Foreign Influence and Welfare*

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Abstract

How do foreign interests influence the policy determination process? What are the welfare implications of such foreign influence? In this paper we develop a model of foreign influence and apply it to the study of optimal tariffs. We develop a two-country voting model of electoral competition, where we allow the incumbent party in each country to take costly actions that probabilistically affect the electoral outcome in the other country. We show that policies end up maximizing a weighted sum of domestic and foreign welfare, and we study the determinants of this weight. We show that although foreign influence is zero in equilibrium, its "threat" may be welfare-enhancing from the point of view of aggregate world welfare. This is because foreign influence helps alleviate externalities arising from cross-border effects of policies. The threat of foreign influence can however prove harmful in the presence of large imbalances in influence power across countries. We apply our model of foreign influence to the study of optimal trade policy. We derive a modified formula for the optimal import tariff and show that a country's import tariff is more distorted whenever the influenced country is small relative to the influencing country and whenever natural trade barriers between the two countries are small.

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1 Introduction

Governments often take actions that affect the image and political prospects of politicians abroad. These actions range from the subtle and covert to the obvious and open, and they also vary in intensity. A typical open channel of influence is the careful use of diplomatic gestures such as bilateral meetings between political leaders from different countries. For instance, the President of country A can change the profile of country B's politician by meeting with him or her or by refusing to do so. This can be an important boost for a leader in opposition but it can also be enjoyed by a party in government. If country B's leader visits country A, a formal dinner at the residence of country A's President provides a much better image of international dignity and ability than a string of low-level meetings. Diplomatic scheming in the United Nations is also important. When a country receives a scolding declaration by this international body, it is clear that the government has been outmaneuvered in the diplomatic arena, which reflects poorly on its ability to deal with the international community. Hence, countries interested in affecting the political equilibrium abroad spend resources trying to obtain declarations in line with their interests and the interest of their political allies abroad, whether they are in government or in the opposition. Powerful governments also attempt to change the political equilibrium in other countries by their allocation of foreign aid or by strategically giving contracts to foreign firms. Furthermore, they exert pressure in multilateral organizations to obtain good deals for "friendly" governments in foreign countries.[1] A dramatic example of the relationship between aid flows and political preferences was the reaction of the international community to the recent election of a Hamas-led government in Palestine.

Countries also resort to more direct forms of electoral influence. The United States routinely allocates funds to organizations dedicated to the promotion of democracy and human rights. These organizations tend to be aligned with certain "friendly" political parties. More directly, some governments have allegedly resorted to direct financial support of their preferred political party in a foreign country.[2] These actions are usually done in a covert

[1] Dreher and Jensen (2007) document that countries that are perceived as "friendly" to the United States obtain better deals from the IMF, and that these deals are systematically better right before elections in those countries. Alesina and Dollar (2000) show that political concerns explain aid flows. Bueno de Mesquita and Smith (2004, 2006) provide an alternative theory of political determination of aid flows, also supported by the data.

[2] There are plenty of alleged examples of financial involvement. For instance, it is believed that the U.S. gave support to the "color revolutions" in the near abroad of Russia by supporting democratic movements (Simes, 2007). It is also widely believed that Venezuela's President Hugo Chavez has used oil money to support his preferred candidates in several Latin American countries (Shifter, 2006). Weiner (2007) also documents that the United States gave direct financial support to certain political figures in Italy, Japan and Chile among other countries.

way and typically involve secret service activity. These services are also used to topple governments by fomenting and giving financial, logistic or direct support to coups.[3] Short of an invasion, this is the most direct route to obtaining a favorable policy in a foreign country.

In this paper we develop a model of foreign influence and study its effects for policy determination. We show that in order to avoid foreign meddling in domestic affairs, governments will tilt their policies to partially bear in mind the interests of foreign countries. This distortion will tend to reduce the welfare of the influenced country to the benefit of that of the influencing countries, but may well lead to an overall increase in world welfare. Furthermore, in a world in which all countries are both influenced *and* influencers, it becomes possible that each country's welfare is strictly higher with the possibility of foreign influence than without it. The reason for this is that foreign influence helps alleviate externalities arising from cross-border effects of policies.

Although our above examples of foreign meddling involved a few non-democratic regimes, we found it logical to take as our starting point a standard political-economy model of policy determination in a democratic society. In particular, we set off by developing a two-country version of a stylized probabilistic voting model of electoral competition in the tradition of Lindbeck and Weibull (1987). As is standard in the literature, the two political parties in each country announce a policy platform at some initial stage, and voters elect whichever party offers them a higher (indirect) utility. Electoral competition disciplines politicians and leads them to commit to policy platforms that tend to be welfare-enhancing for their country's population at large. In the particular formulation we build on, in which voters have common preferences over the policy under consideration, electoral competition leads to a common policy announcement by both parties and this policy maximizes aggregate welfare in each country. Nevertheless, this process of electoral competition leads to *worldwide* efficient policy choices only when the policies being announced generate no externalities on foreign countries.

In practice, a large number of important policy choices generate significant spillovers for foreigners. Examples include announcements regarding trade policy, environmental policy, intellectual property rights protection, migration policies, FDI regulation, or military spending. In those situations, foreigners will not be indifferent as to who ends up winning the election in a particular country. We capture the concept of *foreign influence* inherent in the examples above by endowing the incumbent government in each country with the ability to take certain costly actions that probabilistically affect the election outcome in the other

[3] For the long story of U.S. intervention in foreign countries, either with financial meddling or by fomenting coups, see Kinzer and Schlesinger (1982), Kinzer (2007), and Weiner (2007). The most notorious U.S.-fomented coups are probably the ones in Iran in 1953, in Guatemala in 1954, and in Chile in 1973.

country. We show that to the extent that the two political parties in a given country (say Home) announce different platforms, the foreign government will have an incentive to take actions that increase the relative popularity of whichever candidate is announcing "friendlier" policies towards this foreign country. Our first result is that although the (subgame-perfect) *equilibrium* level of foreign influence is zero, its *threat* tends to tilt the announced policies at Home, which end up maximizing a weighted sum of Home and foreign welfare.[4] The weight on foreign welfare (or foreign's *influence power*) depends on the effectiveness of foreign's influence. This effectiveness in turn varies with the productivity of foreign influence, and also with how impressionable voters at Home are. Hence, characteristics of *both* countries end up determining the effect of influence.

Although the resulting policies necessarily reduce Home welfare, we derive fairly weak conditions under which world welfare is higher with the possibility of foreign influence. Intuitively, although Home is made worse off by the distortions in policy induced by foreigners, foreign pressure leads the Home country to partially internalize its effects on foreign welfare, hence improving international efficiency. Furthermore, when each country is both influencing and being influenced it becomes a possibility that the availability of foreign influence raises welfare in *both* countries. This, however, is only possible when asymmetries in influencing power across countries are not too large. Pairs of countries with "balanced" influence power (in a sense to be defined) are relatively successful in internalizing the externalities they impose on each other, and hence foreign influence is more likely to be Pareto improving in that case. Conversely, in influence relations between powerful and weak countries, the weak country is typically better off in a world where no such meddling is possible. Furthermore, it might well be that some uneven bilateral relationships are so one-sided that world welfare is actually reduced, as the costs in the weak country can be higher than the benefits obtained by the foreign power. Our framework also implies that large imbalances in influence power will hinder the viability of international agreements that bring countries to the efficiency frontier.

We next apply our framework to the study of optimal import tariffs. We first show that optimal tariffs under foreign influence are still proportional to the inverse of the export supply elasticity faced by a country, but the level of these tariffs is *lower* than in standard models. In that respect, our model helps reconcile the findings of Broda, Limao, and Weinstein

[4]Some readers might question the appeal of a model of foreign influence in which these influence activities are zero in equilibrium. It would however be straightforward to modify our model in order to generate positive foreign influence *along the equilibrium path*. This could be achieved, for instance, by introducing uncertainty, incomplete information or differences in ideology between political parties. We believe that our simpler formulation serves a useful pedagogical role in illustrating the *effects* of the possibility of foreign influence.

(2006), who find a positive effect of inverse export supply elasticities on import tariffs but with a factor of proportionality much lower than that implied by theory. We also develop a parametric example with linear demand and supply functions that introduces a parameter governing the relative size of the two countries as well as a parameter measuring geographical barriers between these countries. In the example, a country's import tariff is shown to be more distorted relative to the standard optimal tariff whenever the influenced country is small relative to the influencing country (even when both countries share a common technology of influence), and whenever natural trade barriers between the two countries are small. Finally, we show that the viability of a free trade agreement may hinge on the existence of a negative correlation between economic size and influence power.

Our model departs from standard political-economy frameworks that study the determination of policies as the outcome of a political game played only by domestic agents (politicians, voters, interest groups).[5] A branch of this literature has studied the implications of allowing for international spillovers of such policies and has stressed the fact that the resulting equilibria are inefficient.[6] We contribute by developing a model in which there is a direct political effect of foreign actors. The existing literature on trade agreements also considers the role of foreign governments but is very different in scope and emphasizes formal negotiations between countries. Indeed, if international negotiations were costless and the agreements thereby reached were perfectly enforceable (or self-enforcing), the channels of foreign influence described in this paper would obviously be dominated instruments to achieve worldwide efficiency gains. In practice, however, international agreements are costly to negotiate, the mechanisms that ensure their enforceability are still primitive, and political turnover around the world hinders the emergence of self-enforcing agreements. Hence, in contrast to the existing literature and to analyze the consequences of the obvious existence of such influences, we let foreigners play an active role in a country's political game. In that respect, our work is related to that of Hillman and Ursprung (1988) and Gawande, Krishna and Robbins (2006), which both introduce foreign lobbying in alternative models of trade policy determination.[7] Later in the paper, we will discuss at greater length the relationship between our concept of foreign influence and that of foreign lobbying.

The rest of the paper is organized as follows. In section 2, we develop our two-country

[5] For the case of trade policy choices distorted by domestic lobbying see for instance Magee, Brock and Young (1989) or Grossman and Helpman (1994).

[6] See for instance the two-country model in Grossman and Helpman (1995).

[7] Hillman and Ursprung (1988) focus on showing that voluntary export restraints (VERs) can be rationalized if foreign interests are represented in the determination of a country's international trade policy. Gawande, Krishna and Robbins (2006) show that foreign lobbying can serve a welfare-enhancing, counterweighting role when the political process is distorted by domestic lobbies with interests that are misaligned with those of the rest of the electorate.

model and illustrate how foreign influence distorts policy determination. In section 3, we study some comparative statics that facilitate an analysis of the welfare implications of foreign influence, which we carry out in this same section. An application of our model to the study of import tariff choices is developed in section 4. We offer some concluding remarks in section 5.

2 A Model of Foreign Influence

We begin this section by describing a benchmark, two-country model of electoral competition. We later introduce cross-border externalities and the possibility of foreign influence and proceed to solve for the unique *convergent* equilibrium of the game.

2.1 Environment and Political Structure

The political-economy side of our model is a simple variant of a probabilistic voting model in the tradition of Lindbeck and Weibull (1987).[8] We consider a world of two countries, Home and Foreign, in which electoral competition determines certain dimensions of economic policy. The agents of the model are (i) Home and Foreign politicians (or political parties), who seek to win an upcoming election, and (ii) Home and Foreign voters, who seek to elect whichever politician offers them a higher indirect utility. We next describe their preferences in more detail.

2.1.1 Voters

Each country is populated by a unit measure of individuals whose only role in the model is to vote for their preferred candidate. As is standard in probabilistic voting models, individuals may not be indifferent between the different candidates due to differences in the latter's announced policies or due to idiosyncratic preferences across voters that are independent of policy announcements. To capture these forces, voter preferences in country $j = H, F$ are defined over goods affected by a national government policy τ^j, as well as over goods or attributes of each candidate that cannot be credibly modified as part of the electoral platform. In particular, we assume that the indirect utility that voter i in country j would obtain if

[8] See Persson and Tabellini (2000) for a textbook treatment. Sections 3.5 and 7.4 cover models closest to the one proposed here. Dixit and Londregan (1996, 1998) use a variant of this model to discuss redistributive politics when voters belong to groups with different political sensitivity. Grossman and Helpman (1996) introduce special interest group activities such as campaign contributions in this framework. None of these papers extend this framework to explicitly consider international politics.

party c wins the election takes the form

$$V^{i,j}\left(\tau_c^j, \sigma_c^{i,j}\right) = v^j\left(\tau_c^j\right) + \sigma_c^{i,j}, \tag{1}$$

where $v^j\left(\tau_c^j\right)$ denotes the indirect utility from consuming the goods affected by the policy τ_c^j, while $\sigma_c^{i,j}$ measures the additional utility that voter i enjoys when party c is in power in country j. In the language of Grossman and Helpman (1996), τ_c^j represents a *pliable* policy, while $\sigma_c^{i,j}$ aggregates the welfare consequences of *fixed* policy positions or candidate characteristics that are outside the control of the politician. These fixed policies can be interpreted as voters associating political parties with distinct ideologies, different proclivities to fight corruption or preserve national pride, or simply as differences in politicians' personal appeal and charisma.[9]

We assume that the function $v^j\left(\tau_c^j\right)$ is continuous and differentiable and satisfies $v^{j\prime}\left(\tau_{\min}\right) > 0$, $v^{j\prime}\left(\tau_{\max}\right) < 0$ and $v^{j\prime\prime}\left(\tau_c^j\right) < 0$ for all $\tau_c^j \in \Gamma = [\tau_{\min}, \tau_{\max}]$. Our assumptions ensure that there is a single policy τ that every voter i in j prefers, independently of the idiosyncratic term $\sigma_c^{i,j}$.[10] For now, our specification rules out cross-border externalities of policies, but we shall introduce them shortly.

2.1.2 Politicians

The political structure is identical in both countries. Each country $j \in \{H, F\}$ is governed by an incumbent party I who is facing an opposition party O in an upcoming election. Before the elections, each of these parties credibly commits to a *platform* or policy τ_c^j (with $c = I, O$) to be implemented should that party win the election. Parties choose τ_c^j from a compact subset of the real line, i.e. $\tau_c^j \in \Gamma = [\tau_{\min}, \tau_{\max}]$. We will focus throughout on the case in which equilibrium policies lie in the interior of Γ.

We assume that politicians are partially self-interested. On the one hand, politicians care about their election prospects, as captured by the probability of their own party c winning the election. On the other hand, politicians independently care about the welfare of their citizens. As a consequence, their preferences also depend on the enacted policy decisions. In particular, we assume that the preferences of party $c = I, O$ in country j can be summarized by:

$$W_c^j = \alpha^j P_c^j + \left(1 - \alpha^j\right) v^j\left(\tau_w^j\right), \tag{2}$$

[9] Similarly, Dixit and Londregan (1995, 1996) describe the voters as trading off ideological affinity with direct economic benefits from the policies under contention. Dixit and Londregan (1998) explicitly introduce ideology in this framework.

[10] Previous models have emphasized conflict of interest within countries. As we are interested in the effects of foreign influence, we endow the country with internal consensus on the preferred policy τ^j. Hence, any departure from that preferred policy must be due to international factors.

where $c \in \{I, O\}$ denotes either the incumbent party or the opposition party, P_c^j is the probability of party c winning the election in country j, $v^j(\tau_w^j)$ is the indirect utility associated with pliable issues when party $w = I, O$ wins the election, and α^j measures the degree of self-interest of politicians (which for simplicity we assume independent of political affiliation). One can also interpret $1-\alpha^j$ as an institutional parameter measuring the extent to which there are constraints on politicians that force them to take into account the public interest (e.g. strength of civil society).[11] The political system is such that we can associate winning the election with obtaining more than one-half of the votes.[12]

2.1.3 Information and Timing of Events with No Foreign Influence

The particular values $\sigma_I^{i,j}$ and $\sigma_O^{i,j}$ are unknown to politicians at the time they announce (and commit to) their platforms. In order to simplify the analysis and ensure the existence of a unique equilibrium of the political game, we follow the bulk of the probabilistic voting literature in assuming that the difference or bias $\sigma_I^i - \sigma_O^i$ can be represented as a sum of a common (country-specific) bias term σ^j and a voter-specific term $\varepsilon^{i,j}$:

$$\sigma_I^{i,j} - \sigma_O^{i,j} = \sigma^j + \varepsilon^{i,j}.$$

The idiosyncratic bias $\varepsilon^{i,j}$ is assumed to be uniformly distributed (and independently across i) in the interval $[-\frac{1}{2\lambda^j}, \frac{1}{2\lambda^j}]$. This term represents the ideological dispersion of the citizenry. For instance, citizens with positive $\varepsilon^{i,j}$ display some degree of political affinity with party I and have higher propensity to vote for it, other things equal. The ideological distribution of voters in country j is common knowledge before the election. In contrast, σ^j models a common bias in the perception that all citizens in country j have of party I at the time of casting the ballot. This common element may include last-minute revelations on candidate's competence (such as performances in head-to-head debates) or the effect of shocks to the political environment such as an environmental disaster or judicial decisions with political relevance. Since σ^j may have both deterministic and random elements we model it as $\sigma^j = -\beta^j + \xi^j$, where ξ^j is distributed uniformly (and independently from $\varepsilon^{i,j}$) in the interval $[-\frac{1}{2\gamma^j}, \frac{1}{2\gamma^j}]$. It then follows that the expected value of the difference $\sigma_I^{i,j} - \sigma_O^{i,j}$ is simply equal to $-\beta^j$. We shall thus refer to β^j as the *expected pro-opposition bias* in country j.

