Anti-lobbying gains from international agreements

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Abstract

I argue that an important benefit of international agreements is to reduce wasteful rent-seeking activities by lobbies, through a reduction in policy discretion. I pay particular attention to the role of foreign lobbies, because to the extent that policy discretion induces rent-seeking activities by foreign lobbies, it imposes a negative externality on foreign countries. This negative international externality caused by policy discretion generates novel gains from international agreements. I examine the potential anti-lobbying effects of various kinds of international rules, and in particular, exact policy commitments, policy bounds and non-discrimination rules.

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1. Introduction

Policy discretion invites wasteful rent-seeking activities by special interest groups. This insight has been emphasized by many scholars in economics and political science, including Krueger (1974), Bhagwati (1982), Bhagwati and Srinivasan (1982), Buchanan and Tullock (1962). When a government has wide discretion in choosing a policy, lobbies have strong incentives to spend resources in order to seek access to the government and influence its decision. This is true not only for domestic lobbies, but also for foreign special interest groups, to the extent that the government's policy choice has an impact on foreign countries. Conversely, international agreements can lead to a reduction in wasteful rent-seeking activities, to the extent that they impose rules that constrain governments' policy choices. I will refer to this broadly as the "anti-lobbying" gain from an international agreement.

I investigate the anti-lobbying gains from international agreements through a simple model where a government's policy choice can be influenced by domestic and foreign lobbies, which have opposite interests regarding the policy. The lobbying game is modeled as a two-stage game: in the first stage, each lobby decides whether to seek access to the government ("rent seeking"), in which case it incurs a resource cost; in the second stage, the lobbies that have invested in rent-seeking engage in Nash bargaining with the government. If an international agreement is in place, the same rent-seeking game described above takes place, except that the policy is subject to the constraints set by the agreement.

While the anti-lobbying argument calls for some commitment mechanism that can tie a government's hands, it is not obvious whether it calls specifically for international agreements. An alternative way for governments to tie their own hands is through unilateral commitments, such as domestic laws or constitutional rules. Whether international agreements are specifically called for depends on whether the deadweight loss caused by lobbying falls only on the domestic country or also on foreign countries. The former case is plausible if lobbying is purely domestic, but the latter case is more plausible if lobbying is at least in part cross-national. In the former case lobbying does not generate an international externality, so a domestic policy commitment is in principle sufficient to solve the problem. In the latter case, on the other hand, an international agreement is needed, because lobbying generates a negative international externality. For this reason, in what follows I will distinguish between the "anti-domestic-lobbying" and the "anti-

foreign-lobbying" effects of international agreements.[1]

In the existing literature, there are two broad "stories" for international agreements. One broad story is that international agreements are motivated by the presence of international policy externalities. The other story is that international agreements can help governments tie their own hands vis-a-vis certain groups of actors, such as producer lobbies. The new gain from international agreements that I explore in this paper combines a commitment aspect with an international-externality aspect: the presence of policy discretion itself generates a negative international externality, because it invites rent-seeking activities by foreign groups, and an international agreement can address such international externality by reducing policy discretion.

It is important to note that the anti-*foreign*-lobbying effect of international commitments is not a stand-alone rationale for an international agreement, or in other words, it is not separable from the "fundamental" policy externalities.[2] Rather, it should be thought of as an "amplifier" of the more traditional gains from international agreements. Clearly, the anti-foreign-lobbying gains cannot exist without some fundamental international policy externality: if a country's policies had no effect on foreign countries, there would be no foreign lobbying. Formally, I parametrize in a simple way the strength of the fundamental policy externality – and hence the size of the "traditional" gains from an agreement – and show that, as this parameter increases, the anti-lobbying gains from an agreement increase as well.

It has been suggested by several authors (for example, Gawande, Krishna and Robbins, 2006, and Blanchard, Bown and Johnson, 2017) that the presence of foreign lobbying reduces the scope for international agreements, since it induces a government to internalize part of the international policy externality, and thus brings the noncooperative policies closer to their cooperative levels. My model highlights a force that goes in the opposite direction: the potential

[1] Maggi and Rodriguez-Clare (1998, 2007) and Mitra (2002) focus on domestic lobbying and argue that trade agreements can mitigate domestic commitment problems when it is not feasible to make unilateral commitments through constitutional law. This idea applies to any country, but with particular force to countries that have weak domestic institutions. The anti-*foreign*-lobbying argument for trade agreements, on the other hand, applies with equal force to developed and developing countries.

[2] In the area of trade policy, the most standard type of international externality, emphasized by models with no market imperfections and no multinationals, is the terms-of-trade externality (see for example Bagwell and Staiger, 1999). In models with market imperfections or multinationals, additional international externalities from trade policy can arise, including profit-shifting externalities, local-price externalities (in the presence of multinationals) and "delocation" externalities (in case of imperfect competition with free entry and transport costs). See for example Ossa (2011, 2014) for profit-shifting and delocation externalities, and more generally see Maggi (2014) for a discussion of the various types of international externalities from trade policy.

for foreign lobbying can increase the value of international agreements, due to the anti-foreign-lobbying gains.

To focus sharply on the anti-lobbying gains from international agreements, the first part of the paper focuses on a type of international agreement that completely removes policy discretion, namely *exact policy commitments*. But international agreements rarely strip governments *completely* of their policy space, even within narrow policy areas, and for good reasons, such as the presence of uncertainty and contracting costs (see for example Horn et al, 2010). For this reason, while I do not model these possible benefits of policy discretion, I examine some salient types of international rules that preserve policy discretion along certain dimensions, and in particular, *policy bounds* and *non-discrimination rules.*

In section 2, I focus on policy bounds, and in particular on policy caps (i.e. rules of the kind $t \leq \bar{t}$). Examples of policy caps are tariff ceilings for trade agreements, or emission caps for environmental agreements, and the analysis extends in an obvious way to the case of policy floors, such as minimum product standards or environmental taxes. I argue that policy caps have an important shortcoming relative to exact policy commitments (i.e. rules of the kind $t = \bar{t}$), in that they may invite wasteful ex-post lobbying.

In particular, I consider a policy cap $\bar{t}$ that is binding and is not so low that it removes the foreign lobby's benefit from bargaining with the government (otherwise the cap has no interesting effects), and compare it with the corresponding exact policy commitment. The policy cap has very different effects depending on whether it is above the unilateral welfare-maximizing policy, in which case it does not affect the disagreement point in the government-lobbies bargain, or below it, in which case the cap becomes the disagreement point.

In the first case, the policy cap weakly increases the number of lobbies that engage in rent-seeking in equilibrium, and hence weakly reduces the anti-lobbying gains, relative to the corresponding exact policy commitment, and it foregoes all anti-lobbying gains if the rent-seeking costs are below some threshold levels.

In the second case, a surprising result emerges: if rent-seeking costs are below some threshold levels, the policy cap kills any pure strategy equilibrium of the rent-seeking game. The basic reason is the following: the foreign lobby has incentive to participate in the bargain only if the domestic lobby does not, because only in this case it can convince the government to lower the policy below the bound; and the domestic lobby has incentive to participate only if the foreign lobby does too, in which case it wants to prevent the policy from being lowered below the cap.

In essence, what kills pure-strategy equilibria is a key asymmetry: given the opposite policy interests of the two lobbies, the cap is binding for the domestic lobby but not for the foreign lobby. In this case there exists only a mixed-strategy equilibrium in which each lobby engages in rent-seeking with some probability, so in expectation the policy cap reduces rent-seeking waste relative to the non-cooperative scenario, but does not eliminate it.

In either case, a policy cap leads to the same policy outcome as the corresponding exact policy commitment, but foregoes (at least some of) the anti-lobbying gains for a range of rent-seeking costs.

My results stand in interesting contrast with the point made by Maggi and Rodriguez-Clare (2007), who highlight a beneficial effect of policy caps: by inviting ex-post lobbying, a policy cap in a given sector induces the lobby to pay contributions to the government ex-post, thus reducing the net returns from investment in that sector, and hence reducing the ex-ante misallocation of resources. Taken together, these results suggest that policy discretion can have two opposite effects on the inefficiencies caused by lobbying, depending on the nature of these inefficiencies: if it induces lobbies to make monetary payments to the government and hence lowers the net returns to lobbying, it is beneficial; but if it induces lobbies to engage in wasteful activities, it is harmful.

In section 3, I consider a simple multi-country version of the model in order to examine the potential role of non-discrimination rules. In the area of trade policy, the most prominent non-discrimination rule is the Most Favored Nation (MFN) rule, which allows a government to choose tariff levels but does not allow it to discriminate across foreign countries. But non-discrimination rules are relevant also in other policy areas, such as foreign direct investment, product standards and immigration policies.

