Foreign Influence and Welfare

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Abstract

How do foreign interests influence the policy determination process? How is trade policy affected? 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 foreign influence may be welfare-enhancing from the point of view of aggregate world welfare because it helps alleviate externalities arising from cross-border effects of policies. 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. We also show that the viability of free trade agreements can be hampered by large imbalances in power across countries.

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1 Introduction

In the political economy literature, countries are often taken as independent political units, with the political equilibrium determined solely by domestic circumstances. However, governments often take actions that can affect the image and political prospects of politicians abroad. Therefore, fundamental aspects of the political equilibrium in a country, such as its electoral outcomes, can potentially be influenced by actions taken elsewhere. These influence activities 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 a powerful country can improve the profile of a foreign politician by receiving him or her in a formal reception. This provides an image of international recognition and can result in an important domestic political boost, particularly if the foreign leader is in the opposition. Diplomatic scheming in the United Nations can also be important. When a country receives a scolding declaration by this international body, it is clear that the government has been outmaneuvered, which reflects poorly on its ability to deal with the international community.

Powerful governments also influence the political equilibrium in other countries with 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] Such countries might also resort to more direct forms of electoral influence that involve transfers to political agents. For instance, 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. Moreover, 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 way as they are illegal in most settings.[3]

[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 (2007) 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.

[3] For this reason, they typically involve secret service activity. These services are also used to topple governments by fomenting and giving financial, logistic or direct support to coups. Short of an invasion,

In all these examples, the government in one country performs a costly deed in order to increase the probability of electoral victory of their preferred political party in a foreign country. In this paper we develop a model of this type of foreign influence and study its effects on policy determination. Our starting point is 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). In the particular formulation we use, we abstract from special interest politics and other electoral distortions within each country: voters have common preferences over the policy under consideration, and hence electoral competition is efficient in that it leads to the announcement of policies that maximize aggregate welfare in each country.[4] Nevertheless, we show that this frictionless process of electoral competition leads to *worldwide* efficient policy choices only when the policies under consideration 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 costly actions that probabilistically affect the election outcome in the other country. We show that when 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 framework brings to light the following key insights associated with foreign influence.

First, in the (subgame-perfect) *equilibrium*, the threat of foreign influence affects the

this is the most direct route to obtaining a favorable policy in a foreign country. For descriptions of U.S. interventions 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 against democratically elected governments are probably the ones in Iran in 1953, in Guatemala in 1954, and in Chile in 1973. These are extreme case of influence somewhat beyond the scope of the model we present, which is focused on democratic politics.

[4] We make this assumption for two reasons. First, on theoretical grounds, this assumption allows us to better isolate the effect of foreign influence on policy determination and welfare. Second, on empirical grounds, there is some evidence that special interest groups have a rather small effect on policy determination in democratic societies. For instance, for the case of U.S. non-tariff trade barriers, Goldberg and Maggi (1999) find that the weight of special interest groups in policy determination is statistically existent but quantitatively small: by and large, trade policy in the U.S. in 1983 was determined as if electoral competition had induced welfare-maximizing policies (see also Mitra et al., 2002, for similar results for Turkey's democratic period).

announced policies at Home, which end up maximizing a weighted sum of Home and foreign welfare. 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 ability of the foreign country to exert influence, and also with how susceptible to influence is the Home electoral process. Hence, characteristics of *both* countries end up determining the effect of the influence threat.

Second, despite that fact that the resulting tilted policies necessarily reduce Home welfare, we derive fairly weak conditions under which world welfare is higher with the possibility of foreign influence. The reason is that such pressure leads the Home country to partially internalize its effects on foreign welfare, hence improving international efficiency. Indeed, foreign meddling in domestic affairs can only be rationalized in a world in with cross-country externalities. Absent such externalities, it would never be rational for governments to spend resources trying to change elections that determine policies they do not care about. In sum, foreign influence can only arise in a "second-best" world.