[11] The preference formulation in (2) is also consistent with the following interpretation: politicians are entirely self interested. However, as they are also citizens, they care about the effect that enacted policies have on themselves. In this case, α^j measures the relative weight of the rents associated with holding office. Our results would be essentially identical if politicians placed a weight $1-\alpha^j$ on social welfare under *their* announced policy rather than under that of the winning party: i.e., $W_c^j = \alpha^j P_c^j + \left(1-\alpha^j\right) v^j\left(\tau_c^j\right)$.

[12] For instance, the two parties may be competing for seats in a legislature, and obtaining a majority of seats ensures control over the policies to be implemented in the future.

Given our assumption on the distribution of $\varepsilon^{i,j}$, the fraction of voters that will vote for the incumbent in country j is given by $1/2 + \lambda^j \left(v^j\left(\tau_I^j\right) - v^j\left(\tau_O^j\right) + \sigma^j\right)$, which is higher than one-half only if $v^j\left(\tau_I^j\right) - v^j\left(\tau_O^j\right) + \sigma^j > 0$. Given the assumed distribution of σ^j, the incumbent anticipates winning country j's election with probability

$$P_I^j = \frac{1}{2} + \gamma^j \left(v^j\left(\tau_I^j\right) - v^j\left(\tau_O^j\right) - \beta^j\right). \tag{3}$$

This probability is larger the higher is the level of utility promised by the incumbent relative to that promised by the opposition and the lower is the expected pro-opposition bias. Furthermore, the larger is the dispersion in noneconomic issues (the lower is γ^j), the lower the effect of platform divergence on election prospects. Naturally, the opposition anticipates winning the election with the complementary probability $P_O^j = 1 - P_I^j$. We shall assume throughout the paper that λ^j and γ^j are small enough so that political parties never encounter corner solutions in their maximization programs.[13]

To summarize, the timing of the events is as follows:

- $(t = 1)$ The incumbent and opposition parties in each party announce a policy $\tau_c^j \in \Gamma$.
- $(t = 2)$ The value of ξ^j is realized.
- $(t = 3)$ Elections occur, policies announced at $t = 1$ are implemented and payoffs are realized.

2.2 Equilibrium with No Foreign Influence

We seek to characterize the subgame perfect equilibrium of this political game in which, in each country, voters maximize (1) and politicians maximize (2). Consider first the last stage of the game, at which point τ_I^j, σ_I^j, τ_O^j and σ_O^j are all known. Upon the realization of ξ^j, voters maximize (1) by voting for the incumbent party whenever $-\varepsilon^{i,j} < v^j\left(\tau_I^j\right) - v^j\left(\tau_O^j\right) + \sigma^j$, while voting for the opposition whenever $-\varepsilon^{i,j} > v^j\left(\tau_I^j\right) - v^j\left(\tau_O^j\right) + \sigma^j$. As argued below, this delivers a probability of winning for the incumbent party in country j equal to (3).

Rolling back to the initial stage of the game, party $c = I, O$ in country j sets its platform τ_c^j to maximize its expected welfare, that is

$$\max_{\tau_c^j} \; W_c^j = \alpha^j P_c^j + \left(1 - \alpha^j\right)\left[P_c^j v^j\left(\tau_c^j\right) + \left(1 - P_c^j\right) v^j\left(\tau_{-c}^j\right)\right] \text{ with } -c \neq c,$$

[13] If λ^j or γ^j were large enough, then it could well be the case that P_I^j became negative or larger than 1 for certain off-the-equilibrium path deviations. It would be straightforward to incorporate an analysis of these corner solutions, but it would not add any significant qualitative insights.

subject to P_I^j being given by (3) and P_O^j by $1-P_I^j$. The first-order condition of this program simplifies to

$$\left[\alpha^j\gamma^j + \left(1-\alpha^j\right)\gamma^j\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right) + \left(1-\alpha^j\right)P_c^j\right]\frac{\partial v^j\left(\tau_c^j\right)}{\partial \tau_c^j} = 0. \tag{4}$$

It is straightforward to show (see the Appendix for a proof) that this equation defines a maximum only when $\partial v^j\left(\tau_c^j\right)/\partial\tau_c^j = 0$. Because our assumptions ensure that there exists a unique $\tau \in \Gamma$ such that $\partial v^j\left(\tau\right)/\partial\tau = 0$, we can conclude that:

Proposition 1 *In the political equilibrium with no foreign influence, both political parties in each country $j = H, F$ announce a common policy $\tilde{\tau}^j$ and this policy maximizes social welfare in country j, i.e.,*

$$\frac{\partial v^j\left(\tilde{\tau}^j\right)}{\partial \tilde{\tau}^j} = 0. \tag{5}$$

Proposition 1 provides a useful benchmark. In particular, note that under no foreign influence, the equilibrium policies are identical to those that would be dictated by a benevolent social planner that sought to maximize the utility of its residents. This is a well-known result in the political economy literature: even when political parties are partly self-interested and care about their share of votes, electoral competition will "discipline" the politicians' announced policies, in the sense that equilibrium policies will tend to maximize a weighted sum of voters' welfare. Because we have assumed that all voters share identical preferences with respect to the policy variable τ^j, the equilibrium policy $\tilde{\tau}^j$ ends up simply maximizing $v^j\left(\tau^j\right)$.

2.3 Cross-Border Externalities and Foreign Influence

We have thus far treated elections and policy determination independently in the two countries. In this subsection, we modify the model above in two respects. First, we allow for international "spillover" effects of policies, in the sense that we will now allow the indirect utility $v^j\left(\cdot\right)$ in each country to be a function of the policies implemented in *both* countries. In particular, we will have $v^j = v^j\left(\tau_w^H, \tau_w^F\right)$, where τ_w^H and τ_w^F denote the policies implemented by the winning parties at Home and in Foreign. The dependence of $v^j\left(\cdot\right)$ on the foreign policy could be positive, thus reflecting a positive externality of the foreign policy on domestic welfare, or negative, thus reflecting a negative externality of the foreign policy on domestic welfare. In section 4, we will discuss the particular example of an import tariff, which corresponds to a negative policy externality. For simplicity, we shall consider situations with *symmetric spillover effects*, in the sense that either $\partial v^H/\partial\tau^F > 0$ and $\partial v^F/\partial\tau^H > 0$, or

$\partial v^H/\partial \tau^F < 0$ and $\partial v^F/\partial \tau^H < 0$. For now, the only other structure that we place on the function $v^j\left(\tau_w^H, \tau_w^F\right)$ is that is globally concave in τ_w^H and τ_w^F.

The second modification we introduce is a simple modelling of *foreign influence*. In particular, we will allow the incumbent party in each country to take costly actions to influence the relative popularity of each of the two candidates in the other country, and thereby potentially affect the outcome of the election abroad.[14] These costly actions can range from the dissemination of messages aimed at discrediting or extolling the incumbent party, to diplomatic pressure on the incumbent, to outright military strikes aimed at affecting voters' perceptions of the capability of the incumbent party to safeguard national security. Several examples were discussed in the introduction.

It should be clear that the first modification alone does not have any significant effect on the above analysis. Even with "policy externalities", Proposition 1 still applies and country j's party platforms will converge to the level that maximizes country j's welfare, taking the policies of the other country as given, i.e.,

$$\frac{\partial v^j\left(\tilde{\tau}^j, \tau^k\right)}{\partial \tilde{\tau}^j} = 0 \text{ for } j \neq k.$$

Even though the analysis in section 2.2 is unchanged, it is worth emphasizing that the pair of policies $\left(\tilde{\tau}^H, \tilde{\tau}^F\right)$ will be unilaterally *but not globally* welfare-maximizing, since they will fail to internalize their effect on welfare abroad.[15] This opens the door for a potentially useful role for foreign influence.

In modelling foreign influence, we build on the work on special interest groups of Baron (1994) and Grossman and Helpman (1996). In particular, we start by distinguishing between two types of voters: *impressionable* voters and *unimpressionable* voters. Unimpressionable voters in any country j are assumed to behave as in the previous section: they fully understand the platform τ_c^j proposed by each candidate as well as the welfare implications of alternative values of the parameter σ^j governing the relative position of parties on fixed policies or the relative charisma of their politicians. On the other hand, a share of voters are assumed to be impressionable, in the sense that their perceptions of the relative utility level σ^j can be affected by actions taken by third agents. We denote by θ^j the share of impressionable voters in country j's electorate.

Baron (1994) and Grossman and Helpman (1996) focus on the case in which the value of

[14] We give to each country's incumbent party monopoly power in the exertion of influence abroad, but this is not important for our results. In particular, this monopoly power will not generate an "incumbency advantage," in the sense that the probability of each party winning the election will be 1/2 in our convergent equilibrium.

[15] Note also that unless $v^j\left(\tau_w^H, \tau_w^F\right)$ is separable in both arguments, the equilibrium $\tilde{\tau}^j$s will differ from those in Proposition 1.

σ^j for impressionable voters may be affected by campaign contributions by special interest groups. Our focus is instead on the influence that foreign governments may exert on an election by affecting the relative popularity of each of the two candidates. To simplify matters, we do not model campaign contributions by special interest groups and rule out direct monetary transfers from foreigners to any of the two candidates, although we will briefly comment on them later in section 3.3. Instead, we focus on actions taken by foreign governments that affect the popularity of the incumbent party relative to the opposition party.

More formally, we represent voter preferences in country j when party c is in power in country j and party c' is in power in country $k \neq j$ as follows:

$$V^{i,j}\left(\tau_c^j, \tau_{c'}^k, \sigma_c^{i,j}\right) = v^j\left(\tau_c^j, \tau_{c'}^k\right) + \sigma_c^{i,j}, \tag{6}$$

but we now let the term $\sigma_c^{i,j}$ be affected by actions of the incumbent in country $k \neq j$. In particular, we assume that when country k's government exerts a level of effort $e^k \in \mathbb{R}$ in influencing the relative popularity of country j's incumbent party, voter i's relative preference for country j's incumbent party is given by

$$\sigma_I^{i,j} - \sigma_O^{i,j} = \begin{cases} \xi^j - e^k + \varepsilon^{i,j}, & \text{if} \quad \text{voter } i \text{ is impressionable} \\ \xi^j + \varepsilon^{i,j} & \text{if} \quad \text{voter } i \text{ is unimpressionable} \end{cases},$$

where ξ^j is distributed uniformly in $[-\frac{1}{2\gamma^j}, \frac{1}{2\gamma^j}]$ and $\varepsilon^{i,j}$ is uniformly distributed (independently across i and from ξ^j) in $[-\frac{1}{2\lambda^j}, \frac{1}{2\lambda^j}]$. Notice that with this formulation, the share of votes for the incumbent is now given by

$$\begin{aligned} Sh_I^j &= \theta^j \Pr\left(-\varepsilon^{i,j} < v^j\left(\tau_I^j, \tau_{c'}^k\right) - v^j\left(\tau_O^j, \tau_{c'}^k\right) + \xi^j - e^k\right) \\ &\quad + \left(1-\theta^j\right) \Pr\left(-\varepsilon^{i,j} < v^j\left(\tau_I^j, \tau_{c'}^k\right) - v^j\left(\tau_O^j, \tau_{c'}^k\right) + \xi^j\right), \end{aligned}$$

and hence the incumbent in country j will now win the election with probability

$$P_I^j = \frac{1}{2} + \gamma^j\left(v^j\left(\tau_I^j, \tau_{c'}^k\right) - v^j\left(\tau_I^j, \tau_{c'}^k\right) - \theta^j e^k\right). \tag{7}$$

Comparing this expression with (3) it is clear that the level of foreign influence e^k generates an average pro-opposition bias β^j equal to $\theta^j e^k$ in country j. Intuitively, the larger is the share of impressionable voters in country j, the more effective the influence of country k's incumbent will prove to be. Notice that our specification is such that in the absence of foreign influence, the expected pro-opposition bias would be 0. We make this assumption to

isolate the role of foreign influence in shaping the announced policies of each country. We let e^k take either positive or negative values, so we do not need to take a stance on whether foreign influence is aimed at discrediting or endorsing the incumbent party. Similarly, we could let the foreign governments affect voters' perceptions of both their incumbent and opposition parties, but since voters only care about relative utility (or popularity) levels, our formulation is without loss of generality.[16]

We assume that exerting foreign influence is costly and, for simplicity, we impose a quadratic effort cost function $c^k\left(e^k\right) = (1/2)\left(e^k/\phi^k\right)^2$, where a large ϕ^k reflects that country k is relatively efficient at inflicting international pressure. Below, we shall relax some of our strong assumptions on functional forms.

In sum, preferences for political party c in country j are then given by:

$$W_c^j = \begin{cases} \alpha^j P_c^j + (1-\alpha^j)\, v^j\left(\tau_w^H, \tau_w^F\right) - \frac{1}{2}\left(e^j/\phi^j\right)^2, & \text{if} \quad c = I \\ \alpha^j P_c^j + (1-\alpha^j)\, v^j\left(\tau_w^H, \tau_w^F\right) & \text{if} \quad c = O \end{cases}, \tag{8}$$

where τ_w^H and τ_w^F denote the policies implemented by the winning parties at Home and in Foreign.

We assume that foreign influence is exerted after political parties announce their policy platforms and before voters learn the particular realizations of ξ^j. To summarize, the timing of events in the model is as follows:

- $(t = 1)$ The incumbent and opposition parties in each country j announce a policy τ_c^j, $c = I, O$.
- $(t = 2)$ Each country j's incumbent government simultaneously decides how much effort e^j to exert with the goal of affecting the electoral outcome in country $k \neq j$.
- $(t = 3)$ The values of ξ^H and ξ^F are realized.
- $(t = 4)$ Elections occur in each country, policies announced at $t = 1$ by the winners are implemented and payoffs are realized.

2.4 Equilibrium with Foreign Influence

We seek to characterize a subgame perfect equilibrium of the above political game in which all political parties choose a platform τ_c^j to maximize their utility in (8), each incumbent party

[16] In fact, incumbents will find it suboptimal to influence the perception of *both* political parties in the other country.

chooses an influence level e^j to again maximize (8), and individuals vote for the political party in their country that maximizes their utility in (6).

We will show that this game admits a *convergent equilibrium* in which the two political parties in a given country j announce a common platform τ^j in period $t = 1$. We will hereafter focus on describing this equilibrium.[17] In order to study how the influence stages affects the choice of the policy τ_c^j at $t = 1$, we can thus focus on analyzing *unilateral* deviations from this equilibrium by a single political party in one of the two countries. To fix ideas we consider at length the case in which $\tau_I^F = \tau_O^F = \tau^F$ but $\tau_I^H \neq \tau_O^H$. In words, we assume that either the incumbent or opposition party at Home have deviated from the convergent equilibrium. We will later discuss the alternative case in which the deviation occurs in Foreign.

Voting Stage

As usual, we solve the game by backwards induction. Consider first the last stage of the game, at which point the pliable policies $\left(\tau_I^H, \tau_O^H, \tau_I^F, \tau_O^F\right)$, the foreign influence levels $\left(e^H, e^F\right)$, and the common bias ξ^H and ξ^F have been determined in both countries. Voters at Home now maximize (6) by voting for the incumbent party whenever $-\varepsilon^{i,H} < v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right) + \sigma_I^{i,H} - \sigma_O^{i,H}$, where τ^F denotes the (to-be-determined) policy implemented in Foreign. Since we assume that $\tau_I^F = \tau_O^F = \tau^F$, voters in Home can disregard the electoral outcome in Foreign.[18] From equation (7), we have that the incumbent party at Home will win the election with probability

$$P_I^H = \frac{1}{2} + \gamma^H\left(v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right) - \theta^H e^F\right). \tag{9}$$

As it will become apparent below, it will not be necessary to compute the analogous probability P_I^F in the Foreign country when both parties announce the same policy $\tau_I^F = \tau_O^F = \tau^F$.[19]

Foreign Influence Stage

Consider now the stage of the game at which the extent of foreign influence is decided. Remember that at this point political parties have announced their platforms τ_c^j, but the realizations of ξ^H and ξ^F are still unknown. Consider first the choice of foreign influence by the Foreign government. The Foreign incumbent anticipates that if it exerts an amount of

[17] Depending on the shapes of the functions $v(\cdot)$, the game may also admit non-convergent equilibria. We leave the much more cumbersome study of these equilibria for future research.