In the absence of non-discrimination rules, a government is free to make policy concessions to foreign interest groups on a bilateral basis, resulting in a "spaghetti bowl" of bilateral rent-seeking activities (I owe the spaghetti-bowl metaphor to Richard Baldwin).[3] Imposing a non-discrimination rule, on the other hand, can reduce or even eliminate rent-seeking by foreign lobbies, and the reason is that it injects a free-rider problem in the strategic interaction between

[3] An example of such spaghetti bowl in the real world is the flurry of foreign lobbying activities that followed Trump's announcement of the 2018 steel and aluminum tariffs, whereby a number of foreign governments and interest groups frantically engaged the Trump administration in order to obtain bilateral exemptions to the tariffs. As a result of this, exemptions were granted to South Korea, Brazil, Argentina, Mexico and other countries. (Of course the MFN rule prohibits this kind of bilateral exemptions, but Trump simply gave it the finger.)

foreign lobbies. For example, in the trade policy arena, the MFN rule implies that a foreign lobby seeking a lower tariff from the US government has to effectively lobby on behalf of all foreign lobbies, and this may discourage foreign lobbies from engaging in rent-seeking. This suggests that it may be possible to achieve part or all of the potential anti-foreign-lobbying gains without removing all policy discretion, but simply imposing non-discrimination rules.

I use my model to examine formally the above intuition. I show that, relative to the non-cooperative scenario, imposing a non-discrimination rule weakly reduces the number of foreign lobbies that engage in rent-seeking in equilibrium, and the reduction is strict for a range of the rent-seeking cost parameter. Thus, for any ex-ante distribution of the rent-seeking cost parameter, imposing a non-discrimination rule decreases the equilibrium rent-seeking waste in a first-order stochastic sense. At the same time, however, a non-discrimination rule may worsen the policy outcome relative to the non-cooperative scenario, because foreign lobbying may push non-cooperative policies closer to their cooperative levels, and for this reason it is possible that imposing a non-discrimination rule is worse than imposing no rule at all.

The next question is, what kind of international agreements should we expect to arise endogenously, given that both policy makers and lobbies may be reluctant to give up policy discretion? Is it wishful thinking to hope that international agreements will reduce wasteful rent-seeking? I examine this question by focusing on two polar cases: the case in which lobbies can influence the agreement in the same way as they influence the choice of policies ex post (full ex-ante lobbying), and the case where lobbies do not influence the formation of the agreement (no ex-ante lobbying). In the case of full ex-ante lobbying, the equilibrium agreement will remove all policy discretion, and hence eliminate ex-post rent seeking, but this may be partially offset by the presence of rent seeking at the ex-ante stage. In the case of no ex-ante lobbying, the equilibrium agreement will remove all policy discretion if governments have little bargaining power vis-a-vis the lobbies; but if governments have significant bargaining power, they may prefer to preserve discretion in the form of policy caps.

Before proceeding, it is important to ask whether two key ingredients of my theory, namely the presence of foreign lobbying and the resource costs of lobbying, are empirically important.

Regarding the first question, there is little doubt that cross-national lobbying is a phenomenon of first-order empirical importance, especially across OECD countries. For example, in 2017 at least $534.7 million was spent by foreign interests to influence U.S. policy, with South

Korea topping the list of countries, and trade policy topping the list of policy areas.[4] In the academic literature, there are numerous papers that document the importance of foreign lobbying even before the Trump administration, for example Gawande, Krishna and Mitra (2006), Stoyanov (2009), Gawande, Maloney and Montes-Rojas (2018) and You (2018).

The other empirical question is, to what extent do lobbying activities entail resource costs (as argued among others by Jagdish Bhagwati, T.N. Srinivasan, and Anne Krueger) as opposed to efficient monetary transfers to politicians? This question is difficult to answer, but there is evidence that the resource costs of lobbying are significant. For example, lobbying expenditures in the U.S. are roughly 10 times larger than campaign (PAC) contributions (see for example Ludema, Mayda and Mishra, 2018), and lobbying expenditures are at least in part wasteful, since they pay for lobbyists' time, office space, travel costs and other inputs in the lobbying activity; all of these inputs could alternatively be used to produce goods and services.[5] Also, even if the immediate lobbying instrument is money, this can induce misallocation of resources, as argued for example by Maggi and Rodriguez-Clare (1998, 2007).

In the related literature, the paper that is closest to the present one is arguably Mitra (2002). He considers a small-country government that chooses a tariff under the influence of domestic lobbies. A producer group can get organized into a lobby by paying a fixed setup cost. Mitra shows that the government may want to commit to free trade in order to prevent producer groups from incurring the fixed cost of getting organized. Mitra's fixed cost of lobby formation plays a similar role to my domestic rent-seeking cost ξ^h, but he does not consider foreign lobbying, which plays a central role in my analysis. Also, while Mitra only allows for an all-or-nothing commitment to free trade, I consider a wider set of feasible agreements, including exact tariff commitments, tariff caps and non-discrimination rules. Finally, unlike Mitra, I allow the home country to be large and face multiple foreign countries.

The paper is organized as follows. In section 2, I consider a two-country model to make a number of key points about the anti-lobbying gains from international agreements. In section 3, I consider a multilateral setting, in order to examine the role of non-discriminatory rules. Section 4 concludes.

[4] See opensecrets.org/news/2018/08/foreign-interests-fara-lobby-watch-exclusive.

[5] One caveat to this argument is that, if costly activities are used as a signalling device to convey valuable information to politicians, rather than providing access to a quid-pro-quo exchange with the government, then they cannot be considered entirely wasteful.

2. A Simple Two-Country Model

I start by considering a simple two-country model. As a running example I will often refer to a trade application where the relevant policies are tariffs, but the model is more general and can be applied to other policy areas as well, such as investment policies, environmental policy or immigration policies.

I consider two separable and mirror-image sectors, one where the Home government chooses a policy and the Foreign government is passive, and one where the roles are reversed. In a simple trade application where countries choose import tariffs, the Home government would choose an import tariff in one sector, and the Foreign government would choose an import tariff in the other sector.

Given this simple structure, I can focus on the sector where Home is policy-active, and let t denote Home's policy. The Home government can be influenced in its policy choice by two lobbies: a domestic lobby (h) and a foreign lobby (f). There are two types of cost that a lobby can incur: *contributions* to the Home government, which are pure transfers; and *rent-seeking expenditures*, which are resource costs.

I model the interaction between the government and the lobbies as a Nash bargain, and I assume that lobby $j \in \{h, f\}$ has to incur a resource cost ξ^j in order to be able to bargain with the government. I will refer to these costs interchangeably as "rent-seeking costs" or "access costs." I also assume that any access cost incurred by the foreign lobby falls entirely on the Foreign country, so it is not relevant for Home welfare.

I now describe the payoffs of the Home government and the two lobbies. The payoff of lobby $j \in \{h, f\}$ has three components: the gross payoff from policy t, which I denote $\Pi^j(t)$, the contributions paid to the government, denoted C^j, and the rent-seeking costs:

$$L^j = \Pi^j(t) - A^j \xi^j - C^j, \qquad j = h, f$$

where A^j is a dummy that is equal to one if the lobby j seeks access to the government, and zero otherwise.

I assume that $\Pi^h(t)$ is increasing in t, while $\Pi^f(t)$ is decreasing in t. Thus the domestic lobby and the foreign lobby have opposing policy interests. In a later section I will discuss how results would change if the policy interests of the two lobbies were aligned.

The Home government's payoff has also three components: gross welfare, which I denote

$W^h(t)$, total contributions from lobbies, denoted C, and the domestic rent-seeking cost:

$$G^h = a\left(W^h(t) - A^h\xi^h\right) + C,$$

where the parameter a captures the welfare-mindedness of the government, in the same spirit as Grossman and Helpman (1994). Note the implicit assumption that the deadweight loss associated with the foreign lobby's rent-seeking activity falls on the foreign country, thus the Home government does not care about ξ^f.

The Foreign government's payoff is denoted $G^f = W^f(t) - A^f\xi^f$. I assume that $W^h(t)$ has an interior maximum at t^w,[6] while $W^f(t)$ is decreasing in t. It should be kept in mind that the notation above refers to a single sector, and there is a mirror-image sector where roles are reversed.

The timing of the game is as follows. In the first stage, each lobby chooses whether to incur the access cost. In the second stage, the lobbies that have done so engage in Nash bargaining with the government. For simplicity I assume that the government has no bargaining power, and if both lobbies participate in the bargain they have symmetric power. In case both lobbies participate in the bargain, I allow them to compensate each other with side transfers. I will focus on the subgame perfect equilibria of this game.