Third, when each country is both influencing and being influenced it is possible that the availability of foreign influence raises welfare in *both* countries. This is a direct consequence of the existence of externalities, but it involves some subtlety. Foreign influence only leads to Pareto improvements when the influence power of countries is sufficiently "balanced" (in a sense to be defined). Balanced pairs of countries internalize each other's externalities to a similar extent and hence can both gain from the increased efficiency. Conversely, in influence relations between powerful and weak countries, the weak nation is better off in a world where no such meddling is possible. Indeed, 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. Finally, 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 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. This result corresponds to the empirical findings of Broda, Limao, and Weinstein (2008), 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. We also revisit the Johnson (1953-54) results on the viability of a free trade agreement and show that it 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 governments. 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 foreign governments play an active role in a country's political game.

In that respect, our work is related to a small literature that introduces foreign lobbying in alternative models of policy making.[7] None of these papers considers government to government pressures which is the focus of our analysis. However, some of the welfare results are related. In Gawande, Krishna and Robbins (2006) foreign lobbying can be welfare enhancing as it can balance internal distortions generated by domestic lobbying. Our welfare results do not rely on this mechanism as we assume no domestic conflict of interest. Our channel

[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 domestic 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. Conconi (2003) studies trade and environmental policies with the presence of green lobbyists and different structures of international policy-making. In parallel work to ours, Aidt and Hwang (2008a,b) show that foreign lobbying can reach world welfare maximizing policies and specialize this result for the case of labor standards. Guriev, Yakovlev and Zhuravskaya (2008) provide empirical evidence supporting the internalization effect of multiregional lobbying groups.

is closer to Conconi (2003) and Aidt and Hwang (2008a,b) in that these authors also push the view that foreign lobbying can facilitate the internalization of cross-border externalities (as government pressures do in our model). Their focus is however much narrower because these authors only study whether global efficiency is reached or not with foreign lobbying, while we characterize the full set of parameter values for which foreign influence can induce Pareto improvements. We view our approach more relevant in a world in which utility is not fully transferable and countries possess asymmetric levels of political power. More broadly, the main difference between government pressures and foreign lobbying is that in a model where only the latter occurs, only externalities that affect organized special interest groups are alleviated. This makes Pareto improvements more difficult to generate and also affects some of the positive and normative implications delivered by our model. For instance, our results related to the balance of power between countries would not directly apply in a model of foreign lobbying. Since both foreign lobbying and government to government pressures exist in the world, we do not view these channels as mutually exclusive. Rather, the aim of this paper is to precisely characterize the effects of the latter.[8]

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

In this section we describe and solve our two-country model of electoral competition. The political-economy elements constitute a variant of a probabilistic voting model in the tradition of Lindbeck and Weibull (1987).[9] We simplify the elements that are not essential to our

[8] 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 exploring these questions in ongoing work.

[9] 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)

argument and adapt the model to an international setting.

2.1 Environment and Political Structure

Consider a world with two countries, Home and Foreign, in which electoral competition determines certain dimensions of economic policy. The agents in 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. In each country, two parties present candidates that announce the policies they will implement should they be elected. As is standard in probabilistic voting models, from the point of view of voters, the different candidates differ not only in their platforms, but also in other characteristics that are independent of policy announcements. To capture this structure, voter preferences in country $j = H, F$ contain two different elements. First, voters care about national government policies τ^j, and foreign government policies τ^{-j}. For instance, τ^j and τ^{-j} may contain announcements on tariff policies to be implemented in H and F, respectively. Clearly, voters care about both sets of policies as both of them affect the good and factor prices they face. Second, voters also have preferences over attributes of politicians that cannot be credibly modified as part of the electoral platform. These characteristics can be interpreted as voter perceptions over a candidate's competence, proclivity to fight corruption or preserve national pride, or simply as the politician's personal appeal and charisma.[10] We therefore assume that the indirect utility that a voter in country j would obtain if party c wins the election in country j takes the form

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

where $v^j\left(\tau_c^j, \tau^{-j}\right)$ denotes the indirect utility from consuming the goods affected by policies τ_c^j and τ^{-j}. In addition, σ_c^j measures the additional utility that a voter in country j enjoys (or expects to enjoy, since σ_c^j contains many uncertain and subjective components) when party c is in power.

introduce special interest group activities such as campaign contributions in this framework. None of these papers extend this framework to explicitly consider international politics.