[18] Note that this strategic interaction between voters may potentially be a source of multiple non-convergent equilibria.

[19] Obviously, when we consider a unilateral deviation in Foreign rather at Home, we would need to compute P_I^F rather than P_I^H.

influence e^F, the Home incumbent government will win the election with a probability P_I^H given in equation (9). Using equation (8) and noting again that $\tau_I^F = \tau_O^F = \tau^F$, we obtain that the Foreign government will set e^F to maximize

$$W_I^F\left(e^F\right) = \alpha^F P_I^F + \left(1-\alpha^F\right)\left(P_I^H v^F\left(\tau_I^H, \tau^F\right) + \left(1-P_I^H\right) v^F\left(\tau_O^H, \tau^F\right)\right) - \frac{1}{2}\left(e^F/\phi^F\right)^2,$$

subject to P_I^H being given in (9). This program yields a unique equilibrium Foreign influence level:

$$\hat{e}^F = -\left(1-\alpha^F\right)\gamma^H\theta^H\phi^F\left(v^F\left(\tau_I^H, \tau^F\right) - v^F\left(\tau_O^H, \tau^F\right)\right). \tag{10}$$

Quite naturally, the Foreign government is inclined to reduce the popularity of the Home incumbent party (i.e., $e^F > 0$) whenever the incumbent's announced policy is associated with lower Foreign welfare than the welfare that could be attained under the policy announced by the Home opposition party. Furthermore, the extent of Foreign influence is increasing in this welfare difference. Note that in the expression there are parameters related both to the Home country as well as to the Foreign country. Intuitively, the amount of influence is increasing in the efficiency of influence and this depends both on the capacity of Foreign to generate pressure (as captured by ϕ^F and α^F), as well as on characteristics of the Home country that translate pressure into actual votes (as captured by θ^H and γ^H). More specifically, a larger ϕ^F directly reduces the marginal cost of providing influence, while a lower α^F makes the Foreign incumbent more "benevolent" and thus more likely to undertake a costly investment from which his country will benefit but he will not benefit politically. To illustrate this last point further, note that when α^F goes to 1, Foreign politicians only care about reelection, and since we have $\tau_I^F = \tau_O^F = \tau^F$ in the deviation we are considering, changes in the Home policy have *no* effect on the relative popularity (and hence on the electoral prospects) of the Foreign incumbent and the Foreign opposition. In such a case, the equilibrium level of Foreign influence is 0.[20] Moving to the effect of Home parameters, note that a larger θ^H increases the share of impressionable voters in the Home country which directly increases the *productivity* of influence in that country. Similarly, a larger γ^H reduces the variance of the shock ξ^H and hence makes it more likely that changes in the relative popularity of candidates induced by foreign influence may sway the outcome of an election. Hence, a larger γ^H makes

[20] It may seem counterintuitive that the electorate would not reward the incumbent party for undertaking this welfare-enhancing influence effort abroad. This is due to the fact that, in our model, voters are forward looking and hence ignore past achievements when casting their ballot. One could generate a positive level of Foreign influence with $\alpha^F = 1$ in a more complex model featuring retrospective voting (as in Barro, 1973, and Ferejohn, 1986). This would also be the case if a foreign policy success could reveal something about the general *competence* of the incumbent. Still, as argued in the introduction, policy concessions are often obtained through pressures that are typically made in a covert way, so it is not clear that future reelection prospects are key in shaping these decisions.

foreign influence more efficient.

We have thus far only considered the incentives of the Foreign government to exert influence at Home. Let us next study the incentives of the Home government to exert influence under the maintained assumption of a unique unilateral policy deviation by Home (i.e., $\tau_I^F = \tau_O^F = \tau^F$). Note that the Home government solves

$$W_I^H\left(e^H\right) = \alpha^H P_I^H + \left(1-\alpha^H\right)\left(P_I^H v^H\left(\tau_I^H, \tau^F\right) + \left(1-P_I^H\right) v^H\left(\tau_O^H, \tau^F\right)\right) - \frac{1}{2}\left(e^H/\phi^H\right)^2,$$

subject to P_I^H being given in (9). Because the incumbent's electoral prospects at Home (P_I^H) are independent of e^H, the solution to be above problem is trivial and yields $\hat{e}^H = 0$. The intuition is simple. Given that political parties in Foreign have announced a common policy level τ^F, there is no benefit for the Home government in influencing the Foreign election.

Before we step back to the initial policy announcement stage of the game, it is important to characterize the foreign influence stage under the alternative unique unilateral deviation from the convergent equilibrium. That is, whenever the initial stage features policy convergence at Home ($\tau_I^H = \tau_O^H = \tau^H$) but not in Foreign ($\tau_I^F \neq \tau_O^F$). Following the same steps as above, it is straightforward to verify that this yields a zero level of influence by the Foreign government ($\hat{e}^F = 0$) and a level of influence by the Home government in an amount:

$$\hat{e}^H = -\left(1-\alpha^H\right)\gamma^F\theta^F\phi^H\left(v^H\left(\tau^H, \tau_I^F\right) - v^H\left(\tau^H, \tau_O^F\right)\right). \tag{11}$$

Policy Announcement Stage

We are finally ready to study the initial ($t = 1$) policy announcement stage. Consider the choice of the incumbent party in country $j \in \{H, F\}$. We again focus on a symmetric equilibrium in which the two parties in the other country $k \neq j$ have announced a common policy $\tau^k \in \Gamma$. To fix ideas consider the case in which $j = H$. The incumbent party at Home then seeks to maximize its welfare W_I^H in (8) subject to the influence "reaction function" in (10) and subject to P_I^H being given by equation (9).[21] Straightforward manipulation delivers the following first-order condition for the choice of τ_I^H:

$$\begin{aligned}
&\left[\begin{array}{c} \alpha^H\gamma^H + \frac{1}{2}\left(1-\alpha^H\right) + 2\left(1-\alpha^H\right)\gamma^H\left(v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right)\right) \\ + \left(1-\alpha^H\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\theta^H\right)^2\left(v^F\left(\tau_I^H, \tau^F\right) - v^F\left(\tau_O^H, \tau^F\right)\right) \end{array}\right] \times \frac{\partial v^H\left(\tau_I^H, \tau^F\right)}{\partial \tau_I^H} \\
&+ \left(\alpha^H + \left(1-\alpha^H\right)\left(v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right)\right)\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\theta^H\right)^2 \times \frac{\partial v^F\left(\tau_I^H, \tau^F\right)}{\partial \tau_I^H} = 0.
\end{aligned} \tag{12}$$

[21] In the objective function of the incumbent party, we can ignore the effort cost associated with e^H because starting from a symmetric equilibrium with $\tau_I^F = \tau_O^F = \tau^F$, we have seen that we must have $\hat{e}^H = 0$.

As shown in the Appendix, the first-order condition associated with the optimal choice τ_O^H of the opposition party at Home is entirely symmetric. This suggests that, in equilibrium, both political parties in the Home country will announce a common policy whenever the two political parties in the Foreign country also announce a common policy $\tau_I^F = \tau_O^F = \tau^F$. As intuitive as this may seem, the proof of this policy convergence result is somewhat involved, so we relegate it to the Appendix.[22] With this result at hand, one can follow completely analogous steps to show that the same policy convergence result will apply to the political equilibrium in the Foreign country, which confirms the existence of the convergent equilibrium we have been discussing (see the Appendix for details).

The convergence in policy platforms allows us to simplify the first-order-condition in (12), e.g., by setting. $v^j\left(\tau_I^H, \tau^F\right) - v^j\left(\tau_O^H, \tau^F\right) = 0$ for $j = H, F$. In particular for any "domestic" country $j \in \{H, F\}$ and any "foreign" country $k \neq j$, we obtain the following implicit definition of the equilibrium common policy $\hat{\tau}^j$ announced by the two parties in country j:

$$\frac{\partial v^j\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} + \left(\frac{\alpha^j\left(1-\alpha^k\right)\phi^k\left(\gamma^j\theta^j\right)^2}{\alpha^j\gamma^j + \frac{1}{2}\left(1-\alpha^j\right)}\right)\frac{\partial v^k\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} = 0. \tag{13}$$

We show in the Appendix that given our assumption of global concavity of the functions $v^H(\cdot)$ and $v^F(\cdot)$, when a solution $\hat{\tau}^j$ to equation (13) exists, it will necessarily be unique. We shall assume throughout that such an interior solution for $\hat{\tau}^j$ exists.[23] We have thus derived the following result:

Proposition 2 *There exists a convergent political equilibrium in which the two political parties in each country $j = H, F$ announce a common policy $\hat{\tau}^j$ and this policy maximizes a weighted sum of domestic and foreign welfare, i.e.,*

$$\frac{\partial v^j\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} + \mu^{k\to j} \cdot \frac{\partial v^k\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} = 0.$$

Furthermore, the weight $\mu^{k\to j}$ on foreign welfare is given by

$$\mu^{k\to j} = \frac{\alpha^j\left(1-\alpha^k\right)\phi^k\left(\gamma^j\theta^j\right)^2}{\alpha^j\gamma^j + \frac{1}{2}\left(1-\alpha^j\right)}, \tag{14}$$

and is increasing in α^j, ϕ^k, γ^j and θ^j, and decreasing in α^k.

[22] The source of difficulties is that welfare of each party is not globally concave in their announced policy. The proof of Proposition 2 in the Appendix shows however that there exists a unique *global* best response function for each party and that the intersection of these best response functions is associated with policy convergence.

[23] When an interior solution to (13) does not exist, then we will have either $\tau_c^j = \tau_{\min}$ or $\tau_c^j = \tau_{\max}$ for both $c = I, O$.

Because both political parties in each country end up announcing a common policy $\hat{\tau}_c^j = \hat{\tau}^j$, it follows that in equilibrium the incumbent government in the other country is actually indifferent as to which political party wins the election in that country, that is $v^k\left(\hat{\tau}_I^j, \hat{\tau}^k\right) = v^k\left(\hat{\tau}_O^j, \hat{\tau}^k\right)$. As a result, the *equilibrium* amount of foreign influence $\hat{e}^k$ is zero (see equations (10) and (11)). Nevertheless, notice that the *possibility* or *threat* of foreign influence affects the equilibrium announced policies in a significant manner. To see this, consider the case in which γ^j, θ^j, or ϕ^k are very close to zero or α^k is close to 1, so that, as argued above, foreign influence becomes extremely ineffective or the incentives to exert it disappear. In such a case, we have that $\hat{\tau}^j$ solves $\partial v^j\left(\hat{\tau}^j, \hat{\tau}^k\right)/\partial\hat{\tau}^j = 0$ which is equivalent to our result in Proposition 1 and is equivalent to stating that the common announced policy will maximize social welfare in country j.[24] Relative to this benchmark without foreign influence, we see that whenever $\mu^{k\to j}$ is positive, the announced policies in country j will no longer maximize country j's welfare, but will instead maximize a weighted sum of country j's and country k's welfare, where the latter is the influencing country. The reason for this is that each political party in country j now perceives that, by partly tilting their policies in favor of foreigners, they increase their probability of electoral success. A party that does so reduces its expected share of unimpressionable votes but can expect favorable foreign meddling and a gain of impressionable voters that more than compensates the loss. In equilibrium, both parties announce the policy that perfectly balances these two incentives related to political success and the associated loss related to their partial benevolence. The extent to which political parties in country j tilt their policies is thus increasing in their "political ambition" (α^j), the share of impressionable voters in their country (θ^j) and in the significance of non-pliable issues (high γ^j). All these factors make foreign influence particularly effective or desirable. At the same time, the weight on foreign welfare $\mu^{k\to j}$ is increasing in the efficiency of influencing in country k (ϕ^k) and also decreasing in the degree of self-interest of foreign politicians (α^k). These two factors make the provision of foreign influence less efficient or desirable.

Because both political parties face a symmetric problem, they end up tilting their policies in the same exact way and hence foreign influence is zero in equilibrium. Still, the possibility of "off-the-equilibrium-path" foreign influence ends up distorting the policies announced (and implemented) in country j.[25] Country j's policies will be relatively more distorted whenever

[24] It is worth noting that even when $\left(1-\alpha^k\right)\gamma^j\theta^j\phi^j > 0$, the equilibrium still converges to that in Proposition 1 whenever α^j goes to 0. The reason is that in such case, country j's politicians cease to care about their electoral prospects and simply announce policies that maximize domestic welfare regardless of what governments abroad threaten to do.

[25] As mentioned in the Introduction, simple variants of our model could easily generate positive foreign influence *along the equilibrium path*.

k's influence is more effective (high $\mu^{k\to j}$) or whenever the effect of country j's policies on country k's welfare are larger (as measured by $\partial v^k\left(\hat{\tau}^j,\hat{\tau}^k\right)/\partial\hat{\tau}^j$). We next turn to studying the welfare implications of these policy distortions.

3 Policy Distortion and Welfare

Before entering the welfare analysis, it is informative to characterize how changes in the influence power of countries affect the equilibrium determination of policies in each country. Throughout this section, we treat the weights $\mu^{H\to F}$ and $\mu^{F\to H}$ as parameters, but it should be understood that changes in these weights are induced by changes in the primitive parameters of our model, as characterized by Proposition 2.

3.1 Comparative Statics

For the purpose of deriving some useful comparative statics results, we first note that our equilibrium conditions constitute a system of two equations in two unknowns τ^H and τ^F:

$$\frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H}+\mu^{F\to H}\cdot\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H} = 0 \tag{15}$$

$$\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^F}+\mu^{H\to F}\cdot\frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial\tau^F} = 0 \tag{16}$$

This defines implicitly τ^H and τ^F as a function of $\mu^{H\to F}$, $\mu^{F\to H}$ and properties of the $v^j(\cdot)$ functions. Denote by $\left(\hat{\tau}^H,\hat{\tau}^F\right)$ such an equilibrium. A useful way to characterize the equilibrium is as the intersection of a Home reaction function, obtained by expressing (15) as a function $\hat{\tau}^H\left(\tau^F\right)$, and a Foreign reaction function, obtained by expressing (16) as a function $\hat{\tau}^F\left(\tau^H\right)$. Using the implicit function theorem, we can express the slope of these two reactions functions as

$$\left.\frac{d\tau^F}{d\hat{\tau}^H}\right|_H=-\frac{\left.\frac{\partial^2 v^H(\cdot)}{\partial(\tau^H)^2}\right|_{\tau^H=\hat{\tau}^H}+\mu^{F\to H}\cdot\left.\frac{\partial^2 v^F(\cdot)}{\partial(\tau^H)^2}\right|_{\tau^H=\hat{\tau}^H}}{\left.\frac{\partial^2 v^H(\cdot)}{\partial\tau^H\partial\tau^F}\right|_{\tau^H=\hat{\tau}^H}+\mu^{F\to H}\cdot\left.\frac{\partial^2 v^F(\cdot)}{\partial\tau^H\partial\tau^F}\right|_{\tau^H=\hat{\tau}^H}} \tag{17}$$

and

$$\left.\frac{d\hat{\tau}^F}{d\tau^H}\right|_F=-\frac{\left.\frac{\partial^2 v^F(\cdot)}{\partial\tau^H\partial\tau^F}\right|_{\tau^F=\hat{\tau}^F}+\mu^{H\to F}\cdot\left.\frac{\partial^2 v^H(\cdot)}{\partial\tau^H\partial\tau^F}\right|_{\tau^F=\hat{\tau}^F}}{\left.\frac{\partial^2 v^F(\cdot)}{\partial(\tau^F)^2}\right|_{\tau^F=\hat{\tau}^F}+\mu^{H\to F}\cdot\left.\frac{\partial^2 v^H(\cdot)}{\partial(\tau^F)^2}\right|_{\tau^F=\hat{\tau}^F}}, \tag{18}$$

respectively. Our assumption that the $v^j(\cdot)$ functions are globally concave implies that the sign of the slope of these reactions functions is determined by whether the $v^j(\cdot)$ functions are

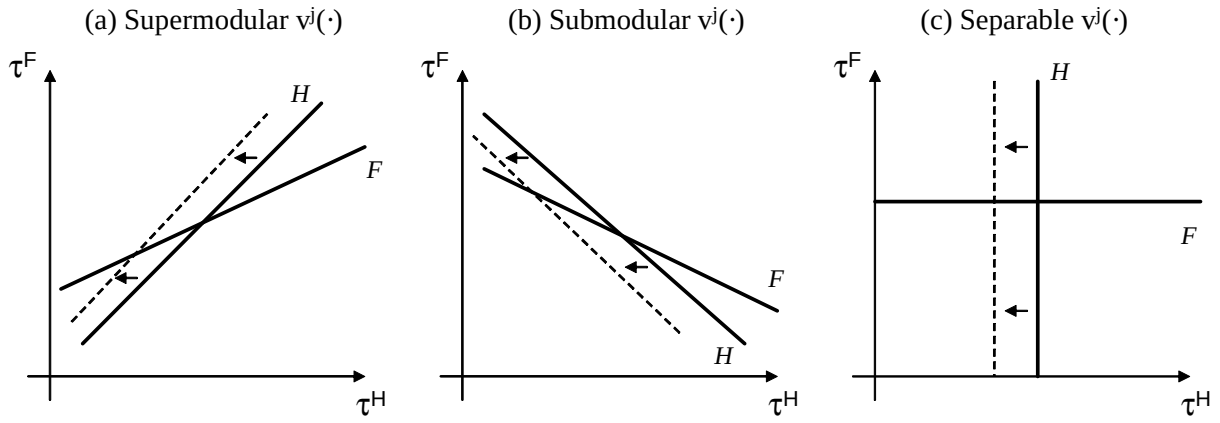

Figure 1: Equilibrium Policies: An Increase in $\mu^{F,H}$ with Negative Policy Externalities

supermodular or submodular (i.e., whether $\partial^2 v^j/\partial\tau^H\partial\tau^F > 0$ or $\partial^2 v^j/\partial\tau^H\partial\tau^F < 0$). Whenever $v^j\left(\tau^H,\tau^F\right)$ is supermodular for $j = H, F$, then we have that both reaction functions are upward sloping. The left panel of Figure 1 illustrates this case, while imposing that the Home reaction function is steeper than the Foreign one, a necessary condition for stability. The middle panel of Figure 1 considers the converse case of submodularity of $v^j\left(\tau^H,\tau^F\right)$ for $j = H, F$, in which case the reaction functions are negatively sloped (and the relative ranking of the slopes is again imposed by stability). Finally, the right panel of Figure 1 depicts the case in which $v^j\left(\tau^H,\tau^F\right)$ is separable in τ^H and τ^F, and thus $\partial^2 v^j\left(\cdot\right)/\partial\tau^H\partial\tau^F = 0$.