2.1. Non-cooperative equilibrium

I start by considering the non-cooperative scenario. Let us proceed by backward induction and examine the four possible subgames:

1. Suppose only the domestic lobby seeks access to the government ($A^h = 1$, $A^f = 0$). The policy that results from the bargain in this case is

$$t_h \equiv \arg\max_t aW^h(t) + \Pi^h(t).$$

Note that, in a trade model a' la Grossman and Helpman (1995), t_h would be the analog of the "trade war" tariff, which incorporates political and terms-of-trade motives for protection.

Let us write the joint surplus for this bargain:

$$S_h = \left(aW^h(t_h) + \Pi^h(t_h)\right) - \left(aW^h(t^w) + \Pi^h(t^w)\right).$$

[6] The unilateral welfare-maximizing tariff t^w may reflect classic terms-of-trade gains from protection, or new-trade-theory motives such as profit-shifting or firm-delocation gains.

Note that the disagreement policy is t^w, the unilateral welfare-maximizing policy: this is the policy that the Home government would choose in the absence of any lobbying. The resulting net payoffs for the lobbies in this case are:

$$\begin{aligned} L^h &= \Pi^h(t^w) + S_h - \xi^h \\ L^f &= \Pi^f(t_h) \end{aligned}$$

2. If both lobbies seek access and bargain with the government ($A^h = A^f = 1$), the resulting policy is

$$t_{hf} \equiv \arg\max_t aW^h(t) + \Pi^h(t) + \Pi^f(t).$$

Note that $t_{hf} < t_h$, because the participation of the foreign lobby in the bargain pushes down the policy. Formally, this follows from $\frac{d}{dt}\Pi^f(t) < 0$. On the other hand, t_{hf} may be higher or lower than t^w.[7]

The joint surplus in this case is

$$S_{hf} = \left(aW^h(t_{hf}) + \Pi^h(t_{hf}) + \Pi^f(t_{hf})\right) - \left(aW^h(t^w) + \Pi^h(t^w) + \Pi^f(t^w)\right),$$

Given that each lobby has bargaining power 1/2, the resulting net payoffs for the lobbies are:

$$\begin{aligned} L^h &= \Pi^h(t^w) + \frac{1}{2}S_{hf} - \xi^h \\ L^f &= \Pi^f(t^w) + \frac{1}{2}S_{hf} - \xi^f \end{aligned}$$

3. If only the foreign lobby incurs the access cost ($A^h = 0$, $A^f = 1$), the resulting policy is

$$t_f \equiv \arg\max_t aW^h(t) + \Pi^f(t).$$

Note that $t_f < t^w$, since the foreign lobby pushes the policy below the level that the Home government would choose absent any lobbying. In this case the joint surplus is:

$$S_f = \left(aW^h(t_f) + \Pi^f(t_f)\right) - \left(aW^h(t^w) + \Pi^f(t^w)\right),$$

[7] In a specific-factor trade model where t is a tariff, whether t_{hf} is higher or lower than t^w would depend on the relative supply and the terms-of-trade impact of the tariff. To see this, note that the tariff is the wedge between domestic and foreign price ($p^h = p^f + t$), and the derivative of the profit function is the supply function ($\frac{d\Pi^j}{dp} = y^j(p)$). Next notice that $t_{hf} > t^w$ if $\frac{d\Pi^h}{dt} + \frac{d\Pi^f}{dt} > 0$ for all t. We can thus write $\frac{d\Pi^h}{dt} = \frac{d\Pi^h}{dp}\frac{dp}{dt} = y^h(1 + \frac{dp^*}{dt})$, while $\frac{d\Pi^f}{dt} = \frac{d\Pi^f}{dp^*} \cdot \frac{dp^*}{dt} = y^f \frac{dp^*}{dt}$. It follows that $t_{hf} > t^w$ if $\frac{y^h}{y^f} > \frac{-\frac{dp^*}{dt}}{1+\frac{dp^*}{dt}}$ for all t. And conversely, $t_{hf} < t^w$ if $\frac{y^h}{y^f} < \frac{-\frac{dp^*}{dt}}{1+\frac{dp^*}{dt}}$ for all t.

and the net payoffs are:

$$\begin{aligned} L^h &= \Pi^h(t_f) \\ L^f &= \Pi^f(t^w) + S_f - \xi^f \end{aligned}$$

4. If neither lobby seeks access ($A^h = A^f = 0$), of course there is no bargain and the policy outcome is t^w.

We are now ready to back up and examine the equilibrium access decisions by the lobbies. These are simply the Nash equilibria of the game summarized by the following payoff matrix (where each entry indicates the payoffs of the lobbies (L^h, L^f) for the corresponding access decisions):

	$A^f = 0$	$A^f = 1$
$A^h = 0$	$\Pi^h(t^w)$, $\Pi^f(t^w)$	$\Pi^h(t_f)$, $\Pi^f(t^w) + S_f - \xi^f$
$A^h = 1$	$\Pi^h(t^w) + S_h - \xi^h$, $\Pi^f(t_h)$	$\Pi^h(t^w) + \frac{1}{2}S_{hf} - \xi^h$, $\Pi^f(t^w) + \frac{1}{2}S_{hf} - \xi^f$

From inspection of the above matrix, it follows immediately that:

(i) $A^h = A^f = 1$ is an equilibrium if $\xi^h < \frac{1}{2}S_{hf} + \Pi^h(t^w) - \Pi^h(t_f)$ and $\xi^f < \frac{1}{2}S_{hf} + \Pi^f(t^w) - \Pi^f(t_h)$

(ii) $A^f = 1, A^h = 0$ is an equilibrium if $\xi^h > \frac{1}{2}S_{hf} + \Pi^h(t^w) - \Pi^h(t_f)$ and $\xi^f < S_{gf}$

(iii) $A^h = 1, A^f = 0$ is an equilibrium if $\xi^h < S_{gh}$ and $\xi^f > \frac{1}{2}S_{hf} + \Pi^f(t^w) - \Pi^f(t_h)$

(iv) $A^h = A^f = 0$ is an equilibrium if $\xi^h > S_{gh}$ and $\xi^f > S_{gf}$.

It is easy to show that if the rent-seeking costs are smaller than some threshold values, both lobbies will choose to engage with the Home government, and more precisely:

Proposition 1. *(i) If* $\xi^h < \frac{1}{2}S_{hf} + \Pi^h(t^w) - \Pi^h(t_f)$ *and* $\xi^f < \frac{1}{2}S_{hf} + \Pi^f(t^w) - \Pi^f(t_h)$, *then* $A^h = A^f = 1$ *is an equilibrium; (ii) If* $\xi^h < \min\{\frac{1}{2}S_{hf} + \Pi^h(t^w) - \Pi^h(t_f), S_h\} \equiv \hat{\xi}^h$ *and* $\xi^f < \min\{\frac{1}{2}S_{hf} + \Pi^f(t^w) - \Pi^f(t_h), S_f\} \equiv \hat{\xi}^f$, *then* $A^h = A^f = 1$ *is the* unique *equilibrium.*

In what follows I will focus on the case $\xi^h < \hat{\xi}^h$ and $\xi^f < \hat{\xi}^f$, in which there is a unique equilibrium in which both lobbies engage in rent-seeking, because this case highlights more sharply the potential anti-lobbying gains from an international agreement. But in order to understand the nature of such gains, it is important to understand the logic of the rent-seeking

game examined above. The key point is that (binding) policy commitments reduce the available joint surplus for the government and the lobbies. In particular, it can already be understood that removing policy discretion will shrink the available surplus to zero, thus the only equilibrium will be $A^h = A^f = 0$ and all rent-seeking waste will be eliminated. If, on the other hand, policy discretion is reduced but not eliminated, the available surplus will be correspondingly reduced but not eliminated, thus there may still be wasteful lobbying in equilibrium.

Next I focus on the effects of two types of international agreements: exact policy commitments, which remove all policy discretion, and policy bounds, which allow only one-sided discretion.

2.2. Exact Policy Commitments

I start by considering agreements that specify an exact policy level, say $t^A = \bar{t}$. Clearly, this type of agreement removes all policy discretion, and hence it shuts down any ex-post lobbying and associated rent-seeking waste.

Here I suppose that the policy commitment is chosen to maximize the joint payoff of governments and lobbies, that is:

$$\Omega \equiv G^h + G^f + L^h + L^f = a\left(W^h + W^f\right) + \Pi^h + \Pi^f - (1+a)(A^h\xi^h + A^f\xi^f)\,.$$

This reflects an implicit assumption that the agreement is chosen jointly by governments and lobbies, but later I will also discuss the case in which the agreement is chosen by the two governments without any ex-ante lobbying.[8]

As a benchmark, I define the "traditional" gains from an agreement $t^A = \bar{t}$ as the maximum increase in global surplus generated by this agreement (relative to the noncooperative equilibrium) when $\xi^f = \xi^h = 0$. Recall that in the noncooperative scenario, absent rent-seeking costs, both lobbies bargain with the government and the resulting tariff is t_{hf}. Thus, the traditional gains from an agreement are $\Omega(t^C) - \Omega(t_{hf})$, where $t^C = \arg\max_t \Omega(t)$ is the cooperative policy.