[10] 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 a similar framework.

The dependence of $v^j(\cdot)$ 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 $v^j\left(\tau^H, \tau^F\right)$ is that it is globally concave in τ^H and τ^F.

Note that in this model, there is no difference in the way voters in country j value each candidacy, as preferences are identical. Our assumptions therefore ensure that, conditional on τ^{-j}, there is a single policy τ^j that every voter i in j prefers.[11]

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. $\tau_c^j \in \Psi = [\tau_{\min}, \tau_{\max}]$. We will focus throughout on the case in which equilibrium policies lie in the interior of Ψ.

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:

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

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, $v^j(\tau^j, \tau^{-j})$ is the indirect utility associated with the implemented policies in H and F, and α^j measures the degree of self-

[11] As we are interested in the effects of foreign influence, we endow the country with internal consensus on the conditionally preferred policy τ^j. Hence, any departure from that preferred policy must be due to international factors. Previous models of probabilistic voting have emphasized conflict of interest within countries. Such models typically consider different utility functions for different groups in the country and also idiosyncratic shocks in how voters value non-platform characteristics of candidates. It is straightforward to add such idiosyncratic elements but it needs considerable additional notation without adding anything substantial to the main findings. For a model with such individual political perceptions, see Antràs and Padró i Miquel (2008).

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).[12] The political system is such that we can associate winning the election with obtaining more than one-half of the votes.[13]

2.1.3 Information and Probability of Winning

Define $\sigma^j \equiv \sigma_I^j - \sigma_O^j$. Therefore σ^j captures a common bias in the perception that all citizens in country j have of party I at the time of casting the ballot. This bias includes voters perceptions on the competence, charisma and moral fiber of candidates, and such perceptions can change dramatically due to last-minute revelations on candidate's characteristics (such as performances in head-to-head debates, or corruption accusations) or to the effect of shocks to the political environment such as a show of incompetence dealing with an environmental disaster or foreign policy crisis. Hence, in keeping with the literature, we assume that the particular values σ_I^j and σ_O^j (and therefore σ^j) are unknown to politicians at the time they announce (and commit to) their platforms. Since perceptions can be affected both by deterministic and random elements, we model the bias as $\sigma^j = -\beta^j + \xi^j$, where ξ^j is distributed uniformly in the interval $[-\frac{1}{2\gamma^j}, \frac{1}{2\gamma^j}]$.[14] It then follows that the expected value of the difference $\sigma_I^j - \sigma_O^j$ is simply equal to $-\beta^j$. We shall thus refer to β^j as the *expected pro-opposition bias* in country j.

The incumbent wins the election iff

$$v^j\left(\tau_I^j, \tau^{-j}\right) - v^j\left(\tau_O^j, \tau^{-j}\right) + \sigma^j > 0,$$

which, given our assumption on the distribution of ξ^j, occurs with probability

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

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.

[12] 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., $W_c^j = \alpha^j P_c^j + \left(1-\alpha^j\right) v^j\left(\tau_c^j, \tau^{-j}\right)$.

[13] 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.

[14] In assuming a uniform distribution, we follow the bulk of the probabilistic voting literature. This distributional assumption ensures the existence of an equilibrium and considerably simplifies the analysis.

Furthermore, the larger is the dispersion in perception shocks σ^j (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 γ^j is small enough so that political parties never encounter corner solutions in their maximization programs.[15]

2.1.4 Foreign Influence

We model *foreign influence* in a simple way. In particular, we allow the incumbent party in each country to take costly actions that influence the relative popularity of each of the two candidates in the other country, and thereby potentially affect the outcome of the election abroad.[16] These costly actions can range from the dissemination of messages aimed at discrediting or extolling the incumbent party, to the provision of funds and logistical help to opposition groups or diplomatic pressure on the incumbent. Alternatively, other actions can be taken to bolster voters perceptions of incumbent's competence. Several examples were discussed in the introduction.