With this apparatus in hand, we can now characterize how each country's policies will be distorted by foreign influence. Consider first an increase in the *influence power* of Foreign over Home, i.e. an increase in $\mu^{F\to H}$. From equation (15) and the concavity of $v^H\left(\cdot\right)$, it is clear that this will lead to a shift in the Home reaction function, with the direction of the shift being determined by the sign of policy externalities. The dotted lines in Figure 1 illustrate the case of negative policy externalities. As is clear, in all cases we obtain a decrease in the equilibrium Home tariff $\hat{\tau}^H$, while the effect on the Foreign equilibrium tariff $\hat{\tau}^F$ depends on whether the functions $v^j\left(\cdot\right)$ are supermodular, submodular or separable. In the converse case of positive externalities, the shift in the Home's reaction function would be in the opposite direction, hence necessarily leading to an increase in the Home tariff $\hat{\tau}^H$ (and again an effect on the Foreign tariff $\hat{\tau}^F$ that depends on the slope of the reaction functions).

The intuition behind these results is straightforward. An increase in Foreign's influence power over Home will naturally lead to a change in the Home tariff that is beneficial to Foreign. Whenever policy externalities are negative, a decrease in $\hat{\tau}^H$ is beneficial, with the converse being true for the case of positive policy externalities. Note that $\mu^{F\to H}$ might increase for various reasons that can be grouped into three sets. First, the influence technology

of Foreign might improve (an increase in ϕ^F). This might be caused by increased investment in diplomacy or secret services, or simply by obtaining a seat in the U.N. Security Council, among other reasons. Second, a change in the institutions in Foreign might help select politicians that are less self-interested (a decrease in α^F).[26] Third, Home might become more vulnerable to foreign meddling (higher γ^H or θ^H). If any of these phenomena occur, political parties at Home know that the Foreign incumbent govern becomes more prone to intervening and that the electoral outcomes at Home are more sensitive to such meddling. As a consequence, they tilt their platforms towards the interest of citizens in Foreign. Given the structure of the convergent equilibrium, this implies that Home increases the distortion on its own policy.

How do these changes affect the equilibrium policy choice in Foreign? The key here is whether policy choices are strategic complements or strategic substitutes. When the $v^j(\cdot)$ functions are supermodular, we have a situation of strategic complementarity and the two equilibrium policy choices will move in the same direction (see the left-panel of Figure 1). In the converse case of submodular $v^j(\cdot)$ functions, policy choices are strategic substitutes and therefore move in opposite directions (see the middle-panel of Figure 1). Finally, in the intermediate case of separable $v^j(\cdot)$ functions, the choices of $\hat{\tau}^H$ and $\hat{\tau}^F$ are independent, which implies that the latter will not be affected by changes in $\mu^{F\to H}$.

We have so far focused on the effects of an increase in the influence power $\mu^{F\to H}$ of Foreign over Home, but it should be clear that the analysis of an increase in $\mu^{H\to F}$ is analogous. We can summarize this discussion as follows (see the Appendix for a formal proof):

Proposition 3 *In any stable equilibrium, an increase in $\mu^{F\to H}$ (respectively, $\mu^{H\to F}$) leads to:*

1. *a reduction in $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) if and only if there are negative policy externalities and to an increase in $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) if and only if there are positive policy externalities.*
2. *no effect on $\hat{\tau}^F$ (resp. $\hat{\tau}^H$) whenever $v^j(\cdot)$ is additively separable in τ^H and τ^F for $j = H, F$;*
3. *a shift in $\hat{\tau}^F$ (resp. $\hat{\tau}^H$) in the same direction as $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) whenever $v^j(\cdot)$ is supermodular in τ^H and τ^F for $j = H, F$;*
4. *a shift in $\hat{\tau}^F$ (resp. $\hat{\tau}^H$) in the opposite direction as $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) whenever $v^j(\cdot)$ is submodular in τ^H and τ^F for $j = H, F$.*

[26] By contrast, a decrease in α^H makes country H more resilient against foreign influence, as discussed above.

Our discussion so far has emphasized the role of influence power in determining the extent of policy distortion. The system of equations in (15) and (16) unveils a second important force shaping this distortion. In particular, let us refer to the term $\left|\frac{\partial v^j\left(\tau^H,\tau^F\right)}{\partial \tau^k}\right|$ as the *policy externality effect* of country k in country $j \neq k$.[27] When this effect is 0, country j's welfare is independent of country k's policies and thus country k exerts no policy externalities on country j. Note that our concept of policy externalities is quite distinct from that of influencing power. In particular, the policy externalities exerted by a country might be related to economic size, but they may also be derived from geopolitical considerations. These considerations do not need to make this country automatically politically powerful. As a consequence, there is no ex ante reason to postulate that these two characteristics of bilateral relations are correlated. We discuss some such examples below.

We next study how an increase in the policy externality effect of a country affects its policy choices. The following result can be derived in a manner similar to our previous study of an increase in $\mu^{F\to H}$ (see the Appendix for a formal proof):

Proposition 4 *In any stable equilibrium, an increase in the policy externality effect of country H (resp. F) leads to a reduction in $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) if there are negative policy externalities and to an increase in $\hat{\tau}^H$ (resp. $\hat{\tau}^F$) if there are positive policy externalities.*

In words, Proposition 4 states that a country that starts generating larger *policy externalities* will need to acquiesce more with the interests of her neighbors. This result may seem counterintuitive, but remember that we are considering a change in the level of policy externalities that holds political or influence power constant. In these circumstances, if a shock increases H's policy externalities, country F becomes much more interested in the policy H will implement, and hence it is willing to devote more resources in order to obtain the preferred electoral outcome. This in turn forces the H parties to propose a platform closer to the interests in F.[28]

Proposition 4 provides a rationale for certain historical experiences of particular countries, such as the case of China in the XIXth century. China's trade relationships with the Western

[27] In the interest of precision, we might want to sharpen this statement. We can parametrize the family of functions $v^j\left(\tau^H,\tau^F;\varkappa_{k,j}\right)$ such that $\varkappa'_{k,j} > \varkappa_{k,j}$ if and only if $\left|\frac{\partial v^j\left(\tau^H,\tau^F;\varkappa'_{k,j}\right)}{\partial \tau^k}\right| > \left|\frac{\partial v^j\left(\tau^H,\tau^F;\varkappa_{k,j}\right)}{\partial \tau^k}\right|$ $\forall\left(\tau^H,\tau^F\right)$. In this case we say that an increase in $\varkappa_{k,j}$ parametrizes an increase in the policy externality effect of country k in country j. At the same time, we assume that $\varkappa_{k,j}$ has no effect on the size of the own partial $\partial v^j\left(\tau^H,\tau^F\right)/\partial \tau^j$.

[28] Increases in the policy externalities of country k in country j will not only affect country k's choices but will generally also affect country j's policy choices. It is straightforward to show that parts 2, 3, and 4 of Proposition 3, which applied to a change in influence power, also characterize the nature of the responses to changes in a country's policy externalities.

Powers made it an internationally significant country, while at the same time it was politically weak (or conversely, the Powers were politically strong vis-à-vis China). This weakness implied that the Chinese government was forced to implement policies far away from the optimum for Chinese citizens. The outcome of the Opium wars is an example both of the foreign weakness of China and a very unfavorable policy result. Note also that countries that are rich in strategic resources such as oil or certain minerals tend to be strongly influenced if they are politically weak. For instance, in 1953 Iran suffered a coup that reinstated the Shah. This coup received strong logistical and economic support of the U.S. at the behest of the U.K. Obviously, the main objective of such operation was to gain control on Iran's oil reserves. Countries might also gain significance because of transient events. For instance, because of geopolitical issues largely external to Laos (the Vietnam conflict), the importance of this country for the United States increased dramatically in the 1960s. In a bid to seal the Ho Chi Minh trail, the U.S. government intervened heavily in the politics of Laos and enlisted some of its citizens in the war. Even short lived increases in significance, such as voting power in the UN Security Council initiate influencing activities by foreign powers.[29]

The main lesson from this discussion is that if a country is politically weak, its citizens obtain less distorted policies if this country generates little policy externalities. As foreign countries do not really care about such policies, they will refrain from any influence activity and domestic political competition will minimize distortions.

3.2 Welfare Effects of Foreign Influence

We are now interested in characterizing the local (country-level) and global (world-level) welfare effects of the existence of these channels of foreign influence. The previous subsection already hinted at the complexity of this question by pointing out the different effects on policies of changes in power and the size of policy externalities. To build some intuition we begin this subsection by characterizing the welfare effects of foreign influence for the case in which the function $v^j\left(\tau^H, \tau^F\right)$ is additively separable in τ^H and τ^F for $j = H, F$.

The Case with Separability

By differentiating (15) and (16), it is easy to show the following proposition (see the Appendix for a formal proof):

Proposition 5 *If $v^H\left(\tau^H, \tau^F\right)$ and $v^F\left(\tau^H, \tau^F\right)$ are additively separable in τ^H and τ^F, the following is true:*

[29] For empirical evidence of this phenomenon, see Kumzienko and Werker (2006) and Qian and Yanagizawa (2007).

1. *the welfare level* $v^j\left(\tau^H, \tau^F\right)$ *of citizens in country* j *is increasing in the influence power* $\mu^{j\to k}$ *of her country and decreasing in the influence power of the other country* $k \neq j$.

2. *world welfare is increasing in the influence power of any country* j *whenever* $\mu^{j\to k} < 1$ *and is decreasing in this influence power for* $\mu^{j\to k} > 1$.

Part 1 of Proposition 5 might provide the impression that foreign influence behaves like a zero-sum game. An increase in the power of a country is good for that country and bad for its neighbors. However, part 2 provides an interesting nuance. Increasing the power of a country might produce and increase in aggregate world welfare, as long as this power does not become overwhelming or predatory (greater than 1, at which point the weak country is valuing foreign pressure higher than the welfare of its own citizens!).

This second point generates an interesting possibility: is it possible to find power configurations $\left(\mu^{H\to F}, \mu^{F\to H}\right)$ that provide a Pareto improvement with respect to the case with no foreign influence whatsoever? Proposition 5 examines changes in a single component of the power configuration vector, but to address this question we are interested in exploring how the welfare levels of both countries are affected by general changes in power.

Power Imbalances between Symmetric Countries

For simplicity, we first address the effect of general changes in power assuming $v^H\left(\tau^H, \tau^F\right) = v^F\left(\tau^F, \tau^H\right)$ for all $\tau^H, \tau^F \in \Gamma$. In this case, countries are symmetric in all respects except for their endowment of influence power, i.e., $\mu^{H\to F} \neq \mu^{F\to H}$. Figure 2 presents the set of attainable welfare levels in such a case. Examination of (15) and (16) reveals that the Pareto possibility frontier is generated by distributions of power of the following family: $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (\omega, \frac{1}{\omega})$, for any $\omega \in (0, +\infty)$. When power is distributed in such way, (15) and (16) are the first order conditions associated with the problem of maximizing a *common* weighted sum of country welfare functions (e.g., $v^H(\cdot) + \omega v^F(\cdot)$). Note also that $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (0, 0)$ must generate a welfare allocation *within* the Pareto frontier as long as there are spillovers (see point A in the Figure).

Now entertain an increase in power of the Home country. In particular, we consider the path of welfare distribution as the power distribution changes according to $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (1, 0)\Delta$ and consider taking Δ from 0 to $+\infty$. Proposition 5 states that the welfare of the Home country must increase, the welfare of the Foreign country must decrease, and aggregate welfare must increase up to the point where $\Delta = 1$. This corresponds to the transition from point A to point B in Figure 2. Beyond this point, country welfares evolve in the same direction as before but world welfare is actually reduced. Increasing the power of one country helps internalize an externality and therefore increases world welfare. All the gains,

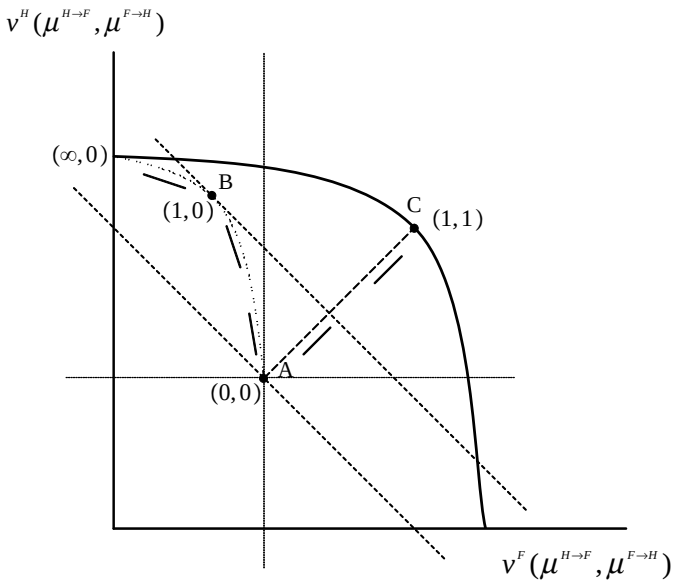

Figure 2: Welfare Effects of Foreign Influence

however, are appropriated by the powerful country and the weak country is left worse off. If the distribution of power becomes sufficiently *unbalanced* ($\Delta > 1$) the cost of the distortions introduced in the weak country are actually big enough to reduce aggregate welfare.

In contrast, consider *balanced* increases in the distribution of power. In particular, start again at point A with political autarky $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (0,0)$ and trace the path of the welfare distribution as the power distribution evolves according to $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (1,1)\Delta$. In this case, both countries are increasing their capacity to influence foreign elections at the same time, and *both* externalities are increasingly internalized by the electoral incentives of parties in each of the countries. As a consequence, a *balanced* increase in foreign meddling might actually prove to be Pareto improving. Note, however, that this is only true up to $\Delta = 1$ (i.e., point C in Figure 2), where aggregate welfare is maximized. Any increase of power from this point is bound to reduce utility as countries start distorting their policies in excess.