Now consider the *total* gains from the agreement $t^A = \bar{t}$. Recall that I am focusing on the case where $\xi^h < \hat{\xi}^h$ and $\xi^f < \hat{\xi}^f$, so that in the noncooperative equilibrium both lobbies engage in rent-seeking and the resulting tariff is t_{hf}. In this case, the total gains are $\Delta^\Omega \equiv \Omega(t^C) - \Omega(t_{hf}) + (1+a)\left(\xi^h + \xi^f\right)$. Thus I can state:

[8] Note that, given the assumption that there are two mirror-image sectors, no international transfers are needed for this approach to be valid, but international transfers would be needed if the symmetry assumption were relaxed.

Proposition 2. *Assume $\xi^h < \hat{\xi}^h$ and $\xi^f < \hat{\xi}^f$, so that both lobbies engage in rent seeking in the noncooperative equlibrium. Then an agreement of the type $t^A = \bar{t}$ provides "anti-lobbying" gains of $(1+a)\left(\xi^h + \xi^f\right)$ in addition to the traditional gains.*

The simple point here is that, if one ignores the effects of international agreements on the lobbies' rent-seeking activities, one will underestimate the gains from international agreements.

Before proceeding, an important question is whether the anti-lobbying argument for policy commitments calls specifically for an international agreement, as opposed to a domestic commitment that a country can make unilaterally, through for example a change in its domestic constitution. I have argued elsewhere (Maggi and Rodriguez-Clare, 1998 and 2007) that making unilateral economic policy commitments in practice may be difficult to do and hard to self-enforce, especially for weakly-institutionalized countries. But an important point that the present model highlights is that, even if unilateral commitments are feasible, an international agreement may still be necessary, and the reason is that policy discretion causes not just domestic waste of resources (captured by ξ^h in the model), but it also imposes a negative international externality, by inducing waste of foreign resources (captured by ξ^f in the model). This negative international externality from the presence of policy discretion, which generates a role specifically for international agreements, is to my knowledge new in the literature. For this reason, in what follows I will distinguish between the "anti-domestic-lobbying" and the "anti-foreign-lobbying" effects of policy commitments.

A simple way to isolate the "anti-foreign-lobbying" gains from an international agreement is to set $\xi^h = 0$, thus shutting down any domestic rent–seeking waste. In this case it is clear that the Home government has no incentive to make a unilateral commitment, so unless there is an international agreement, the rent-seeking waste caused by foreign lobbying (ξ^f) will not go away.

The next observation is that the potential for anti-foreign-lobbying gains cannot be considered a stand-alone rationale for an international agreement, because it is tightly linked to the presence of direct international policy externalities (in my model, the direct impact of t on foreign profits and welfare). Clearly, if the domestic policy t had no externality on the foreign country, then $\frac{d}{dt}\Pi^f(t) = 0$ and there would be no reason for foreign producers to lobby the domestic government. Rather, the anti-foreign-lobbying gains should be thought of as *amplifying* the traditional gains from an international agreement.

This point can be formalized in the following way. Suppose we parametrize the intensity of the international policy externality, and hence the traditional gains from an international agreement, by writing foreign profits as $\Pi^f(t) = \delta\tilde{\Pi}^f(t)$ (and keeping the assumption $\frac{d}{dt}\Pi^f(t) < 0$).

Note that increasing δ increases the marginal impact of t on foreign welfare as well, since foreign welfare is the sum of foreign profits and foreign consumer surplus, thus increasing δ unambiguously strengthens the international policy externality, and hence the traditional gains from an agreement. It is easy to show that increasing δ also increases the likelihood of foreign rent-seeking at the noncooperative equilibrium, and hence the anti-foreign-lobbying gains from an agreement. I can thus state:

Remark 1. *Suppose $\xi^h = 0$. As δ increases, so that the traditional gains from an international agreement increase, also the anti-foreign-lobbying gains increase, in the sense that the range of ξ^f for which the foreign lobby engages in rent-seeking at the noncooperative equilibrium – and hence an agreement eliminates the waste ξ^f – increases.*

This is a good juncture to discuss the relationship between the anti-foreign-lobbying argument for an international agreement and the argument made by several authors, for example Emily Blanchard, that the presence of cross-border ownership and foreign lobbying may reduce the scope for international agreements, since it induces a government to internalize part of the international policy externality. In the context of import tariffs, cross-border ownership and foreign lobbying tend to bring noncooperative equilibrium tariffs closer to the cooperative tariff levels. While my model has nothing to say about cross-border ownership, in the case of foreign lobbying it highlights a force that goes in the opposite direction as the one highlighted by these authors: if foreign lobbying entails wasteful rent-seeking, the potential for foreign lobbying can amplify the value of international agreements.

These two forces can be formalized in the context of my model. Let us compare the setting above, where foreign lobbying can occur, with the benchmark case in which foreign lobbying is not feasible at all, and evaluate the maximum gains from an agreement in each scenario.

If foreign lobbying is feasible, the maximum gains from the agreement are $\Delta^\Omega = \Omega(t^C) - \Omega(t_{hf}) + (1+a)\left(\xi^h + \xi^f\right)$, while if foreign lobbying is not feasible the gains are $\hat{\Delta}^\Omega = \Omega(t^C) - \Omega(t_h) + (1+a)\xi^h$ (recall that t_{hf} and t_h are the noncooperative policies respectively with and without foreign lobbying).

Notice that, in the noncooperative scenario, foreign lobbying necessarily enhances global surplus, that is $\Omega(t_{hf}) > \Omega(t_h)$. To see this, recall that t_h maximizes $aW^h(t) + \Pi^h(t)$, while t_{hf} maximizes $aW^h(t) + \Pi^h(t) + \Pi^f(t)$, and the cooperative tariff t^C maximizes $aW^h(t) + \Pi^h(t) + \Pi^f(t) + aW^f(t)$. Since $\frac{d}{dt}\Pi^f(t) < 0$ and $\frac{d}{dt}W^f(t) < 0$, it follows that $t_h > t_{hf} > t^C$, which implies the claim since $\Omega(t)$ is concave. Thus:

In this case, the potential for foreign lobbying implies an additional anti-lobbying gain ξ^f, but reduces the traditional gain by $\Omega(t_{hf}) - \Omega(t_h)$. I summarize this point with:

Remark 2. *The potential for foreign lobbying has two opposite effects on the gains from an international agreement (relative to the benchmark case of no foreign lobbying): (i) it brings the noncooperative policy closer to the cooperative level, thus reducing the traditional gains by $\Omega(t_{hf}) - \Omega(t_h)$; (ii) it increases the anti-lobbying gains, from $(1+a)\xi^h$ to $(1+a)\left(\xi^h + \xi^f\right)$. The net effect can go either way, and it is possible that introducing foreign lobbying increases the value of an international agreement.*

2.3. Policy Caps

In this section I consider an international agreement that imposes a *bound* on the policy t. This is an agreement that allows only one-sided policy discretion. Since in my setting an increase in t exerts a negative international externality, I will consider policy caps of the kind $t \leq \bar{t}$. Real-world examples of policy caps are tariff ceilings for trade agreements, or emission caps for environmental agreements. If an increase in t exerted a positive international externality instead, we would consider a lower bound for t, and the analysis would be qualitatively similar; an example of a lower policy bound might be a minimum product standard or a minimum environmental tax.

I will consider a policy cap $\bar{t}$ that is binding and is not so low that it removes the foreign lobby's benefit from participating in the bargain (otherwise the cap has no interesting effects), and compare it with the corresponding exact policy commitment ($t = \bar{t}$).

Recalling the assumption that $\xi^h < \hat{\xi}^h$ and $\xi^f < \hat{\xi}^f$, so that both lobbies engage in rent seeking in the noncooperative equlibrium, the noncooperative policy is t_{hf}. For the policy cap to be binding, it has to be strictly lower than the noncooperative policy level, so I consider a cap $\bar{t} < t_{hf}$.

Intuitively, an agreement in the form of a policy cap may forego some or all of the anti-lobbying gains, because it does not remove shut down wasteful ex-post lobbying. But the

analysis will reveal further, subtle implications of policy caps.