In modelling foreign influence, we build on the work on special interest groups by Baron (1994) and Grossman and Helpman (1996). In particular, in keeping with this literature, we assume that the value of σ^j can be affected by actions taken by third agents. Baron (1994) and Grossman and Helpman (1996) focus on the case in which the value of σ^j may be affected by campaign contributions. 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.[17]

To link σ^H to the actions of the government in country F, we simply assume that

$$\sigma^H = -\beta^H + \xi^H = -e^F + \xi^H$$

where e^F captures the costly actions that the incumbent in F takes to affect perceptions in

[15] If γ^j was 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.

[16] 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.

[17] 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. In Baron (1994) and Grossman and Helpman (1996) there is a distinction between two types of voters: *impressionable* voters and *unimpressionable* voters. Unimpressionable voters are not susceptible to third party actions and political propaganda. Because it is not essential to our argument, we simplify the model by assuming that all voters are impressionable. See Antràs and Padró i Miquel (2008) for a model that includes both types of voters.

country H. In short, we assume that the actions taken by the foreign government affect the average bias at home β^H one to one. Hence, 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^F 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.[18] The model is symmetric and the incumbent in H can also exert effort e^H to affect the relative popularity of candidates abroad.

We assume that exerting foreign influence is costly and, for simplicity, we impose a quadratic effort cost function $c^j(e^j) = (1/2)\left(e^j/\phi^j\right)^2$, where a large ϕ^j reflects that country j is relatively efficient at inflicting international pressure.

Bearing in mind the cost of foreign influence, we have that preferences for political party c in country j are given by:

$$W_c^j = \begin{cases} \alpha^j P_c^j + (1-\alpha^j)\, v^j\left(\tau_w^H, \tau_w^F\right) - \frac{1}{2}\left(e^j/\phi^j\right)^2, & \text{if} \quad c = I \\ \alpha^j P_c^j + (1-\alpha^j)\, v^j\left(\tau_w^H, \tau_w^F\right) & \text{if} \quad c = O \end{cases}, \tag{4}$$

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 the particular realizations of ξ^j are known. 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.

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

2.2 Equilibrium with No Foreign Influence

To provide a simple intuition for the results that follow, we first characterize the subgame perfect equilibrium of this model with the assumption that $e^H = e^F = 0$. That is, when no foreign influence is possible and hence stage 2 of the game is inconsequential.

In a subgame perfect equilibrium, voters maximize (1) and politicians maximize (4) in each country. We focus on a *convergent equilibrium* in which the two political parties in a given country j announce a common platform τ^j in period $t = 1$.[19] To fix ideas, and without loss of generality, consider the case in which $\tau_I^F = \tau_O^F = \tau^F$ but τ_I^H may be different from τ_O^H. In words, we assume that both parties in Foreign announce a common platform τ^F and ask what is the optimal response of parties at Home.

The last stage of the game is the voting stage, at which point τ_I^j, σ_I^j, τ_O^j and σ_O^j are all known. Upon the realization of ξ^H, voters maximize (1) by voting for the incumbent party whenever

$$-\xi^H < v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right)$$

and they vote for the opposition otherwise. As argued above, this delivers a probability of winning for the incumbent party in country j equal to (3), with $\beta^j = 0$ due to the absence of foreign influence.

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

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

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

$$\left[\alpha^H \gamma^H + \left(1 - \alpha^H\right)\gamma^H\left(v^H\left(\tau_c^H, \tau^F\right) - v^H\left(\tau_{-c}^H, \tau^F\right)\right) + \left(1 - \alpha^H\right)P_c^H\right]\frac{\partial v^H\left(\tau_c^H, \tau^F\right)}{\partial \tau_c^H} = 0. \tag{5}$$

It is straightforward to show (see the Appendix for a proof) that this equation defines a maximum only when $\partial v^H\left(\tau_c^H, \tau^F\right)/\partial \tau_c^H = 0$. Because our assumptions ensure that there exists a unique $\tau \in \Psi$ such that $\partial v^j\left(\tau, \tau^{-j}\right)/\partial \tau = 0$, it follows that both parties announce the same policy. Hence, when parties abroad announce a common platform, parties at Home also converge to a common platform. We can therefore conclude that:

[19] Depending on the shape 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.