Figure 3 provides another illustration of the welfare effects of foreign influence. The two curves in the graph represent the combinations of $\mu^{H\to F}$ and $\mu^{F\to H}$ – with $\left(\mu^{H\to F}, \mu^{F\to H}\right) \in [0,1]\times[0,1]$ – that leave Home and Foreign indifferent between a world with foreign influence and a world without foreign influence (i.e., $\mu^{H\to F} = \mu^{F\to H} = 0$). The fact that these curves are upward sloping follows from part 1 of Proposition 5. For instance, the larger is $\mu^{F\to H}$, the lower is welfare at Home in the equilibrium with foreign influence, so the larger is the $\mu^{H\to F}$ needed to restore indifference with the case of no foreign influence. Finally, the fact that these

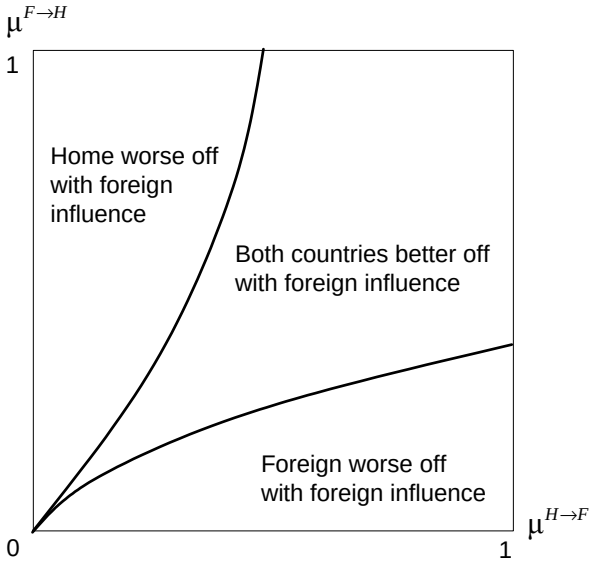

Figure 3: Balanced of Power and Pareto Gains

two curves intersect only at $\left(\mu^{H\to F},\mu^{F\to H}\right)=(0,0)$ is ensured by part 2 of Proposition 5 (i.e., by the fact that world welfare must be higher at any point $\left(\mu^{H\to F},\mu^{F\to H}\right)\in(0,1]\times(0,1]$). Figure 3 then illustrates that a world with foreign influence will Pareto dominate a world without foreign influence only when influence power imbalances are not too large.

That foreign meddling can be Pareto-improving is a striking result as seen from the point of view of the lobbying literature. Our baseline model is one in which political competition is efficient in the sense that it maximizes the preferences of the polity involved. However, in an open-economy polity, this internal efficiency can easily cause inefficiencies due to international externalities. Countries only have an interest in influencing their neighbors insofar they are affected by their neighbors' decisions. As a consequence, even murky channels for cross-country influence such as the ones we emphasize here might have the potential not only to increase world welfare, but actually to generate Pareto-improving changes in policies. It is also instructing that the second possibility is only available for sufficiently *balanced* increases in the distribution of power.

Our model of foreign influence also has implications for the incentives of countries to sign an agreement that sets policies at their world welfare-maximizing level. In our framework, this corresponds to an agreement to move from a world in which each country obtains a welfare level $v^j\left(\hat{\tau}^j\left(\mu^{H\to F},\mu^{F\to H}\right),\hat{\tau}^k\left(\mu^{H\to F},\mu^{F\to H}\right)\right)$ to a world in which each country obtains a welfare level equal to $v^j\left(\hat{\tau}^j(1,1),\hat{\tau}^k(1,1)\right)$. Part 2 of Proposition 5 ensures that if countries could negotiate a binding agreement while exchanging lump-sum transfers, the agreement would indeed be signed for any initial distribution of influence power. Neverthe-

less, in the absence of means to transfer utility it is not obvious that both countries would find it appealing to sign such an agreement.

To gain intuition on this issue, consider an initial situation in which $\mu^{H\to F}=1$ and $\mu^{F\to H}=0$. According to the results above, political parties in Foreign will feel pressured to announced a policy $\hat{\tau}^F$ that maximizes aggregate world welfare, while politicians at Home will announce a policy $\hat{\tau}^H$ that maximizes Home welfare only. It is then clear that from the point of view of Home, an international agreement that brings $\mu^{F\to H}$ up to 1 will necessarily be welfare reducing. In the absence of a means to transfer utility in a non-distortionary way, Home will thus block such an agreement. Similarly, when $\mu^{H\to F}=0$ and $\mu^{F\to H}=1$, it will be the Foreign country that will oppose the agreement. Imagine now situations in which political power is more balanced (i.e., $\mu^{H\to F}\approx\mu^{F\to H}$). In these situations it becomes possible that both countries would support the agreement.

To illustrate this, Figure 4 depicts the region of the parameter space $\left(\mu^{H\to F},\mu^{F\to H}\right)\in[0,1]\times[0,1]$ such that both countries would favor an agreement.[30] With the maintained assumption that the functions $v^H(\cdot)$ and $v^F(\cdot)$ are symmetric, then it is easy to show that the point $\left(\mu^{H\to F},\mu^{F\to H}\right)=(0,0)$ will necessarily belong to this set, as shown in the figure. In words, in the absence of means to affect foreign elections, both countries would agree to sign an efficient international agreement. Figure 4 then shows that the emergence of imbalances in influence power across countries may lead to the powerful country blocking this efficient agreement.

Power Imbalances and Country Asymmetries

In the analysis above, we have assumed that countries are symmetric in all respects except in the distribution of power $\left(\mu^{H\to F},\mu^{F\to H}\right)$. This assumption ensures that as long as $\mu^{H\to F}=\mu^{F\to H}$, we have $\hat{\tau}^H=\hat{\tau}^F$ and therefore $v^H=v^F$. Note, however, that (15) and (16) imply that if the $v^H(\cdot)$ and $v^F(\cdot)$ functions are asymmetric, then this will no longer be the case. As a result, our graphs above need to be qualified whenever countries differ in ways that are not captured in $\mu^{H\to F}$ and $\mu^{F\to H}$.

For instance, imagine that country F has a much higher policy externality effect than country H. That is, $\left|\frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial\tau^F}\right|>>\left|\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H}\right|$ for all $\tau^H,\tau^F\in\Gamma$. As a consequence, even with equal influence power ($\mu^{H\to F}=\mu^{F\to H}$), $\hat{\tau}^F$ will be much more distorted relative to the zero-influence benchmark than $\hat{\tau}^H$. It then becomes a possibility that the proposed balanced increase in the distribution of power, $\left(\mu^{H\to F},\mu^{F\to H}\right)=(1,1)\Delta$ in Figure 2, might not lead to Pareto gains, as F might be made worse of as Δ increases. If such asymmetries

[30] The shape of the curves in Figure 4 follows again from parts 1 and 2 of Proposition 5.

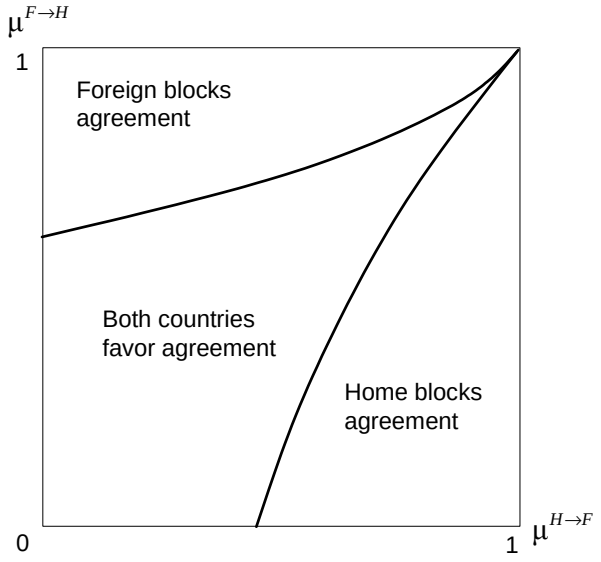

Figure 4: Power Imbalances and International Agreements

in the level of policy externality effects are sufficiently important, the power configurations that lead to Pareto gains take the shape of Figure 5 instead of that in Figure 3.

For foreign influence to lead to welfare gains for country F, its influence power has to be greater than country H's: $\mu^{F\to H} > \mu^{H\to F}$. This greater power is needed to counteract the fact that its policies generate more externalities and are therefore more conducive to foreign meddling. Interestingly, it follows that $\left(\mu^{H\to F}, \mu^{F\to H}\right) = (1,1)$ does not always yield a Pareto improvement with respect to the situation without any foreign influence. The intuition is straightforward: the country that generates more externalities needs to change its policies much more in order to ensure international efficiency and therefore it may prefer a situation in which *no* externalities are internalized. Foreign influence therefore leads to Pareto gains if the distribution of power is sufficiently aligned with the policy externality effects of the two countries.[31] Inspection of Figures 5 and 3 reveal however that one of our key previous conclusions is robust to the inclusion of country asymmetries, namely, the fact that a world with sufficiently unbalanced influencing power will necessarily result in welfare levels that do not Pareto dominate those of a world without foreign influence.

Country asymmetries are also relevant for assessing the viability of international agreements in the absence of transferable utility. In particular, if F generates more externalities than H, it will accept a welfare maximizing international agreement only if H is substantially more powerful than F. The reason is that F needs to face a very unfavorable power

[31] It is worth noting that, as a consequence, the distributions of influence power that ensure Pareto gains might be associated with meager gains in world welfare relative to a world without foreign influence.

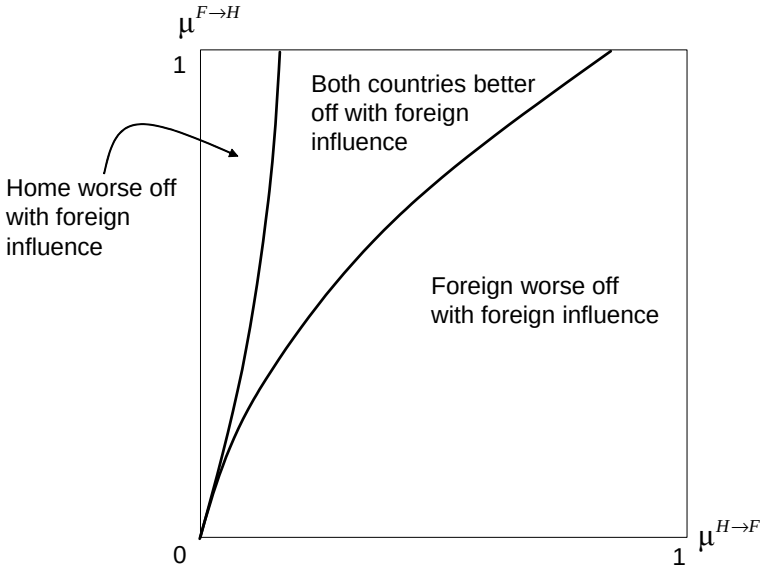

Figure 5: Pareto Gains with Asymmetric Functions

balance in order to prefer the move to the world welfare maximizing policies. Furthermore, when the difference in externality levels across countries is large enough, it is possible that F blocks an agreement even when influence power is identical in the two countries, as illustrated in Figure 6. As in the case of symmetric countries it however continues to be the case that a sufficiently unbalanced distribution of influencing power will hinder the viability of international agreements.

Note that country asymmetries in the model can also be generated by changing the sensitivity that domestic voters have with respect to domestic policies. For instance, $v^H(\cdot)$ and $v^F(\cdot)$ can be such that $\left|\frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial \tau^H}\right| >> \left|\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial \tau^F}\right| \forall \tau^H, \tau^F$. In this case, voters at Home are particularly sensitive to their politicians' platforms. Examination of (15) and (16) reveals that, with equal influence power, $\hat{\tau}^F$ will again be much more distorted relative to the zero-foreign influence benchmark than $\hat{\tau}^H$. Therefore, voter sensitivity provides insulation from foreign influence. It is easy to see that such asymmetry can generate outcomes very similar to those in Figures 5 and 6.

In general, with asymmetric indirect utility functions, the relationship between the distribution of power and the welfare of each country can display many different patterns and an exhaustive analysis falls beyond the scope of this paper. Moreover, asymmetries can be caused by several different country characteristics -e.g. size, productive structure-, and the impact of these characteristics on policy externality effects and domestic sensitivities differs depending on the particular policy examined. Therefore, to better understand the effects

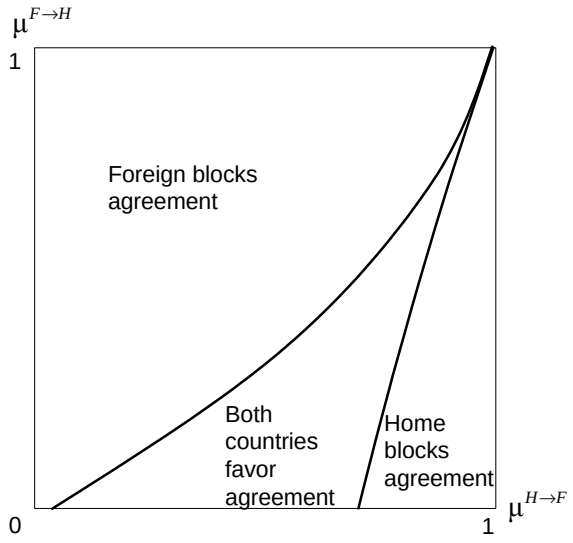

Figure 6: Viability of International Agreements with Asymmetric Countries

of power imbalances on particular policies and how these effects interact with country characteristics, it is necessary to analyze settings where $v^H(\cdot)$ and $v^F(\cdot)$ are generated by fully specified economic models. In order to illustrate this, in section 4 we develop an international trade model and examine the interaction between influence power, size and welfare in a standard tariff-setting game.

The Case with Non-Separabilities

We have thus far derived welfare results for the case of additively separable indirect utility functions. It is of interest to examine the extent to which our results survive the inclusion of interaction or strategic effects in the setting of policies. Consider first the case of supermodular welfare functions $v^j\left(\tau^H, \tau^F\right)$ for $j = H, F$. As shown in Proposition 3, an increase in the influence power of a country will not only lead to a beneficial policy response by the other country, but will also lead to a shift of the country's own policy in the same direction. Regardless of the sign of policy externalities, this "secondary" reaction will necessarily prove welfare reducing for the influencing country and welfare enhancing for the influenced country. For low levels of supermodularity (i.e., low $\partial^2 v^j/\partial\tau^H\partial\tau^F$ for $j = H, F$), these secondary effects will tend to be dominated and part 1 of Proposition 5 will continue to apply. Nevertheless, for large levels of strategic complementarity it is theoretically possible that an influencing country can actually made worse off by an increase in her influencing power. How robust is part 2 of Proposition 5 to allowing for supermodular welfare functions? It turns out that the answer we obtain here is still quite sharp. In particular, increases in influencing

power $\mu^{F\to H}$ or $\mu^{H\to F}$ necessarily increase welfare whenever $\mu^{F\to H}<1$ and $\mu^{H\to F}<1$, and decrease it whenever $\mu^{F\to H}>1$ and $\mu^{H\to F}>1$. To see this formally, we can differentiate the welfare functions and use (15) and (16) to express:

$$\begin{aligned}\frac{d\left(v^H(\cdot)+v^F(\cdot)\right)}{d\mu^{F\to H}} &= \left(\frac{\partial v^H(\cdot)}{\partial \tau^H}+\frac{\partial v^F(\cdot)}{\partial \tau^H}\right)\frac{d\tau^H}{d\mu^{F\to H}}+\left(\frac{\partial v^H(\cdot)}{\partial \tau^F}+\frac{\partial v^F(\cdot)}{\partial \tau^F}\right)\frac{d\tau^F}{d\mu^{F\to H}}\\ &= \left(1-\mu^{F\to H}\right)\frac{\partial v^F(\cdot)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F\to H}}+\left(1-\mu^{H\to F}\right)\frac{\partial v^H(\cdot)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}}. \quad (19)\end{aligned}$$

Part 1 of Proposition 3 implies that the product $\left(\partial v^F(\cdot)/\partial \tau^H\right)\times\left(d\tau^H/d\mu^{F\to H}\right)$ is necessarily positive, while supermodularity ensures that $d\tau^H/d\mu^{F\to H}$ and $d\tau^F/d\mu^{F\to H}$ have the same sign, and hence the product $\left(\partial v^H(\cdot)/\partial \tau^H\right)\times\left(d\tau^F/d\mu^{F\to H}\right)$ is also positive. We thus see that the effects of increases in foreign influence on world welfare are still crucially affected by the relative size of the weight placed by each government on the welfare of domestic residents and foreign residents. Again, relative to a world without foreign influence, world welfare is higher with the possibility of moderate foreign influence. Still, when foreign influence becomes predatory, it may lead to reductions in world welfare.[32]

We next consider the case of submodularity of the function $v^j\left(\tau^H,\tau^F\right)$ for $j=H,F$. In light of Proposition 3 we have that, in such a case, an increase in the influence power of a country will lead to a "secondary" policy reaction in that country that is welfare-increasing for this country but welfare-reducing for the influenced country. For example, in the case of negative policy externalities, an increase in $\mu^{F\to H}$ not only reduces $\hat{\tau}^H$ but also increases $\hat{\tau}^F$, thus bringing the latter policy closer to the Foreign unilateral "optimum" $\tilde{\tau}^F$, implicitly defined by $\partial v^F\left(\hat{\tau}^H,\tilde{\tau}^F\right)/\partial\tilde{\tau}^F=0$. Consequently, we have that part 1 of Proposition 5 not only holds for additively separable welfare functions, but also for submodular ones. Because of these secondary effects, however, it becomes more complex to characterize the cases in which an increase in foreign welfare will increase world welfare. This is reflected in the fact that the second term in equation (19) is now negative. We learn from this equation, however, that a result analogous to part 2 of Proposition 5 will continue to hold as long as the level of submodularity is low, i.e. as long as $\left|\partial^2 v^j/\partial\tau^H\partial\tau^F\right|$ for $j=H,F$ is small.