Let us revisit the rent-seeking game under the policy cap. First note that, whichever lobbies participate in the bargain, in case of disagreement the government will choose policy $t_d \equiv \min\{t^w, \bar{t}\}$. Going by backward induction, let us re-examine the four subgames:

1. If only the domestic lobby participates ($A^h = 1$, $A^f = 0$), the agreed-upon policy maximizes $aW^h(t) + \Pi^h(t)$ subject to $t \leq \bar{t}$. The cap is clearly binding, so the resulting policy is $\bar{t}$ and the joint surplus for G^h and L^h is:

$$S_h = \left[aW^h(\bar{t}) + \Pi^h(\bar{t})\right] - \left[aW^h(t_d) + \Pi^h(t_d)\right].$$

The resulting net payoffs for the lobbies are:

$$\begin{aligned} L^h &= \Pi^h(t_d) + S_h(\bar{t}) - \xi^h \\ L^f &= \Pi^f(\bar{t}) \end{aligned}$$

2. If both lobbies participate ($A^h = A^f = 1$), the agreed-upon policy maximizes $aW^h(t) + \Pi^h(t) + \Pi^f(t)$ subject to $t \leq \bar{t}$. Since $\bar{t} < t_{hf}$ the policy cap is binding, thus the resulting policy is again $\bar{t}$. The joint surplus from the bargain in this case is:

$$S_{hf} = \left[aW^h(\bar{t}) + \Pi^h(\bar{t}) + \Pi^f(\bar{t})\right] - \left[aW^h(t_d) + \Pi^h(t_d) + \Pi^f(t_d)\right],$$

The net payoffs for the lobbies are:

$$\begin{aligned} L^h &= \Pi^h(t_d) + \frac{1}{2}S_{hf}(\bar{t}) - \xi^h \\ L^f &= \Pi^f(t_d) + \frac{1}{2}S_{hf}(\bar{t}) - \xi^f \end{aligned}$$

3. If only the foreign lobby participates ($A^h = 0$, $A^f = 1$), the agreed-upon policy maximizes $aW^h(t) + \Pi^f(t)$ subject to $t \leq \bar{t}$. Recall that the unconstrained optimum in this case is denoted $t_f \equiv \arg\max_t[aW^h(t) + \Pi^f(t)]$, and recall also that $t_f < t^w$.

In this case, the policy that results from the bargain is $\min\{\bar{t}, t_f\}$, so the joint surplus is:

$$S_f = \left[aW^h(\min\{\bar{t}, t_f\}) + \Pi^f(\min\{\bar{t}, t_f\})\right] - \left[aW^h(t_d) + \Pi^f(t_d)\right],$$

and the net payoffs are:

$$\begin{aligned} L^h &= \Pi^h(\min\{\bar{t}, t_f\}) \\ L^f &= \Pi^f(t_d) + S_f - \xi^f \end{aligned}$$

4. If $A^h = A^f = 0$, there is no bargain and the policy outcome is t_d.

The payoff matrix is thus the following:

	$A^f = 0$	$A^f = 1$
$A^h = 0$	$\Pi^h(t_d),\ \Pi^f(t_d)$	$\Pi^h(\min\{\bar{t}, t_f\}),\ \Pi^f(t_d) + S_f - \xi^f$
$A^h = 1$	$\Pi^h(t_d) + S_h - \xi^h,\ \Pi^f(\bar{t})$	$\Pi^h(t_d) + \frac{1}{2}S_{hf} - \xi^h,\ \Pi^f(t_d) + \frac{1}{2}S_{hf} - \xi^f$

It is important to understand that the imposition of a policy cap changes the lobby participation game in two ways relative to the noncooperative scenario. First, it reduces the joint surplus for the government and the lobbies that choose to engage, although it may not reduce it to zero. Second, it may change the disagreement policy: if $\bar{t} < t^w$, the disagreement policy is lowered from t^w to $\bar{t}$.

Note that, when the policy bound becomes the new disagreement policy ($\bar{t} < t^w$), this wipes out the joint surplus available when the domestic lobby is in the bargain. To see this recall from the analysis above that, if the domestic lobby is in the bargain, then the cap is binding; so if the policy bound is also the disagreement point, then $S_h = 0$. But if the foreign lobby is the only one participating the joint surplus S_f may be positive, if the cap is not binding. Let us consider the two cases:

Case A: the policy cap does not affect the disagreement policy ($\bar{t} > t^w$).

In this case, $t_d = t^w$ and $\min\{\bar{t}, t_f\} = t_f$, so the payoff matrix above is qualitatively similar as the one in the non-cooperative scenario, except that the joint surplus terms (S_f, S_h and S_{hf}) are uniformly lower. But note the joint surplus is strictly positive regardless of which lobbies participate. Thus, if the lobbying costs ξ^f and ξ^h are below some threshold levels, the unique equilibrium is for both lobbies to engage in rent-seeking. In this case, the use of a policy cap foregoes all the anti-lobbying gains from the international agreement

More generally, depending on ξ^f and ξ^h, the policy cap may reduce the number of active lobbies relative to the non-cooperative scenario, in which case part or all of the anti-lobbying gains from the agreement are retained, but in any event a policy cap weakly reduces the anti-lobbying gains relative to the corresponding exact policy commitment:

Proposition 3. *Suppose $\bar{t} > t^w$, so that the policy cap does not affect the disagreement policy. Then the policy cap weakly reduces the anti-lobbying gains relative to the corresponding exact policy commitment, and it foregoes all anti-lobbying gains if ξ^f and ξ^h are below some threshold levels.*

Next I focus on the case in which the policy bound becomes the new disagreement point.

Case B: the policy cap becomes the new disagreement policy ($\bar{t} < t^w$).

Recall first from the previous section that $t_f < t^w$. If $\bar{t} < t_f < t^w$, then in all subgames the cap is binding and $\bar{t}$ is the disagreement policy, so the joint surplus is zero in all subgames, and hence the unique equilibrium is $A^h = A^f = 0$. This is not a very interesting case: the policy cap is so low that the discretion it leaves is irrelevant, so it is equivalent to an exact policy commitment $t = \bar{t}$. I will thus ignore this case in what follows.

The interesting case is the one in which $\bar{t}$ is not so low that it removes the foreign lobby's incentive to get engaged, that is $t_f < \bar{t} < t^w$. In this case, if the lobbying costs ξ^f and ξ^h are sufficiently small, the policy cap is an assassin: it kills any pure-strategy equilibrium, and only a mixed-strategy equilibrium survives. To see this, suppose ξ^f and ξ^h are infinitesimally small. First, $A^h = A^f = 0$ is not an equilibrium, because the foreign lobby can gain from deviating and entering. Second, $A^h = 0, A^f = 1$ is not an equilibrium: given that the foreign lobby is in the bargain and pushes the policy below the cap, the domestic lobby has incentive to enter in order to prevent this from happening and bring the policy to the cap. Third, $A^h = 1, A^f = 1$ is not an equilibrium: if both lobbies are in the bargain, the policy is at the cap, and if the foreign lobby exits the policy will still be at the cap, so the foreign lobby prefers to save the rent-seeking cost and exit. Finally, $A^h = 1, A^f = 0$ is not an equilibrium: if only the domestic lobby is in the bargain, the policy is at the cap, and the foreign lobby will want to enter in order to push the policy down.

Intuitively, the simple reason for the non-existence of pure-strategy equilibria is the following: the foreign lobby has incentive to engage in rent-seeking only if the domestic lobby does not, because only in this case it can convince the government to lower the policy below the cap $\bar{t}$; and the domestic lobby has incentive to participate only if the foreign lobby does too, because in this case it wants to prevent the policy from being lowered below $\bar{t}$. At a basic level, what kills pure-strategy equilibria is a key asymmetry: given the opposite policy interests of the two lobbies, the policy cap is binding for the domestic lobby but not for the foreign lobby.

In this case, there is only a mixed-strategy equilibrium in which each lobby pays the access cost with some probability.[9] In expectation, then, the policy cap will reduce lobbying waste relative to the non-cooperative scenario, but will not eliminate it, so a policy cap ($t < \bar{t}$) is

[9] It is a well-known result that a mixed-strategy Nash equilibrium always exists in a game of this type.

worse than the corresponding exact policy commitment ($t = \bar{t}$).

The following proposition summarizes:

Proposition 4. *Suppose $t_f < \bar{t} < t^w$, so that the policy cap becomes the disagreement policy (but is not so low that it removes the foreign lobby's benefit from bargaining with the government). Then, if the rent-seeking costs ξ^f and ξ^h are sufficiently small, there exists only a mixed strategy equilibrium of the rent-seeking game. In this case, the expected rent-seeking waste is lower than in the non-cooperative scenario, but strictly positive.*

It is worth noting that the result of Proposition 4 extends beyond the simple model I consider here, and applies more generally to the effect of a policy cap when there is countervailing lobbying. For example, it would apply also to a model of tariff-setting where there is no foreign lobbying but there is countervailing lobbying between final-good producers and intermediate-good producers about the tariff choice.