Lemma 1 *In the convergent political equilibrium with no foreign influence, both political parties in each country $j = H, F$ announce a policy $\tilde{\tau}^j$ which maximizes social welfare in country j, taking as given the policy in the other country, i.e.,*

$$\frac{\partial v^j\left(\tilde{\tau}^j, \tau^{-j}\right)}{\partial \tilde{\tau}^j} = 0. \tag{6}$$

Lemma 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 taking as given the policy implemented abroad.[20]

It is worth emphasizing, however, that the pair of policies $\left(\tilde{\tau}^H, \tilde{\tau}^F\right)$ that result from this game with no foreign influence are unilaterally *but not globally* welfare-maximizing. In particular, as long as $\partial v^j\left(\tau^j, \tau^{-j}\right)/\partial \tau^{-j} \neq 0$ the equilibrium pair of policies must lie within the world Pareto frontier because they fail to internalize their effect on welfare abroad. Because citizens are affected by policies from foreign countries but cannot vote in the elections that determine them, there is a potentially useful role for foreign influence.

2.3 Equilibrium with Foreign Influence

We now seek to characterize a subgame perfect equilibrium of the full political game with foreign influence in which all political parties choose a platform τ_c^j to maximize their utility in (4), each incumbent party chooses an influence level e^j to again maximize (4), and individuals vote for the political party in their country that maximizes their utility in (1).

We show that the game with foreign influence also admits a *convergent equilibrium* in which the two political parties in a given country j announce a common platform τ^j in period $t = 1$. 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 again 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.

[20] 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 $v^j\left(\tau^j, \tau^{-j}\right)$.

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 perception shocks ξ^H and ξ^F have been determined in both countries. Voters at Home now maximize (1) by voting for the incumbent party whenever $v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right) + \xi^H - e^F > 0$, where τ^F denotes the (to-be-determined) equilibrium policy implemented in Foreign. From equation (3), we have that the incumbent party at Home will win the election with probability

$$P_I^H = \frac{1}{2} + \gamma^H\left(v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right) - e^F\right). \tag{7}$$

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 $\tau_I^F = \tau_O^F = \tau^F$.[21]

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 influence e^F, the Home incumbent government will win the election with a probability P_I^H given in equation (7). Using equation (4) 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 (7). This program yields a unique equilibrium Foreign influence level:

$$\hat{e}^F = -\left(1-\alpha^F\right)\gamma^H\phi^F\left(v^F\left(\tau_I^H, \tau^F\right) - v^F\left(\tau_O^H, \tau^F\right)\right). \tag{8}$$

The first obvious lesson from equation (8) is that foreign influence will only arise insofar as the Home policy has an effect on Foreign welfare, that is, insofar as there are policy externalities. 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

[21] 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.

both to the Home country as well as to the Foreign country. In particular, the amount of influence depends on three magnitudes. First, it is decreasing in α^F, the degree to which the Foreign incumbent is election minded, because there are no electoral rents associated with exerting costly foreign influence. 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. Note that when α^F goes to 1, Foreign politicians only care about reelection, and in such a case, the equilibrium level of Foreign influence is 0.[22]

Second, equilibrium foreign influence is increasing in the capacity of Foreign to generate pressure, ϕ^F, as this makes the costs of achieving a given amount of influence lower. Finally, e^F is increasing in the sensitivity of election results to foreign influence. In this model this is captured by γ^H which parameterizes the amplitude of perception shocks. When γ^H is small, random perception shocks are common and large and hence the effect of a given amount of foreign influence is very low (election results are close to random). Conversely, 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 the election. Hence, a larger γ^H makes foreign influence more productive.

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 (7). 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.