The next proposition summarizes our discussion above (see the Appendix for a formal proof):

Proposition 6 *For general globally concave welfare functions $v^H\left(\tau^H,\tau^F\right)$ and $v^F\left(\tau^H,\tau^F\right)$, the following welfare properties are true:*

[32] There is a subtle difference between the results with supermodularity and those with additive separability. In particular, in Proposition 5 it sufficed to assume that $\mu^{j\to k}<1$ in order to have a positive aggregate welfare effect of foreign influence, while we now need to assume also that $\mu^{k\to j}<1$.

1. *the welfare level* $v^j\left(\tau^H, \tau^F\right)$ *of citizens in country* j *is increasing in the influence power* $\mu^{j\to k}$ *of her country and decreasing in the influence power* $\mu^{k\to j}$ *of the other country* $k \neq j$ *whenever (a)* $v^j\left(\tau^H, \tau^F\right)$ *is submodular in* τ^H *and* τ^F *for* $j = H, F$*; or (b)* $v^j\left(\tau^H, \tau^F\right)$ *is supermodular in* τ^H *and* τ^F *for* $j = H, F$ *and* $\left|\partial^2 v^j/\partial\tau^H\partial\tau^F\right|$ *is small enough;*

2. *world welfare is increasing in the influence power of any country* j *whenever* $\mu^{j\to k} < 1$ *and* $\mu^{k\to j} < 1$ *and is decreasing in this influence power whenever* $\mu^{j\to k} > 1$ *and* $\mu^{k\to j} < 1$ *provided that (a)* $v^j\left(\tau^H, \tau^F\right)$ *is supermodular in* τ^H *and* τ^F *for* $j = H, F$*; or (b)* $v^j\left(\tau^H, \tau^F\right)$ *is submodular in* τ^H *and* τ^F *for* $j = H, F$ *and* $\left|\partial^2 v^j/\partial\tau^H\partial\tau^F\right|$ *is small enough.*

It is worth emphasizing that even for the case in which $\mu^{F\to H} < 1$ and $\mu^{H\to F} < 1$, an increase in these parameters may not always increase world welfare. This contrasts with the results in Proposition 5 and follows from the strategic interactions in policy setting. Notice, in particular, that equation (19) implies that when Foreign is very powerful ($\mu^{F\to H}$ is close to 1) and Home is very weak ($\mu^{H\to F}$ is close to 0), a further increase in Foreign influence power will necessarily decrease world welfare when $v^j\left(\tau^H, \tau^F\right)$ is submodular in τ^H and τ^F. Hence, increased power imbalances may generate negative welfare effects at the *world* level.

3.3 Foreign Influence vs. Foreign Lobbying

Our setup has abstracted from foreign lobbying which constitutes an alternative channel through which foreign residents can potentially affect the electoral outcomes in a particular country. More specifically, although *direct* contributions by foreigners to particular candidates are illegal in most countries, indirect contributions mediated by registered intermediaries are not ruled out (see, for instance, the U.S. Foreign Agents Registration Act). A natural question is thus how different are the conclusions that emerge from our model of foreign influence relative to those obtained from a model with foreign lobbying.

Without dwelling into detail, it is straightforward to show that a model without governmental foreign influence but with foreign lobbying would also deliver the implication that a country's policies would be tilted to partly reflect the interests of foreign residents (see for instance Gawande et al., 2006). Still, the determinants of the equilibrium policies would be distinct from those in our model. Instead of maximizing a weighted sum of domestic and foreign aggregate welfare, governments would instead maximize a weighted sum of aggregate domestic welfare and the welfare of the *particular* foreign residents engaged in cross-border lobbying. This may appear to be a small difference, but it implies significant differences in the positive and normative conclusions of these different approaches.

Consider first the positive implications of a model with foreign lobbying. Our model suggests that an increase in the level of policy externalities exerted by a country on the rest of the world will naturally increase the incentives for foreign countries to shape its policies and will lead to relatively more distorted policies in that country. In a model in which the only foreign voice represented in that country is that of *particular* producers, it is hard to envision why general policy externalities would affect the equilibrium level of policy distortions. Foreign lobbies act only insofar as their narrow interests are threatened. Hence, such a model would not be able to explain the aforementioned influence activities in reaction to the accession of a country to a position of general international significance, such as the UN Security Council.

Regarding the normative implications of our model, the divergences with a framework with foreign lobbying are important. Note that in such model, externalities will only be internalized to the extent that they specifically affect the foreign lobby. Hence, it will be much more difficult to generate cases in which foreign lobbying can be Pareto improving unless the lobby is very well aligned with the population at large. For the same reason, it is far from clear in such a model that an increase in the power of a country implies an increase in this country's welfare. Note that with direct foreign lobbying, what matters is the ability of the lobby, not the power of the country in which it is based.[33]

4 An Application: Revisiting the Optimal Tariff

In this section, we consider an application of our model of foreign influence to the study of optimal import tariffs. We develop a simple general-equilibrium model of trade with quasilinear preferences, that allows for a sector by sector study of trade policy choices. The model will provide an economic foundation for the abstract indirect utility function $v^j\left(\tau^H, \tau^F\right)$ used above. Furthermore, our assumptions will imply that $v^j\left(\tau^H, \tau^F\right)$ will be separable in its arguments, which will greatly simplify the analysis.

[33] While the present paper restricts its attention to government to government pressures with homogeneous citizens, lobbying by domestic and foreign special interests would naturally interact with these pressures. As pointed out by Putnam (1988), international policy making is best represented as a two-layer game in which foreign policy is constrained by the pressure of domestic interest groups (see also Grossman and Helpman, 1994, 1995 and Maggi and Rodriguez-Clare, 2007). A full-fledged analysis of international influence in the presence of lobbies needs to consider at least three issues. First, whether domestic lobbies and foreign lobbies of similar interests might cooperate. Second, the reasons local producers sometimes choose to lobby their own government for foreign influence, while other times they choose to lobby abroad directly. Third, the effect that domestic lobbies can have in dampening foreign influence by promising contributions to parties that defend the national interest. We are pursuing such enquiry in ongoing work.

4.1 Economic Model

Consider a world consisting of two countries: Home and Foreign. Each country is populated by a continuum of measure one of individuals with identical preferences:

$$u^j = c_0^j + \sum_{i=1}^{2} u_i^j \left(c_i^j\right), \quad j = H, F \tag{20}$$

where $u_i^j(\cdot)$ is increasing and strictly concave. All individuals inelastically supply one unit of labor. Good 0 serves as the numeraire, is costlessly traded and not subject to tariffs. Its world and domestic price is normalized to 1. It is produced one to one with labor everywhere in the world, which pins down the wage rate to 1 in all countries. The other goods can also be traded internationally, but for one unit of good i to make it to the other country, $d_i > 1$ units have to be shipped. We shall also assume that good 1 is a "natural export" of Home, while good 2 is a "natural export" of Foreign.[34] More precisely, we assume that trade policy and "foreign influence" cannot revert "natural" comparative advantage patterns. The examples below will feature this property.

For simplicity, we will focus on a world in which countries only tax their imports. As is well-known, countries may find it optimal to use import tariffs to shift the terms of trade in their favor. Let p_i^W denote the world untaxed price of good i. This corresponds to the price paid by consumers in the exporting country, since there are no taxes nor transport costs involved in that transaction. On the other hand, the domestic price in the importing country j will be given by $\tau_i^j d_i p_i^W$, where d_i denotes the (exogenous) transport cost while $\tau_i^j - 1$ denotes the import tariff (to be derived below). To see this, note that if the domestic price was larger than $\tau_i^j d_i p_i^W$, then exporters would not want to sell in their own country, while if the price was lower than $\tau_i^j d_i p_i^W$, they would not want to export. We can summarize this as follows:

$$p_i^j = \begin{cases} p_i^W & \text{if} \quad j \text{ exports } i \\ \tau_i^j d_i p_i^W & \text{otherwise} \end{cases} . \tag{21}$$

Non-numeraire goods are produced combining labor and sector-specific capital according to a constant returns to scale technology. Let Π_i^j be the aggregate rent accruing to sector i specific factor in country j. Capital is evenly distributed among the measure 1 of workers in each country.

A convenient property of the quasilinear representation of preferences in (20) is that

[34] We could easily extend the analysis to the case of $N > 2$ goods.

aggregate welfare in country j can be written as

$$v^j(\mathbf{p}) = I^j(\mathbf{p}) + S^j(\mathbf{p}), \tag{22}$$

where $I^j(\mathbf{p})$ denotes aggregate income in country j, $S^j(\mathbf{p})$ denotes consumer surplus, and $\mathbf{p}$ is the vector of domestic prices $\mathbf{p} \equiv \left(1, p_1^j, p_2^j\right)$. Given our assumptions, we can further write aggregate income in country j as

$$I^j = 1 + \Pi_1^j\left(p_1^j\right) + \Pi_2^j\left(p_2^j\right) + R^j\left(\boldsymbol{\tau}, \mathbf{p}^W\right), \tag{23}$$

where

$$R^j\left(\boldsymbol{\tau}, \mathbf{p}^W\right) = \begin{cases} \left(\tau_2^H - 1\right) d_2 p_2^W \left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) & \text{if} \quad j = H \\ \left(\tau_1^F - 1\right) d_1 p_1^W \left(c_1^F\left(p_1^F\right) - y_1^F\left(p_1^F\right)\right) & \text{if} \quad j = F \end{cases} \tag{24}$$

is tariff revenue in country j.[35] Note also that consumer surplus is simply given by:

$$S^j(\mathbf{p}) = \sum_{i=1}^{2} \left[u_i^j\left(c_i^j\left(p_i^j\right)\right) - p_i^j c_i^j\left(p_i^j\right)\right]. \tag{25}$$

Given quasilinear preferences, we can study trade policy good by good. We can focus on the problem of a single country setting tariffs on the good that is a natural import for that country. In doing so, it is important to remember that the world price p_i^W is endogenous and must satisfy market clearing, or

$$d_i M_i^j\left(p_i^j\right) \equiv d_i\left(c_i^j\left(p_i^j\right) - y_i^j\left(p_i^j\right)\right) = y_i^{-j}\left(p_i^W\right) - c_i^{-j}\left(p_i^W\right) \equiv X_i^{-j}\left(p_i^W\right) \text{ for } j \neq -j. \tag{26}$$

4.2 Optimal Tariffs: General Formula

Consider first the determination of optimal tariffs in the standard case without foreign influence. As argued above, the optimal tariff in country j will then satisfy $\partial v^j\left(\tau^H, \tau^F\right)/\partial \tau^j = 0$, where $v^j\left(\tau^H, \tau^F\right)$ is now given by (22) together with equations (23) through (26).

For simplicity, let us consider the determination of the optimal tariff for the Home country. Ignoring the irrelevant terms, we can write the Home government problem as:

$$\max_{\tau^H} \; \Pi_2^H\left(p_2^H\right) + \left(\tau^H - 1\right) d_2 p_2^W \left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) + u_2^H\left(c_2^H\left(p_2^H\right)\right) - p_2^H c_2^H\left(p_2^H\right),$$

subject to $p_2^H = \tau^H d_2 p_2^W$ and $d_2\left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) = y_2^F\left(p_2^W\right) - c_2^F\left(p_2^W\right)$. Solving this

[35] An implicit assumption in the tariff revenue function is that tariffs are imposed on the CIF (rather than the FOB) value of imports. This squares well with common practice, but the results should not be too different when studying tariffs on FOB values.

program we find the standard formula:

$$\tilde{\tau}^H - 1 = \frac{1}{\xi_2^F} \equiv \frac{X_2^F\left(p_2^W\right)}{p_2^W X_2^{F\prime}\left(p_2^W\right)}. \tag{27}$$

In words, the (percentage) Home optimal tariff in sector 2 is equal to the inverse of the export supply elasticity of the Foreign country.

We can next study the optimal tariffs in the Home country whenever the Foreign country meddles in the political process in the Home country. Because the Home import tariff exerts a negative externality on Foreign welfare, our results in section 3 indicate that the Home tariff under Foreign influence will be lower than that in equation (27). Given our results in Proposition 2, the Home optimal tariff now solves:

$$\begin{aligned}\max_{\tau^H}\ & \Pi_2^H\left(p_2^H\right) + \left(\tau^H - 1\right) d_2 p_2^W \left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) + u_2^H\left(c_2^H\left(p_2^H\right)\right) - p_2^H c_2^H\left(p_2^H\right) \\ & + \mu^{F\to H}\left[\Pi_2^F\left(p_2^W\right) + u_2^F\left(c_2^F\left(p_2^W\right)\right) - p_2^W c_2^F\left(p_2^W\right)\right],\end{aligned}$$

subject again to $p_2^H = \tau^H d_2 p_2^W$ and $d_2 \cdot \left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) = y_2^F\left(p_i^W\right) - c_2^F\left(p_i^W\right)$. This program delivers the following solution

$$\hat{\tau}^H - 1 = \left(1 - \mu^{F\to H}\right)\frac{1}{\xi_2^F} \equiv \left(1 - \mu^{F\to H}\right)\frac{X_2^F\left(p_2^W\right)}{p_2^W X_2^{F\prime}\left(p_2^W\right)}. \tag{28}$$

Note that when $\mu^{F\to H} = 0$, the Foreign country does not exert any influence at Home, and naturally we obtain the same expression as in equation (27). Conversely, when $\mu^{F\to H} = 1$, Foreign's influence is so powerful that it precludes any terms-of-trade manipulation on the part of the Home country. In such a case, and given that we rule out the use of export taxes by the Foreign country, we have that Foreign's influence leads to free trade in sector 2. This is not surprising because, in such a case, the Home country would be choosing τ^H to maximize aggregate world welfare, and this is achieved with free trade.[36]

In the intermediate cases in which $\mu^{F\to H} \in (0,1)$, we have that Home's optimal tariff is still positive but lower than the optimal one when $\mu^{F\to H} = 0$. This result may be helpful in understanding the results of Broda, Limao and Weinstein (2006), who find a positive correlation between import tariffs and inverse export supply elasticities, but with a coefficient markedly lower than that implied by standard theory.

So far we have focused on the characterization of the Home optimal tariff. In a manner

[36] In the extreme case in which $\mu^{F\to H} > 1$, our theory predicts that the Home country will adopt an import subsidy.

analogous, one can solve for the Foreign optimal import tariff in sector 1, which is given by

$$\hat{\tau}^F - 1 = \left(1 - \mu^{H \to F}\right) \frac{1}{\xi_1^H} \equiv \left(1 - \mu^{H \to F}\right) \frac{X_1^H\left(p_1^W\right)}{p_1^W X_1^{H\prime}\left(p_1^W\right)}.$$

As simple as these formulas appear, it is important to note that the distorted tariffs are *not* simple fractions of the standard tariffs with no foreign influence. In particular, these tariffs are expressed as functions of export supply elasticities, which in turn are endogenous. To gain a better understanding as to how the foreign influence weights $\mu^{H \to F}$ and $\mu^{F \to H}$ affect the equilibrium tariffs, we next move to a parametric example with linear demand and supply functions that has been widely used in the literature.

4.3 Example: A Linear Model

Consider the particular linear case developed among others by Bond and Park (2002). More specifically, we assume that the utility functions u_i^j in (20) are quadratic, so that demand functions are linear and given by

$$\begin{aligned} c_i^H\left(p_i^H\right) &= \lambda\left(\alpha_i^H - \beta p_i^H\right), \\ c_i^F\left(p_i^F\right) &= \alpha_i^F - \beta p_i^F, \end{aligned}$$

for $i = 1, 2$, where $\alpha_2^H = \alpha_1^F = \alpha_L > \alpha_S = \alpha_1^H = \alpha_2^F$. Furthermore, the rent functions Π_i^j are also assumed to be quadratic, thus leading to linear supply functions in each country:[37]

$$\begin{aligned} y_i^H\left(p_i^H\right) &= \lambda\left(a + b p_i^H\right) \\ y_i^F\left(p_i^F\right) &= a + b p_i^F, \end{aligned}$$

for $i = 1, 2$.