Finally, it is straightforward to show the following:

Remark 3. *(i) A binding policy cap is weakly dominated by the corresponding exact policy commitment, and it is strictly dominated if ξ^f and ξ^h are sufficiently low but positive. This is because a binding policy cap leads to the same policy outcome as the corresponding exact policy commitment, but the former implies a weakly higher rent-seeking waste, and strictly higher if ξ^f and ξ^h are sufficiently low but positive. (ii) A policy cap, if appropriately chosen, can always improve over the noncooperative equilibrium. This is because an appropriate cap can strictly improve the policy outcome relative to the noncooperative equilibrium, and it weakly reduces the equilibrium rent-seeking waste for any ξ^f and ξ^h.*

It is important to emphasize that my model stacks the deck against policy discretion, in order to isolate the potential anti-lobbying gains from an international agreement, and as a consequence policy caps are weakly dominated by exact policy commitments in my model. But a more complete model would include considerations in favor of policy caps, such as the presence of uncertainty and contracting costs (as in Horn et al, 2010) or the misallocation of resources across sectors caused by lobbying (as in Maggi and Rodriguez-Clare, 2007).

Before moving on, it is worth highlighting the contrast between the point I am making here and the point made by Maggi and Rodriguez-Clare (2007) regarding tariff caps. Here I am arguing that tariff caps have a disadvantage relative to exact tariff commitments, in

that they may invite wasteful ex-post lobbying. In contrast, Maggi and Rodriguez-Clare (2007) highlights an *advantage* of tariff caps: by inviting ex-post lobbying, a tariff cap in a given sector induces the lobby to pay monetary contributions to the government ex-post, thus reducing the net returns from investment in that sector, and hence reducing the ex-ante misallocation of resources. These results should be seen as complementary. Taken together, they suggest that policy discretion can have opposite effects on the resource misallocations caused by lobbying: to the extent that it induces lobbies to make monetary payments to the government and hence lowers returns to lobbying, it is a good thing; to the extent that it induces lobbies to engage in wasteful activities, it is a bad thing. The relative importance of wasteful activities versus pure transfers in the lobbying process is a fascinating empirical question in its own right.

2.4. Will the equilibrium agreement remove policy discretion?

What kind of agreement should we expect to arise endogenously? Will the equilibrium agreement remove policy discretion, thus achieving all potential anti-lobbying gains?

Even in the context of my model – which stacks the deck against policy discretion – this is not obvious, since governments and/or lobbies might not want to give up all policy discretion when negotiating the agreement.

Here I discuss this question, focusing on two polar cases: (i) the case where lobbies can influence the agreement in the same way as they can influence the choice of policies ex post (full ex-ante lobbying), and (ii) the case in which lobbies do not influence the formation of the agreement (no ex-ante lobbying).[10]

International agreements are arguably long-term commitments, whereas unilateral policy choices (such as tariff bills or executive orders) are more easily reversible, so the relative importance of ex-ante versus ex-post lobbying depends crucially on the time horizon of lobbies. If lobbies represent the owners of fixed factors, for example, the time horizon of a lobby is linked to the amount of time that a fixed factor is "stuck" in a given sector. Thus I interpret the case of no ex-ante lobbying as the case where lobbies have a short-run horizon, and the case of full ex-ante lobbying as the case where lobbies have a long-run horizon. Most real-world situations are probably somewhere in the middle, so it is instructive to examine these two polar cases.

Consider first the case of full ex-ante lobbying, where the agreement maximizes the joint

[10] The case of no ex-ante lobbying is considered for example by Maggi and Rodriguez-Clare (1998) and Mitra (2002), while the case of full ex-ante lobbying is considered by Maggi and Rodriguez-Clare (2007).

payoff of the two governments and the two lobbies ($G^h + G^f + L^h + L^f$). In this case the equilibrium agreement will remove all policy discretion, thus it will specify exact policy commitments. The reason is simple: suppose the agreement specifies a policy cap $\bar{t}$ and ex-post this results in a policy outcome t^e, a certain amount of contributions and a certain amount of rent-seeking waste. Since contributions are a pure transfers and rent-seeking waste is bad for both governments and lobbies, this outcome can be improved upon by an agreement that specifies an exact policy commitment $t = t^e$. A policy cap can be optimal only if it does not induce any rent seeking ex-post (that is, $\bar{t}$ is so low that no lobby engages in rent-seeking), in which case it is equivalent to an exact policy commitment.

I have implicitly assumed that lobbies engage in rent-seeking only to influence ex-post policy choices, not to influence the agreement. While some wasteful rent seeking should be expected also at the agreement negotiation stage, I would argue that the magnitude of ex-post rent-seeking waste is likely to be higher, because ex-ante lobbying occurs once and for all, while ex-post lobbying occurs repeatedly over a long period of time after the agreement is signed. In other words, the ex-post rent-seeking costs in my model should be interpreted as the present discounted value of rent-seeking costs over a potentially long period of time. If one is willing to assume that the ex-post rent-seeking waste is larger than the ex-ante rent-seeking waste, the net anti-lobbying gains from an agreement will still be positive.

Next consider next the case of no ex-ante lobbying, where the agreement maximizes the joint payoff of the two governments, $G^h + G^f$. Recall that I am focusing on a sector where the Foreign government is policy-passive, so it does not receive any contributions.

I have assumed that lobbies have all the bargaining power. Under this assumption, the home government does not gain anything from retaining policy discretion, since it will walk away from the ex-post bargain with its reservation utility, and the foreign government has nothing to gain from discretion either. On the other hand, discretion can lead to wasteful rent-seeking, so the governments will jointly prefer an exact policy commitment that removes all discretion.

If the model is extended to allow governments to have some bargaining power, it is not hard to show that the governments jointly may prefer to retain some discretion in the form of a policy cap. This point is reminiscent of the result in Maggi and Rodriguez-Clare (1998), where a small-country government prefers a commitment to free trade to the lack of any commitment if its bargaining power is below some threshold level.

To summarize the main points of the discussion above: (i) In the case of full ex-ante lobbying,

the equilibrium agreement will remove all policy discretion, thus shutting down all ex-post rent seeking, but this may be partially offset by the presence of ex-ante rent seeking. (ii) In the case of no ex-ante lobbying, the equilibrium agreement will remove all policy discretion, given the assumption that governments have no bargaining power vis-a-vis the lobbies; but if this assumption is relaxed and governments have significant bargaining power, governments may prefer policy caps.

3. The value of non-discrimination rules

To examine the effects of nondiscrimination rules, I now extend the model to a simple multilateral setting. I will argue that a non-discrimination rule can achieve some or all of the potential anti-lobbying gains from an international agreement, by reducing the rent-seeking waste caused by foreign lobbying.

Consider a three-country world comprised of the Home country and two foreign countries. In the sector under consideration, the two foreign countries are symmetric. For each foreign country $k \in \{1, 2\}$, the Home government can choose a bilateral policy t^k. This could be interpreted as a bilateral tariff, or a bilateral investment policy, or a bilateral immigration policy. I define a non-discriminatory policy as one that entails $t^1 = t^2 \equiv t$.

The two foreign lobbies face the same access cost ξ^f. To focus more sharply on the important points, I assume in this section that the domestic lobby has zero cost of access: $\xi^h = 0$. Under this assumption, it is a dominant strategy for the domestic lobby to participate in the bargain with the government, so I can take a shortcut and fix $A^h = 1$ throughout the analysis, and focus on the access decisions of the foreign lobbies.

I continue to assume that the bargaining power is shared evenly by the lobbies that participate in the bargain.

The Home gross welfare function is now $W^h(t^1, t^2)$, the gross profit function for the domestic lobby is $\Pi^h(t^1, t^2)$, and the gross profit function of foreign lobby k is $\Pi^k(t^k, t^{-k})$. Note that, given the symmetry of foreign lobbies, $\Pi^1(t, t) = \Pi^2(t, t)$. With a slightl abuse of notation, I will denote $\Pi^k(t, t)$ the foreign lobbies' common profit function given a symmetric policy t.

I assume that: (i) the domestic lobby's profit Π^h is increasing in each t^k; (ii) foreign lobby k's profit Π^k is decreasing in t^k and increasing in t^{-k}; and (iii) a uniform increase in t hurts each foreign lobby: $\frac{d}{dt}\Pi^k(t, t) < 0$. In a trade application, the interpretation of these assumptions

would be that the import-competing lobby prefers higher tariffs on imports from both countries, each exporter prefers a lower tariff on its own products but a higher policy on the competing exporter, and each exporter dislikes uniform policy increases.

I am now ready to launch into the analysis. I will first characterize the noncooperative equilibrium, and then examine the effects of a nondiscrimination (ND) rule that imposes the constraint $t^1 = t^2 \equiv t$ on the Home country's policies.

