$$\sum_i \pi_i^G < 0 \Leftrightarrow \sum_i u_i(\theta_G) - \sum_i s_i < 0$$

Also here, $\sum_i u_i(\theta_G)$ can never be larger than 2. This means that for $\sum_i s_i > 2$, we always have that $\sum_i \pi_i^G < 0$.

5.7 Proof of Proposition 7

For the proof, consider the citizens' welfare function:

$$W(X) = u_G(\theta)X - V(T-X) + Y - T.$$

The first part of the proof is straightforward: When there is lobbying only in the second stage, we have $\theta = \theta_G$, where θ_G maximizes $u_G(\theta)$. Then, $W(X)$ is only distorted as the lobbying contributions $\sum \pi$ distort the implementation outcome X^*. When there is lobbying in both stages, the policy choice θ_C also reduces $u_G(\theta)$.

To prove that $W(X_C^*, \theta_C) < W(X_G^*, \theta_G)$ when $\lambda < \frac{1}{2}$, take the result from proposition 4:

When $\lambda < \frac{1}{2}$, we have that $\sum_i \pi_i^C < \sum_i \pi_i^G$. When we now add the requirement that $\sum_i \pi_i^G < 0$, we see that lobbying distorts the policy implementation levels downwards. In this case, as $\sum_i \pi_i^C < \sum_i \pi_i^G$, we have that $X_C^* < X_G^*$ and thus that $X_{nl}^* - X_C^* > X_{nl}^* - X_G^*$. Therefore, lobbying in both stages both distorts $u_G(\theta)$ and X^* more than lobbying only in the second stage. Thus, it must be the case that $W(X_C^*, \theta_C) < W(X_G^*, \theta_G)$.

On the other hand, when $\lambda > \frac{1}{2}$, we have that $\sum_i \pi_i^C > \sum_i \pi_i^G$. When we now add the requirement that $\sum_i \pi_i^G > 0$, we see that lobbying distorts the policy implementation levels upwards. In this case, as $\sum_i \pi_i^C > \sum_i \pi_i^G$, we have that $X_C^* > X_G^*$ and thus that $X_C^* - X_{nl}^* > X_G^* - X_{nl}^*$. Therefore, lobbying in both stages both distorts $u_G(\theta)$ and X^* more than lobbying only in the second stage. Thus, it must be the case that $W(X_C^*, \theta_C) < W(X_G^*, \theta_G)$.

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Figure 2: Comparing lobbying in both stages with lobbying in second stage only