Following the same steps as above, it is straightforward to verify that under the alternative unilateral deviation from the convergent equilibrium (i.e. when there is convergence at Home ($\tau_I^H = \tau_O^H = \tau^H$) but not in Foreign ($\tau_I^F \neq \tau_O^F$)), the calculations above yield a zero level

[22] 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.

of influence by the Foreign government ($\hat{e}^F = 0$) and a level of influence by the Home government given by:

$$\hat{e}^H = -\left(1-\alpha^H\right)\gamma^F \phi^H \left(v^H\left(\tau^H, \tau_I^F\right) - v^H\left(\tau^H, \tau_O^F\right)\right). \tag{9}$$

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 $\tau^k \in \Psi$. 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 (4) subject to the influence "reaction function" in (8) and subject to P_I^H being given by equation (7).[23] Straightforward manipulation delivers the following first-order condition for the choice of τ_I^H:

$$\begin{aligned}&\left[\begin{array}{c}\alpha^H\gamma^H + \frac{1}{2}\left(1-\alpha^H\right) + 2\left(1-\alpha^H\right)\gamma^H\left(v^H\left(\tau_I^H,\tau^F\right) - v^H\left(\tau_O^H,\tau^F\right)\right) \\ + \left(1-\alpha^H\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\right)^2\left(v^F\left(\tau_I^H,\tau^F\right) - v^F\left(\tau_O^H,\tau^F\right)\right)\end{array}\right] \times \frac{\partial v^H\left(\tau_I^H,\tau^F\right)}{\partial \tau_I^H} \\ &+ \left(\alpha^H + \left(1-\alpha^H\right)\left(v^H\left(\tau_I^H,\tau^F\right) - v^H\left(\tau_O^H,\tau^F\right)\right)\right)\phi^F\left(1-\alpha^F\right)\left(\gamma^H\right)^2 \times \frac{\partial v^F\left(\tau_I^H,\tau^F\right)}{\partial \tau_I^H} = 0.\end{aligned} \tag{10}$$

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.[24] 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).

Convergence in policy platforms allows us to simplify the first-order-condition in (10), as we can set $v^j\left(\tau_I^H, \tau^F\right) - v^j\left(\tau_O^H, \tau^F\right) = 0$ 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

[23] 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 $\hat{e}^H = 0$.

[24] The source of difficulties is that welfare of each party is not globally concave in their announced policy. The proof of Proposition 1 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.

definition of the equilibrium common policy $\hat{\tau}^j$ announced by the two parties in country j:

$$\frac{\partial v^j\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} + \left(\frac{\alpha^j\left(1-\alpha^k\right)\phi^k\left(\gamma^j\right)^2}{\alpha^j\gamma^j + \frac{1}{2}\left(1-\alpha^j\right)}\right)\frac{\partial v^k\left(\hat{\tau}^j, \hat{\tau}^k\right)}{\partial \hat{\tau}^j} = 0. \tag{11}$$

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 (11) exists, it will necessarily be unique. We shall assume throughout that such an interior solution for $\hat{\tau}^j$ exists.[25] We have thus derived the following result:

Proposition 1 *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.,*

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

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

$$\mu^{k,j} = \frac{\alpha^j\left(1-\alpha^k\right)\phi^k\left(\gamma^j\right)^2}{\alpha^j\gamma^j + \frac{1}{2}\left(1-\alpha^j\right)}, \tag{12}$$

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

Because both political parties in each country end up announcing a common policy $\hat{\tau}^j_c = \hat{\tau}^j$, 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 $v^k\left(\hat{\tau}^j_I, \hat{\tau}^k\right) = v^k\left(\hat{\tau}^j_O, \hat{\tau}^k\right)$. As a result, the *equilibrium* amount of foreign influence $\hat{e}^k$ is zero (see equations (8) and (9)). Nevertheless, notice that the *possibility* or *threat* of foreign influence affects the equilibrium announced policies in a significant manner as can be seen by comparing this proposition to our result in Lemma 1.[26]

Relative to the benchmark without foreign influence, we see that whenever $\mu^{k,j}$ is positive, the announced policies in country j no longer maximize country j's welfare, but instead

[25] When an interior solution to (11) does not exist, then we will have either $\tau^j_c = \tau_{\min}$ or $\tau^j_c = \tau_{\max}$ for both $c = I, O$.