The rent-seeking game in the non-cooperative scenario

Let us examine the rent-seeking game in the noncooperative scenario. Having set $A^h = 1$, we have a symmetric game between the two foreign lobbies. Let us proceed by backward induction and examine the various subgames.

In what follows, the subscript(s) of the policy t indicate the foreign lobbies that participate in the bargain, while the supercript of t indicates the country that the policy applies to, and I use no superscript when the policy is non-discriminatory; thus, for example, t_1^2 is the policy that applies to foreign country 2 when only foreign lobby 1 is in the bargain, and t_{12} is the symmetric policy that emerges when both lobbies are in the bargain.

Focus first on the subgame $(A^1 = 1, A^2 = 1)$.

With both foreign lobbies in the bargain, the agreed-upon policy is

$$t_{12} = \arg\max_t \Omega_{12}(t,t) = \arg\max_t [aW^h(t,t) + \Pi^h(t,t) + 2\Pi^k(t,t)].$$

The joint surplus in this case is

$$S_{12} = \max_t \Omega_{12}(t,t) - \Omega_{12}(t^w, t^w),$$

where t^w denotes the (symmetric) unilateral welfare-maximizing policy. The net payoffs for the foreign lobbies are:

$$L^1 = L^2 = \Pi^k(t^w, t^w) + \frac{1}{3}S_{12} - \xi^f$$

Next focus on the subgame $(A^1 = 1, A^2 = 0)$ (given that the foreign lobbies are symmetric, the subgame $(A^1 = 0, A^2 = 1)$ is analogous).

The agreed-upon policies are

$$(t_1^1, t_1^2) = \arg\max_{t^1,t^2} \Omega_1(t^1, t^2) = \arg\max_{t^1,t^2} [aW^h(t^1,t^2) + \Pi^h(t^1,t^2) + \Pi^1(t^1,t^2)]$$

The joint surplus in this case is

$$S_1 = \max_{t^1,t^2} \Omega_1(t^1,t^2) - \Omega_1(t^w,t^w),$$

and the net payoffs for the foreign lobbies are:

$$\begin{aligned} L^1 &= \Pi^k(t^w,t^w) + \frac{1}{2}S_1 - \xi^f \\ L^2 &= \Pi^2(t_1^1,t_1^2). \end{aligned}$$

Finally focus on the subgame $(A^1 = 0, A^2 = 0)$. The policy in this case is

$$t_0 = \arg\max_t [aW^h(t,t) + \Pi^h(t,t)]$$

and the net payoffs for the foreign lobbies are:

$$L^1 = L^2 = \Pi^k(t_0,t_0)$$

Having derived the subgame equilibrium payoffs, I can now move backwards and examine the equilibrium access decisions of the foreign lobbies.

The first question is: under what conditions is $(A^1 = 1, A^2 = 1)$ an equilibrium? This requires that foreign lobby 1 have no incentive to deviate and step out, which in turn requires the following condition (the condition for foreign lobby 2 is equivalent, given symmetry):

$$\xi^f < \Pi^k(t^w,t^w) + \frac{1}{3}S_{12} - \Pi^1(t_1^1,t_2^1) \equiv \hat{\xi}^f.$$

Next, under what conditions is $(A^1 = 1, A^2 = 0)$ an equilibrium? This requires that (i) lobby 2 has no incentive to step in, which in turn requires: $\Pi^2(t_1^1,t_1^2) > \Pi^k(t^w,t^w) + \frac{1}{3}S_{12} - \xi^f$, and (ii) lobby 1 has no incentive to step out, which in turn requires: $\Pi^k(t^w,t^w) + \frac{1}{2}S_1 - \xi^f > \Pi^k(t_0,t_0)$. Thus the condition is

$$\hat{\xi}^f \equiv \Pi^k(t^w,t^w) + \frac{1}{3}S_{12} - \Pi^2(t_1^1,t_1^2) < \xi^f < \Pi^k(t^w,t^w) + \frac{1}{2}S_1 - \Pi^k(t_0,t_0) \equiv \bar{\xi}^f \qquad (3.1)$$

By symmetry, (3.1) is also the condition for $(A^1 = 0, A^2 = 1)$ to be an equilibrium. Also note that the interval $(\hat{\xi}^f, \bar{\xi}^f)$ may be empty, which is the case if $\frac{1}{2}S_1 - \frac{1}{3}S_{12} < \Pi^k(t_0,t_0) - \Pi^2(t_1^1,t_1^2)$.

Finally, under what conditions is $(A^1 = 0, A^2 = 0)$ an equilibrium? Clearly this is the case if

$$\xi^f > \Pi^k(t^w,t^w) + \frac{1}{2}S_1 - \Pi^k(t_0,t_0) \equiv \bar{\xi}^f$$

Note that the equilibrium number of foreign lobbies that participate in the bargain is unique, and in particular, it is equal to two if $\xi^f < \hat{\xi}^f$, one if $\hat{\xi}^f < \xi^f < \bar{\xi}^f$, and zero if $\xi^f > \bar{\xi}^f$. Thus the total rent-seeking waste in equilibrium, which I denote RS^f, is

$$RS^f = \begin{cases} 2\xi^f & \text{if} \quad \xi^f < \hat{\xi}^f \\ \xi^f & \text{if} \quad \hat{\xi}^f < \xi^f < \bar{\xi}^f \\ 0 & \text{if} \quad \xi^f > \bar{\xi}^f \end{cases}$$

Note that the equilibrium rent-seeking waste is non-monotonic in ξ^f: it is initially increasing, then it jumps down when ξ^f crosses the first threshold $\hat{\xi}^f$, then it starts increasing again, and finally jumps down to zero as ξ^f crosses the second threshold $\bar{\xi}^f$ (with the interval $\left(\hat{\xi}^f, \bar{\xi}^f\right)$ possibly empty, as I noted above). Figure 1 illustrates.

The rent-seeking game under the ND rule

Let us now revisit the rent-seeking game under the ND rule, which imposes the constraint $t^1 = t^2$ on the bargain.

Consider first the subgame ($A^1 = A^2 = 1$). With both foreign lobbies in the bargain, the agreed-upon policy maximizes

$$\Omega_{12}(t,t) \equiv aW^h(t,t) + \Pi^h(t,t) + 2\Pi^k(t,t)$$

The joint surplus in this case is

$$S_{12}^{ND} = \max_t \Omega_{12}(t,t) - \Omega_{12}(t^w, t^w)$$

and the net payoffs for the foreign lobbies are:

$$L^1 = L^2 = \Pi^k(t^w, t^w) + \frac{1}{3} S_{12}^{ND} - \xi^f$$

Next consider the subgame ($A^1 = 1, A^2 = 0$) (given symmetry, the subgame ($A^1 = 0, A^2 = 1$) is analogous).

The agreed-upon policy is

$$t_1^{ND} = \arg\max \Omega_1(t,t) = \arg\max_t [aW^h(t,t) + \Pi^h(t,t) + \Pi^1(t,t)]$$

The joint surplus from the bargain in this case is

$$S_1^{ND} = \max_t \Omega_1(t,t) - \Omega_1(t^w, t^w)$$

and the net payoffs for the foreign lobbies are:

$$\begin{aligned} L^1 &= \Pi^1(t^w, t^w) + \frac{1}{2}S_1^{ND} - \xi^f \\ L^2 &= \Pi^2(t_1^{ND}, t_1^{ND}). \end{aligned}$$

Finally consider the subgame $(A^1 = 0, A^2 = 0)$. The policy in this case is

$$t_0 = \arg\max_t [aW^h(t,t) + \Pi^h(t,t)]$$

Thus the net payoffs for the foreign lobbies are the same as in the absence of the ND rule:

$$L^1 = L^2 = \Pi^k(t_0, t_0)$$

Having derived the subgame equilibrium payoffs under the ND rule, I can now move backwards and examine the equilibrium access decisions of the foreign lobbies.