Notice that both countries share similar demand and supply functions, but Home demand is disproportionately large in sector 2, while Foreign demand is disproportionately large in sector 1. Furthermore, the parameter λ captures the relative size of the Home country relative to the Foreign country.

Let us focus first on the determination of the Home import tariff in sector 2. Note that Foreign exports in that sector are given by

$$X_2^F = a - \alpha_S + (b + \beta)\, p_2^W, \tag{29}$$

[37] Remember that by Hotelling's lemma, we have that $\Pi_i^{j\prime}\left(p_i^j\right) = y_i^j$

while Home imports are

$$M_2^H = \lambda \left(\alpha_L - a - (b + \beta) \tau^H dp_2^W \right).$$

Goods market clearing – $dM_2^H = X_2^F$– thus implies that the world price in sector 2 is given by:

$$p_2^W = \frac{\lambda d (\alpha_L - a) + \alpha_S - a}{(b + \beta)(\lambda d^2 \tau^H + 1)}. \tag{30}$$

In order to ensure that Home is a "natural importer" in sector 2, we assume that $(\alpha_L - a) > (\alpha_S - a) d$, which necessarily holds for sufficiently small transport costs (i.e., d close enough to 1).[38] Combining equations (27) and (29) we can then express the optimal tariff $\hat{\tau}^H$ as a function of exogenous parameters:

$$\tilde{\tau}^H - 1 = \frac{(\alpha_L - a) - (\alpha_S - a) d}{(\alpha_L - a) + (\alpha_S - a) \left(\frac{1}{\lambda d} + d \right)}. \tag{31}$$

Quite naturally, and as emphasized by the existing literature, the larger is the Home country relative to the Foreign country (a larger λ), the larger is the optimal tariff at Home. Furthermore, this optimal tariff converges to 0 when $\lambda \to 0$.

Following similar steps, we find that the optimal import tariff in Foreign (applying to sector 1) is given by:

$$\tilde{\tau}^F - 1 = \frac{(\alpha_L - a) - (\alpha_S - a) d}{(\alpha_L - a) + \left(\frac{\lambda}{d} + d \right)(\alpha_S - a)}, \tag{32}$$

which is naturally decreasing in λ and approaches 0 when $\lambda \to \infty$.

We can next compare these tariffs to the ones that emerge in the case of foreign influence. Combining equations (28) and (29) we find that in such a case, the Home and Foreign import tariffs are given by:

$$\hat{\tau}^H - 1 = \frac{\left(1 - \mu^{F \to H}\right)(\alpha_L - a - d(\alpha_S - a))}{(\alpha_L - a) + (\alpha_S - a) \left(\frac{1}{\lambda d} + d \left(1 - \mu^{F \to H}\right) \right)} \tag{33}$$

and

$$\hat{\tau}^F - 1 = \frac{\left(1 - \mu^{H \to F}\right)(\alpha_L - a - (\alpha_S - a) d)}{(\alpha_L - a) + (\alpha_S - a) \left(\frac{\lambda}{d} + \left(1 - \mu^{H \to F}\right) d \right)} \tag{34}$$

respectively. Again $\hat{\tau}^H$ is increasing in λ, while $\hat{\tau}^F$ is decreasing in λ. We next consider the

[38] It may be thought that the endogenous determination of τ^H could lead to a reversal of the pattern of trade, but it is straightforward to show that, as long as $(\alpha_L - a) > (\alpha_S - a) d$, the optimal τ^H is always such that Home imports good 2 in equilibrium.

following measure of distortions:

$$\Gamma^j = \frac{\tilde{\tau}^j - 1}{\hat{\tau}^j - 1} - 1 > 0, \quad j = H, F, \tag{35}$$

which naturally equals 0 when $\mu^{H \to F} = \mu^{F \to H} = 0$ and is larger the more distorted (downwards) is country j's tariff. We find that (see Appendix for the proof):

Proposition 7 *The distortion Γ^H in the Home tariff τ^H is increasing in Foreign's political power $\mu^{F \to H}$, decreasing in the distance d between the two countries, and also decreasing in the relative size λ of Home.*

The first result is intuitive and follows directly from Proposition 3. In particular, given that the Home import tariff generates a negative externality in Foreign, the size of this tariff will be decreasing in the influence power $\mu^{F \to H}$ of Foreign. The negative effect of distance on the size of the distortion is related to our discussion of the effect of changes in the size of *policy externalities* in Proposition 4.[39] More specifically, the size of the negative externality generated by Foreign is decreasing in the distance between Home and Foreign, and therefore it is not surprising that the extent to which the Home tariff is distorted is lower when distance is higher. This result is interesting because it provides a rationale for the fact that most instances of active foreign influence occur between relatively close countries. Our final result is that relatively large countries tend to be influenced relatively less, even when they are not more politically powerful (in terms of the μ's) than smaller countries. The reason for this is related to the fact that the *absolute* value of the utility gain of influence for the Foreign country relative to the absolute value of the utility loss at Home is lower, the lower Foreign is relative to Home. Consequently, the amount of resources that Foreign can threaten to use to influence Home politics will tend to be relatively low when λ is high.

When studying the analogous determinants of the import tariff distortion in Foreign we find that (see Appendix for the proof):

Proposition 8 *The distortion Γ^F in the Foreign tariff τ^F is increasing in Home's political power $\mu^{H \to F}$, decreasing in the distance d between the two countries, and increasing in the relative size λ of Home.*

For the same reasons as above, we have that the size of the distortions will be larger for countries that are geographically close to politically powerful and economically large countries.

[39] It should be noted, however, that d not only affects the level of policy externalities, but also impacts the sensitivity of a country's welfare to its own policy, i.e., $\partial v^j(\cdot)/\tau^j$.

4.4 Influence Power and Trade Talks

We finally consider how foreign influence affects the likelihood that countries will have an incentive to sign a free trade agreement. In his seminal paper, Johnson (1953-54) showed that when two countries are sufficiently asymmetric in size, the larger country might be better off under the status quo set of tariffs than under free trade. In the absence of lump-sum transfers across countries, which has been a maintained assumption in our framework, it then follows that free trade will only come about for sufficiently symmetric countries. In our framework, a free trade agreement may not be viable even when countries are of equal size ($\lambda = 1$), provided that one of them has disproportionately more influence power than the other one. The logic for this result was explained in section 3.2 and illustrated in Figure 4 for the case of general indirect utility functions so it will not be repeated here.

Our economic model however allows us to formally study the interaction of economic size and influence power in affecting the viability of free trade agreements. In particular, consider the case in which λ is relatively small. In such a case, Johnson's (1953-54) results suggest that free trade might not be achieved even when influence power is balanced (e.g., when $\mu^{H\to F} = \mu^{F\to H} = 0$) because Foreign will block it. In those situations, free trade will only be achieved in a region of the parameter space in which the ratio $\mu^{F\to H}/\mu^{H\to F}$ is relatively low (but not too low), that is, whenever Home has relatively more influence power than Foreign, as previously depicted in Figure 6. In other words, the achievement of free trade requires a negative correlation between size and influence power. It is interesting to note that, in the real world, we often observe a positive correlation between economic size and influence power, which corresponds to situations in which according to our analysis the achievement of free trade is at greater risk.

5 Conclusion

We have developed a model of foreign influence and have studied its welfare implications. We have shown that the possibility of foreign meddling in electoral processes may prove to be welfare enhancing from the point of view of world aggregate welfare. The reason is that foreign influence is not random: foreigners will only exert costly influence whenever policies in the influenced country generate externalities on them. As a result, the possibility of foreign influence may help partially alleviate externalities arising from cross-border effects of policies.

We have shown, however, that large imbalances in influence power will tend to imply that a world with access to foreign influence will not be Pareto superior to a world without

access to foreign influence. Countries with little influencing power will be made worse off by foreign meddling, while they will not be able to tilt foreign policies to their advantage. Furthermore, imbalances of influencing power between countries have also been shown to hinder the viability of international agreements that fully internalize cross-border externalities.

We have also studied an application of our setup to the study of import tariffs. Foreign influence has been shown to decrease the Nash equilibrium tariff choices of countries, with the effect being disproportionately larger for geographically close countries. Nevertheless, we have also demonstrated that sufficiently large imbalances in influencing power may hinder the transition to a world with free trade.

Our framework is special in many respects. First, in our deterministic setup, foreign influence only occurs off-the-equilibrium path. It would be interesting to modify our model so as to deliver sharper predictions regarding the type of situations in which we expect foreign influence to emerge *in equilibrium*, and also in order to take into account these costs in evaluating the welfare gains from foreign influence. Second, our model has abstracted from domestic conflict (either driven by ideology or special interests): the influencing efforts of each country's incumbent government have sought to protect the general interests of its population. In practice, foreign influence often defends in a disproportionate manner the interests of particular economic agents. It seems reasonable that a proper modelling of these forces could lead to further qualifications of our main welfare results. We are currently exploring these issues in ongoing research.

A Appendix

A.1 Proof of Proposition 1

Equation (4) implicitly defines the best response τ_c^j of political party c as a function of the strategy τ_{-c}^j of the other political party in country j. We first show that this first-order condition can be satisfied only if $\partial v^j\left(\tau_c^j\right)/\partial\tau_c^j = 0$. To prove this, assume instead that (4) holds because

$$\alpha^j\gamma^j + \left(1-\alpha^j\right)\gamma^j\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right) + \left(1-\alpha^j\right)P_c^j = 0.$$

Because $P_c^j \in [0,1]$, this could only be the case if

$$\alpha^j + \left(1-\alpha^j\right)\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right) \leq 0. \tag{36}$$

Note, however, that when this condition holds, we can conclude that party c's welfare W_c^j satisfies:

$$W_c^j = P_c^j\left(\alpha^j + \left(1-\alpha^j\right)\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right)\right) + v^j\left(\tau_{-c}^j\right) \leq v^j\left(\tau_{-c}^j\right) < \frac{1}{2}\alpha^j + v^j\left(\tau_{-c}^j\right),$$

where the right-hand-side is the welfare that party c can secure by using the simple (sub-optimal) strategy $\tau_c^j = \tau_{-c}^j$. This shows that any τ_c^j that satisfied (40) cannot be part of party c's best response function. In sum, we must have $\alpha^j\gamma^j + \left(1-\alpha^j\right)\gamma^j\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right) + \left(1-\alpha^j\right)P_c^j > 0$ and thus only $\partial v^j\left(\tau_c^j\right)/\partial\tau_c^j = 0$ is consistent with the first-order condition in (4).

Next, we can compute the second-order-condition to obtain:

$$\left\{\alpha^j\gamma^j + \left(1-\alpha^j\right)\gamma^j\left(v^j\left(\tau_c^j\right) - v^j\left(\tau_{-c}^j\right)\right) + \left(1-\alpha^j\right)P_c^j\right\}\frac{\partial^2 v^j\left(\tau_c^j\right)}{\partial\left(\tau_c^j\right)^2} + 2\left(1-\alpha^j\right)\gamma^j\left(\frac{\partial v^j\left(\tau_c^j\right)}{\partial\tau_c^j}\right)^2.$$

Given the concavity of the function $v^j\left(\tau_c^j\right)$ and the fact that $\partial v^j\left(\tau_c^j\right)/\partial\tau_c^j = 0$ at the optimum $\tilde{\tau}^j$, it is clear that this expression is negative and thus $\tilde{\tau}^j$ is a global maximum.

A.2 Proof of Proposition 2

We first show that the problem of the opposition party at Home is symmetric to that of the incumbent party in that country. The opposition seeks to maximize

$$W_O^H = \alpha^H\left(1-P_I^H\right) + \left(1-\alpha^H\right)\left(P_I^H v^H\left(\tau_I^H,\tau^F\right) + \left(1-P_I^H\right)v^H\left(\tau_O^H,\tau^F\right)\right)$$

subject to

$$P_I^H = \frac{1}{2} + \gamma^H\left(v^H\left(\tau_I^H,\tau^F\right) - v^H\left(\tau_O^H,\tau^F\right) - \theta^H\hat{e}^F\right) \tag{37}$$

and

$$\hat{e}^F = -\left(1-\alpha^F\right)\gamma^H\theta^H\phi^F\left(v^F\left(\tau_I^H,\tau^F\right)-v^F\left(\tau_O^H,\tau^F\right)\right).$$

The first-order condition of the problem is then

$$-\alpha^H\frac{\partial P_I^H}{\partial\tau_O^H}+\left(1-\alpha^H\right)\left(1-P_I^H\right)\frac{\partial v^H\left(\tau_O^H,\tau^F\right)}{\partial\tau_O^H}+\left(1-\alpha^H\right)\frac{\partial P_I^H}{\partial\tau_O^H}\left(v^H\left(\tau_I^H,\tau^F\right)-v^H\left(\tau_O^H,\tau^F\right)\right)=0$$

which results in

$$\begin{aligned}&\left[\begin{array}{c}\alpha^H\gamma^H+\frac{1}{2}\left(1-\alpha^H\right)+2\left(1-\alpha^H\right)\gamma^H\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\\+\left(1-\alpha^H\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\theta^H\right)^2\left(v^F\left(\tau_O^H,\tau^F\right)-v^F\left(\tau_I^H,\tau^F\right)\right)\end{array}\right]\times\frac{\partial v^H\left(\tau_O^H,\tau^F\right)}{\partial\tau_O^H}\\&+\left(\alpha^H+\left(1-\alpha^H\right)\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\theta^H\right)^2\times\frac{\partial v^F\left(\tau_O^H,\tau^F\right)}{\partial\tau_O^H}=0.\end{aligned}\tag{38}$$

This equation defines the Home's opposition best response function. Note that this equation is entirely symmetric to equation (12) in the main text. This suggests that incumbent and opposition best response function will intersect at a point in which $\tau_I^H=\tau_O^H=\tau^H$, hence delivering the representation result in Proposition 2.

Nevertheless, we still need to verify that this solution corresponds to the *unique* intersection of each Home party' reaction function (given policy convergence in the Foreign country), and also that the second-order conditions for a maximum are satisfied at this solution. For that purpose, we first further characterize the best response function of Home's opposition party by differentiating the first-order condition (and using (38) and the definition of $P_O^H=1-P_I^H$ in (37) to simplify) to obtain the following second-order-condition:

$$\begin{aligned}&\left[\alpha^H\gamma^H+\left(1-\alpha^H\right)\gamma^H\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\right]\frac{\partial^2 v^H\left(\tau_O^H,\tau^F\right)}{\partial\left(\tau_O^H\right)^2}+\left(1-\alpha^H\right)P_O^H\frac{\partial^2 v^H\left(\tau_O^H,\tau^F\right)}{\partial\left(\tau_O^H\right)^2}\\&+\left(\alpha^H+\left(1-\alpha^H\right)\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\theta^H\right)^2\times\frac{\partial^2 v^F\left(\tau_O^H,\tau^F\right)}{\partial\left(\tau_O^H\right)^2}\\&-\frac{-2\left(1-\alpha^H\right)^2P_O^H}{\left(\alpha^H+\left(1-\alpha^H\right)\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\right)}\left(\frac{\partial v^H\left(\tau_O^H,\tau^F\right)}{\partial\tau_O^H}\right)^2.\end{aligned}\tag{39}$$

This equation suggests that the opposition's party welfare is not globally concave in their announced policy τ_O^H. Still, given the concavity of the $v^j(\cdot)$ functions, we see that the function is strictly concave for the set of announced policies τ_O^H that satisfy

$$\alpha^H+\left(1-\alpha^H\right)\left(v^H\left(\tau_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)>0.\tag{40}$$

Hence, there can be at most one τ_O^H satisfying (40) that maximizes W_O^H. We still need to rule out, however, the existence of a potential alternative solution $\check{\tau}_O^H$ that violates (40) but still satisfies the first-order condition in (38) and the second-order condition in (39), and translates into a larger value of W_O^H than the unique maximizer that satisfies (40). We can conclude this by noting that whenever (40) is violated, we can write

$$\begin{aligned} W_O^H\left(\check{\tau}_O^H\right) &= \left(1-P_I^H\right)\left[\alpha^H+\left(1-\alpha^H\right)\left(\left(v^H\left(\check{\tau}_O^H,\tau^F\right)-v^H\left(\tau_I^H,\tau^F\right)\right)\right)\right]+\left(1-\alpha^H\right)v^H\left(\tau_I^H,\tau^F\right) \\ &\leq \left(1-\alpha^H\right)v^H\left(\tau_I^H,\tau^F\right)<\frac{1}{2}\alpha^H+\left(1-\alpha^H\right)v^H\left(\tau_I^H,\tau^F\right), \end{aligned}$$

where the latter is the welfare that the opposition party can secure by using the simple (sub-optimal) strategy $\tau_O^H=\tau_I^H$. This shows that any $\check{\tau}_O^H$ that violates (40) cannot be part of the opposition's best response function. This in turn implies that the solution to (12) is unique and, because the Home incumbent's problem is entirely symmetric, we have that the unique intersection of the two parties at Home necessarily leads to $\tau_O^H=\tau_I^H$. Furthermore, whenever $\tau_O^H=\tau_I^H$, the condition in (40) is satisfied, so the second-order conditions associated with the convergent equilibrium are satisfied. Finally, solving the analogous problem of the Foreign incumbent and opposition parties, one can also conclude that, given policy convergence at Home, policy convergence in Foreign will result. This concludes the proof of existence of the convergent equilibrium described in Proposition 2.