Clearly, for $(A^1 = 1, A^2 = 1)$ to be an equilibrium we need:

$$\xi^f < \Pi^k(t^w, t^w) + \frac{1}{3}S_{12}^{ND} - \Pi^2(t_1^{ND}, t_1^{ND}) \equiv \hat{\xi}_{ND}^f$$

For $(A^1 = 1, A^2 = 0)$ to be an equilibrium, we need that: (i) lobby 2 has no incentive to step in, which requires: $\Pi^2(t_1^{ND}, t_1^{ND}) > \Pi^k(t^w, t^w) + \frac{1}{3}S_{12}^{ND} - \xi^f$, and (ii) lobby 1 has no incentive to step out, which requires: $\Pi^k(t^w, t^w) + \frac{1}{2}S_1^{ND} - \xi^f > \Pi^k(t_0, t_0)$. Thus the condition for $(A^1 = 1, A^2 = 0)$ to be an equilibrium, and by symmetry also for $(A^1 = 0, A^2 = 1)$ to be an equilibrium, is

$$\hat{\xi}_{ND}^f \equiv \Pi^k(t^w, t^w) + \frac{1}{3}S_{12}^{ND} - \Pi^2(t_1^{ND}, t_1^{ND}) < \xi^f < \Pi^k(t^w, t^w) + \frac{1}{2}S_1^{ND} - \Pi^k(t_0, t_0) \equiv \bar{\xi}_{ND}^f$$

Note that the interval $(\hat{\xi}_{ND}^f, \bar{\xi}_{ND}^f)$ may be empty, which is the case if $\frac{1}{2}S_1^{ND} - \frac{1}{3}S_{12}^{ND} < \Pi^k(t_0, t_0) - \Pi^2(t_1^{ND}, t_1^{ND})$.

Finally, the condition for $(A^1 = 0, A^2 = 0)$ to be an equilibrium is

$$\xi^f > \Pi^k(t^w, t^w) + \frac{1}{2}S_1^{ND} - \Pi^k(t^h, t^h) \equiv \bar{\xi}_{ND}^f$$

Note that, just as in the noncooperative scenario, the number of foreign lobbies that engage in rent-seeking is unique, and in particular, it is equal to two if $\xi^f < \hat{\xi}_{ND}^f$, one if $\hat{\xi}_{ND}^f < \xi^f < \bar{\xi}_{ND}^f$, and zero if $\xi^f > \bar{\xi}_{ND}^f$. Thus the equilibrium rent-seeking waste under the ND rule is:

$$RS_{ND}^f = \begin{cases} 2\xi^f & \text{if} \quad \xi^f < \hat{\xi}_{ND}^f \\ \xi^f & \text{if} \quad \hat{\xi}_{ND}^f < \xi^f < \bar{\xi}_{ND}^f \\ 0 & \text{if} \quad \xi^f > \bar{\xi}_{ND}^f \end{cases}$$

The impact of the ND rule on equilibrium rent-seeking waste

Next I argue that imposing the ND rule decreases both cost thresholds relative to the non-cooperative equilibrium, that is $\hat{\xi}^f_{ND} < \hat{\xi}^f$ and $\bar{\xi}^f_{ND} < \bar{\xi}^f$, thus it reduces (weakly) the number of foreign lobbies that engage in rent-seeking.

The first observation is that, since the foreign lobbies are symmetric, the ND constraint is not binding when both lobbies are in the bargain, thus $S^{ND}_{12} = S_{12}$. Furthermore, it can be shown that $\Pi^2(t^{ND}_1, t^{ND}_1) > \Pi^2(t^1_1, t^2_1)$, that is, the ND rule increases the payoff of a foreign lobby that stays out when the other foreign lobby is in the bargain.[11] It follows that $\hat{\xi}^f_{ND} < \hat{\xi}^f$.

Next note that $S^{ND}_1 < S_1$, because imposing the ND constraint lowers the available surplus when only one foreign lobby is in the bargain, and hence $\bar{\xi}^f_{ND} < \bar{\xi}^f$.

We can conclude that imposing the ND rule weakly reduces the number of foreign lobbies that engage in rent-seeking, and hence the total rent-seeking waste, for any given ξ^f, and the reduction is strict for a range of ξ^f. Figure 1 visualizes this point, by contrasting the $RS^f_{ND}(\xi^f)$ function with the $RS^f(\xi^f)$ function.

Another way to describe the impact of the ND rule on the equilibrium rent-seeking waste is to think of ξ^f as a parameter that is ex-ante uncertain. In this case it is straightforward to show that, for any ex-ante distribution of ξ^f, imposing the ND rule decreases the equilibrium rent-seeking waste RS^f in a first-order stochastic sense. I can thus state:

Proposition 5. *Relative to the non-cooperative equilibrium, imposing the ND rule weakly reduces the number of foreign lobbies that engage in rent-seeking in equilibrium for any ξ^f, and the reduction is strict for a range of ξ^f. Thus, for any ex-ante distribution of ξ^f, imposing the ND rule decreases the equilibrium rent-seeking waste in a first-order stochastic sense.*

The broad intuition for this result is that the ND rule injects a free-rider problem in the strategic interaction between the foreign lobbies, and more specifically, it modifies the rent-seeking game in two ways. First, it increases the payoff of a lobby that stays out of the fray when the other one engages in rent-seeking, and this increases the incentive to deviate from an equilibrium where both foreign lobbies participate in the bargain. Second, it reduces the

[11] To see this, note that in the absence of the ND rule, if only lobby 1 is in the bargain the agreed-upon tariffs maximize $[aW^h(t_1, t_2) + \Pi^h(t_1, t_2) + \Pi^1(t_1, t_2)]$. Clearly, this leads to $t^1_1 < t^2_1$. In the presence of the ND rule, the agreed-upon tariffs maximize the same objective, but under the constraint $t_1 = t_2$. Given that the objective function is concave in t_1 and t_2, imposing the equality constraint leads to a higher t_1 and a lower t_2, and as a consequence Π^2 increases.

available surplus when only one foreign lobby is in the bargain, and this decreases the incentive of that lobby to stay in the bargain.

The logic of this result is reminiscent of the well-known free-rider problem in trade negotiations caused by the MFN rule, however there are some differences. First, in the present context the free-riding occurs in the process of ex-post lobbying, not in the process of negotiating the agreement, so free-riding is not necessarily a "problem". Second, the nature of the free-riding is somewhat different. The free-riding problem caused by the MFN rule in trade negotiations occurs because a country that participates in the bargain must make trade concessions, while a country that stays out does not. Here the lobby that participates in the bargain may get a *higher* payoff than the lobby that stays out: to see this, suppose $t_1^{ND} > t^w$; then the participating lobby gets a side transfer for accepting an increase in the tariff relative to the disagreement policy t^w, so it gets a higher payoff than the non-participating lobby.

The final observation is that, while imposing the ND rule reduces wasteful rent-seeking, it may worsen the policy outcome relative to the non-cooperative scenario. This is because, as discussed in section 2.2, foreign lobbying pushes non-cooperative policies closer to their cooperative levels. Thus, to the extent that the ND rule induces one or both of the foreign lobbies to disengage, it leads to a worse policy outcome. The net effect is ambiguous, and it is possible that imposing the ND rule is worse than imposing no rule at all.

Remark 4. *The ND rule has two opposite effects on global surplus: it reduces wasteful rent-seeking but it distorts the equilibrium policy outcome relative to the non-cooperative equilibrium. The net effect can go in either direction.*

It is worth highlighting, however, that the beneficial effect of foreign lobbying on the equilibrium policy levels depends on the assumption that Home's policy affects foreign lobbies and foreign welfare in the same direction. In the trade application, this is the feature that an increase in Home's tariff damages the foreign lobby as well as foreign welfare. But it is not hard to think of policy domains where this is not the case. For example, a tax on FDI from a given country may hurt producer lobbies in that country, but it may increase welfare in that country by inducing those producers to invest more locally (if for example there are local agglomeration externalities).

4. Conclusion

I have argued that an important potential gain from international agreements is to reduce wasteful rent-seeking activities through a reduction in policy discretion. In particular, to the extent that policy discretion induces rent-seeking activities by foreign lobbies, it imposes a negative externality on foreign countries. This in turn generates novel gains from international agreements. I developed a simple model of rent-seeking by domestic and foreign lobbies, assuming that domestic and foreign lobbies have opposite policy interests and thus engage in countervailing lobbying. Within this setting, I examined the potential anti-lobbying effects of various types of international rules.

Exact policy commitments eliminate all rent-seeking waste, by removing discretion and hence shutting down ex-post lobbying. Thus exact policy commitments achieve the maximum potential anti-lobbying gains from an international agreement. I then examined alternative types of international rules that reduce discretion only along certain dimensions, and in particular, policy bounds and non-discrimination rules. I showed that an appropriate policy bound always improves on the non-cooperative equilibrium, but is weakly dominated by the corresponding exact policy commitment, because it invites ex-post lobbying and foregoes part or all of the potential anti-lobbying gains. I also showed that a policy bound may kill the pure-strategy equilibria of the rent-seeking game between the lobbies, and lead to randomization of the lobbies' rent-seeking decisions. Finally, I highlighted a novel rationale for non-discrimination rules such as the Most Favored Nation rule, in that they can reduce wasteful rent-seeking by foreign lobbies, by injecting a free-rider problem in the strategic interaction between these lobbies. Under some conditions a non-discrimination rule can achieve all potential anti-lobbying gains from an international agreement, but at the same time it may distort the policy outcome relative to the non-cooperative equilibrium.

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Figure 1