A.3 Proof of Proposition 3

We first totally differentiate the system in (15) and (16) with respect to $\mu^{F\to H}$, and write it in compact (matrix) form (throughout the proof we ignore hats on the equilibrium policies τ^H and τ^F in order to avoid cluttered notation):

$$\begin{bmatrix} \frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\left(\tau^H\right)^2}+\mu^{F\to H}\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\left(\tau^H\right)^2} & \frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}+\mu^{F\to H}\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F} \\ \frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F} & \frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\left(\tau^F\right)^2}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\left(\tau^F\right)^2} \end{bmatrix}\times\begin{bmatrix} \frac{d\tau^H}{d\mu^{F\to H}} \\ \frac{d\tau^F}{d\mu^{F\to H}} \end{bmatrix}=\begin{bmatrix} -\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H} \\ 0 \end{bmatrix}$$

The determinant of the 2×2 left-hand-side matrix (call it A) is complicated, but we can appeal to stability to show that it must be positive. In particular, from equations (17) and (18) we have that $|A|>0$ if and only if the absolute value of the slope of the Home reaction function is higher than that of the Foreign reaction function, which is a necessary condition for the equilibrium pair $\left(\tau^H,\tau^F\right)$ to be stable.

Next we can use Cramer's rule to obtain

$$\frac{d\tau^H}{d\mu^{F\to H}}=\frac{-\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H}\left(\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\left(\tau^F\right)^2}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\left(\tau^F\right)^2}\right)}{|A|},$$

which given concavity of $v^j(\cdot)$ has the same sign as $\partial v^F\left(\tau^H,\tau^F\right)/\partial\tau^H$. Hence, as stated in the Proposition, an increase in $\mu^{F\to H}$ leads to a reduction in τ^H if and only if there are negative policy externalities. The proof of the analogous result involving the effect of an increase in $\mu^{H\to F}$ on τ^F can be derived in the same manner.

As for the effect of $\mu^{F\to H}$ on the equilibrium τ^F, we can use Cramer's rule to obtain

$$\frac{d\tau^F}{d\mu^{F\to H}}=\frac{\left(\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}\right)}{-\left(\frac{\partial^2 v^F(\tau^H,\tau^F)}{\partial(\tau^F)^2}+\mu^{H\to F}\frac{\partial^2 v^H(\tau^H,\tau^F)}{\partial(\tau^F)^2}\right)}\frac{d\tau^H}{d\mu^{F\to H}},$$

which confirms that $\hat{\tau}^H$ and $\hat{\tau}^F$ shift in the same direction whenever the $v^j\left(\tau^H,\tau^F\right)$ functions are supermodular in τ^H and τ^F for $j=H,F$ (i.e., $\frac{\partial^2 v^j\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}>0$). The shifts are in opposite directions for the case of submodular $v^j(\cdot)$ functions, while $\hat{\tau}^F$ is not affected when the $v^j(\cdot)$ functions are separable.

A.4 Proof of Proposition 4

Remember from our formal definition of the level of policy externalities (see footnote 27) that we are considering an increase in a parameter $\varkappa_{k,j}$ that raises $\left|\frac{\partial v^j\left(\tau^H,\tau^F\right)}{\partial\tau^k}\right|$ for $j\neq k$. Consider an increase in the level of policy externalities $\varkappa_{H,F}$ exerted by Home on Foreign (the case of an increase in $\varkappa_{F,H}$ can be studied in an analogous way). Totally differentiating the first order conditions, we have

$$\begin{bmatrix} \frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial(\tau^H)^2}+\mu^{F\to H}\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial(\tau^H)^2} & \frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}+\mu^{F\to H}\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F} \\ \frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\tau^F} & \frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial(\tau^F)^2}+\mu^{H\to F}\frac{\partial^2 v^H\left(\tau^H,\tau^F\right)}{\partial(\tau^F)^2} \end{bmatrix}\times\begin{bmatrix} \frac{d\tau^H}{d\varkappa_{H,F}} \\ \frac{d\tau^F}{d\varkappa_{H,F}} \end{bmatrix}=\begin{bmatrix} -\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\varkappa_{H,F}}\mu^{F\to H} \\ 0 \end{bmatrix}.$$

Because $\varkappa_{k,j}$ increases $\left|\frac{\partial v^j\left(\tau^H,\tau^F\right)}{\partial\tau^k}\right|$, it is clear that $\frac{\partial^2 v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H\partial\varkappa_{H,F}}$ inherits the sign of policy externalities, i.e., $\frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial\tau^H}$. This in turn implies that the comparative statics with respect to $\varkappa_{H,F}$ are qualitatively identical to those with respect to $\mu^{F\to H}$. The statement in Proposition 4 is thus a corollary of Proposition 3.

A.5 Proof of Propositions 5 and 6

Consider the effects of an increase in $\mu^{F\to H}$ on Home and Foreign welfare (the case of an increase in $\mu^{H\to F}$ is symmetric). Note that these are given by (again we drop the hats over equilibrium

policies to simplify the algebra):

$$\frac{dv^H}{d\mu^{F\to H}} = \frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F\to H}} + \frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}} \tag{41}$$

$$\frac{dv^F}{d\mu^{F\to H}} = \frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F\to H}} + \frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}}. \tag{42}$$

Part 1 of Proposition 3 immediately implies that the first term in the right-hand-side of (42) is positive. Using equation (15), it is straightforward to verify that part 1 of Proposition 3 also implies that the first term in the right-hand-side of (41) is negative.

When the functions $v^j(\cdot)$ are additively separable, part 2 of Proposition 3 implies that the second terms in the right-hand-side of both (41) and (42) are 0. We thus conclude $dv^H/d\mu^{F\to H} < 0$ and $dv^F/d\mu^{F\to H} > 0$, which confirms part 1 of Proposition 5.

Consider next the case of submodular welfare functions. In such a case, part 4 of Proposition 3 implies that the second term in the right-hand-side of (41) is negative, and coupled with (16), it also implies that the second term in the right-hand-side of (42) is positive. We thus obtain that for arbitrary submodular functions, we still have that $dv^H/d\mu^{F\to H} < 0$ and $dv^F/d\mu^{F\to H} > 0$, as stated in part 1(a) of Proposition 6.

The case of supermodular welfare functions is a bit more complex because the first and second terms in the right-hand-side of (41) and (42) are of opposite signs (again this can be verified by appealing to Proposition 3). Still, as long as $\partial^2 v^j/\partial\tau^H\partial\tau^F$ is small enough, the size of the second terms will be too small to overturn the sign of the first terms, and we will again have that $dv^H/d\mu^{F\to H} < 0$ and $dv^F/d\mu^{F\to H} > 0$. This justifies our statement part 1(b) in Proposition 6.

We next move on to discuss the effects of an increase in $\mu^{F\to H}$ on aggregate world welfare. From equation (19) we have

$$\frac{d\left(v^H(\cdot)+v^F(\cdot)\right)}{d\mu^{F\to H}} = \left(1-\mu^{F\to H}\right)\frac{\partial v^F(\cdot)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F\to H}} + \left(1-\mu^{H\to F}\right)\frac{\partial v^H(\cdot)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}}. \tag{43}$$

The sign of this effect obviously depends on whether $\mu^{F\to H}$ and $\mu^{H\to F}$ are larger or smaller than one. From our above discussion, part 1 of Proposition 3 immediately implies that the first term in the right-hand-side of (43) is necessarily positive whenever $\mu^{F\to H} < 1$ and necessarily negative whenever $\mu^{F\to H} > 1$. Hence, if the second term in the right-hand-side of (43) is small enough, we will obtain that world welfare is increasing in the influence power of any country j whenever $\mu^{j\to k} < 1$ and is decreasing in this influence power for $\mu^{j\to k} > 1$. Whenever the functions $v^j(\cdot)$ are additively separable, this second term is equal to 0 and we thus obtain part 2 of Proposition 5. Whenever the functions $v^j(\cdot)$ are supermodular, the term $\frac{\partial v^H(\cdot)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}}$ will be non-negligible, but from our discussion above, Proposition 3 implies that it will necessarily be positive. This naturally leads to the result stated in part 2(a) of Proposition 6. In the case of submodular welfare functions, the term $\frac{\partial v^H(\cdot)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F\to H}}$ is negative and, theoretically, the overall effect of an increase in

$\mu^{F\to H}$ on world welfare may well be negative. Still, as stated in part 2(b) of Proposition 6, as long as $\left|\partial^2 v^j/\partial\tau^H\partial\tau^F\right|$ is small enough, the sign of the overall effect will be governed by the first term.

A.6 Proof of Propositions 7 and 8

The results follow from simple differentiation. Combining equations (31), (32), (33), (34), and (35), we have

$$\Gamma^H = \frac{\mu^{F\to H}\left((\alpha_L - a) + (\alpha_S - a)\,\frac{1}{\lambda d}\right)}{(1-\mu^{F\to H})\left((\alpha_L - a) + (\alpha_S - a)\left(\frac{1}{\lambda d} + d\right)\right)}$$

and

$$\Gamma^F = \frac{\mu^{H\to F}\left((\alpha_L - a) + (\alpha_S - a)\,\frac{\lambda}{d}\right)}{(1-\mu^{H\to F})\left((\alpha_L - a) + \left(\frac{\lambda}{d} + d\right)(\alpha_S - a)\right)}$$

It is apparent that $\partial\Gamma^H/\partial\mu^{F\to H} > 0$ and $\partial\Gamma^F/\partial\mu^{H\to F} > 0$. In words, the distortion in each country is increasing in the other country's influence power.

Next, note that

$$\frac{\partial\Gamma^H}{\partial\lambda} = -\frac{\mu^{F\to H}(\alpha_S - a)^2}{(1-\mu^{F\to H})\lambda^2\left(\left((\alpha_L - a) + (\alpha_S - a)\left(\frac{1}{\lambda d} + d\right)\right)\right)^2} < 0$$

and

$$\frac{\partial\Gamma^F}{\partial\lambda} = \frac{\mu^{H\to F}(\alpha_S - a)^2}{(1-\mu^{H\to F})\left(\left((\alpha_L - a) + (\alpha_S - a)\left(\frac{\lambda}{d} + d\right)\right)\right)^2} > 0,$$

and hence, each country's distortion is decreasing in their relative size.

Finally, note that

$$\frac{\partial\Gamma^H}{\partial d} = -\frac{\mu^{F\to H}(\alpha_S - a)\left((\alpha_L - a) + 2(\alpha_S - a)\,\frac{1}{\lambda d}\right)}{(1-\mu^{F\to H})\left(\left((\alpha_L - a) + (\alpha_S - a)\left(\frac{1}{\lambda d} + d\right)\right)\right)^2} < 0$$

and

$$\frac{\partial\Gamma^F}{\partial d} = -\frac{\mu^{H\to F}(\alpha_S - a)\left((\alpha_L - a) + 2(\alpha_S - a)\,\frac{\lambda}{d}\right)}{(1-\mu^{H\to F})\left(\left((\alpha_L - a) + (\alpha_S - a)\left(\frac{\lambda}{d} + d\right)\right)\right)^2} < 0,$$

which implies that each country's distortion is higher the lower is the distance between them.

References

Alesina, Alberto and David Dollar (2000), "Who Gives Foreign Aid to Whom and Why?" *Journal of Economic Growth*, 5: 33-64.

Baron, David (1994), "Electoral Competition with Informed and Uninformed Voters," *American Political Science Review*, 88(1), pp. 33-47.

Barro, Robert (1973), "The Control of Politicians: An Economic Model," *Public Choice*, vol. 14, pp. 19-42.

Broda, Christian, Nuno Limao and David Weinstein (2006), "Optimal Tariffs: The Evidence," forthcoming *American Economic Review*.

Bueno de Mesquita, Bruce and Alastair Smith (2004), "Foreign Aid and Policy Concessions," NYU typescript

Bueno de Mesquita, Bruce and Alastair Smith (2006), "A Political Economy of Aid," NYU typescript.

Dixit, Avinash and John Londregan (1995), "Redistributive Politics and Economic Efficiency," *American Political Science Review*, 89:4, pp. 856-866.

Dixit, Avinash and John Londregan (1996), "The Determinants of Success of Special Interests in Redistributive Politics," *Journal of Politics*, 58:4, pp. 1132-55.

Dixit, Avinash and John Londregan (1998), "Ideology, Tactics, And Efficiency In Redistributive Politics," *Quarterly Journal of Economics*, vol. 113(2), pages 497-529.

Dreher, Axel and Nathan Jensen (2007), "Independent Actor or Agent? An Empirical Analysis of the Impacts of US interests on IMF Conditions," *The Journal of Law and Economics* 50 (1).

Ferejohn, John (1986), "Incumbent Performance and Electoral Competition," *Public Choice*, vol. 50, pp. 5-26.

Gawande, Kishore, Pravin Krishna, and Michael J. Robbins (2006), "Foreign Lobbies and U.S. Trade Policy," *Review of Economics and Statistics*, Vol. 88, No. 3, pp. 563-571.

Grossman, G.M. and Helpman, E. (1994), "Protection for Sale," *American Economic Review*, Vol. 84, No. 4, pp. 833-850.

Grossman, G., and E. Helpman (1995), "Trade Wars and Trade Talks," *Journal of Political Economy*, Vol. 103, No. 4, pp. 675-708.

Grossman, G.M. and E. Helpman (1996), "Electoral Competition and Special Interest Politics," *The Review of Economic Studies*, vol:63 pg:265.

Grossman, G.M. and E. Helpman (2001), *Special Interest Politics*, Cambridge MA and London UK: The MIT Press.

Hillman, Arye L. and Heinrich Ursprung (1988), "Domestic Politics, Foreign Interests, and International Trade Policy" *American Economic Review*, Vol. 78, No. 4, pp. 729-745.

Johnson , Harry G. (1953), "Optimum Tariffs and Retaliation," *Review of Economic Studies*, Vol. 21, No. 2, pp. 142-153.

Kinzer, Stephen and Stephen Schlesinger (1982), *Bitter Fruit: The Story of the American Coup in Guatemala*. Cambridge, MA: Harvard University Press

Kinzer, Stephen (2006), *Overthrow: America's Century of Regime Change from Hawaii to Iraq*. New York: Times Books.

Kuziemko, Ilyana, and Eric D. Werker (2006), "How Much Is a Seat on the Security Council Worth? Foreign Aid and Bribery at the United Nations," *Journal of Political Economy*, forthcoming.

Lindbeck, Assaf and Jurgen Weibull (1987), "Balanced-budget Redistribution as the Outcome of Political Competition," *Public Choice*, vol:52 iss:3 pg: 273.

Magee, Stephen P.; Brock, William A. and Young, Leslie (1989), *Black Hole Tariffs and Endogenous Policy Theory: Political Economy in General Equilibrium*. Cambridge: Cambridge University Press.

Maggi, Giovanni, and Andres Rodriguez-Clare (2007), "A Political-Economy Theory of Trade Agreements," *American Economic Review*, Vol. 97, No. 4, pp. 1374-1406.

Persson, T and G Tabellini (2000), *Political Economics: Explaining Economic Policy*, MIT press.

Putnam, Robert D. (1988), "Diplomacy and Domestic Politics: The Logic of Two-Level Games," *International Organization*, Vol. 42, pp. 427-460.

Qian, Nancy and David Yanagizawa (2007), "The Curse of Power: The Adverse Effects of United Nations Security Council Membership on Autocracies," mimeo Brown University.

Shifter, Michael (2006), "In Search of Hugo Chavez," *Foreign Affairs*, Vol. 85, number 3.

Simes, Dimitri K. (2007), "Losing Russia," *Foreign Affairs*, Vol 86, number 6.

Weiner, Tim (2007), *Legacy of Ashes: The History of the CIA*. New York: Doubleday.