[26] 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 role in illustrating that the mere *possibility* of foreign influence can have important effects.

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 realizes that, by partly tilting their policies in favor of foreigners, they can forestall adverse foreign influence. Since both parties do this to the same extent, they do not pay an electoral cost. However, there is a cost associated with the fact that they care directly about the policies. In equilibrium, parties announce the policy that perfectly balances these opposing incentives. The extent to which political parties in country j tilt their policies is thus increasing in γ^j and ϕ^k, and decreasing in α^k. As found in expressions (8) and (9), these are the variables that increase the propensity of foreign countries to exert influence. In addition, this tilting is increasing in the "political ambition" in the receiving country (α^j) because ambitious candidates give greater importance to winning elections than to the welfare of their constituents. Hence, they are more willing to sacrifice the latter to avoid foreign influence that could diminish their electoral prospects.

Finally, note that country j's policies are relatively more distorted whenever the effect of country j's policies on country k's welfare are larger (as measured by $\partial v^k\left(\hat{\tau}^j, \hat{\tau}^k\right)/\partial\hat{\tau}^j$). Hence, for policies that generate no cross-border externality, the existence of the influence channel makes no difference. 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 $\mu^{H,F}$ and $\mu^{F,H}$ 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 1.

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:

$$\frac{\partial v^H\left(\tau^H, \tau^F\right)}{\partial \tau^H} + \mu^{F,H} \cdot \frac{\partial v^F\left(\tau^H, \tau^F\right)}{\partial \tau^H} = 0 \tag{13}$$

$$\frac{\partial v^F\left(\tau^H, \tau^F\right)}{\partial \tau^F} + \mu^{H,F} \cdot \frac{\partial v^H\left(\tau^H, \tau^F\right)}{\partial \tau^F} = 0 \tag{14}$$

This defines implicitly τ^H and τ^F as a function of $\mu^{H,F}$, $\mu^{F,H}$ and properties of the $v^j(\cdot)$

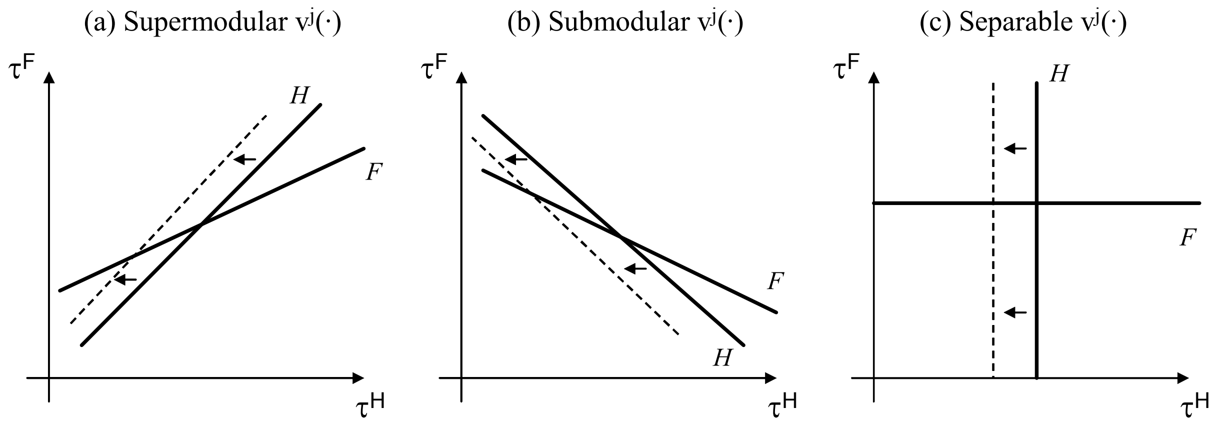

Figure 1: Equilibrium Policies: An Increase in $\mu^{F,H}$ with Negative Policy Externalities

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 (13) as a function $\hat{\tau}^H\left(\tau^F\right)$, and a Foreign reaction function, obtained by expressing (14) as a function $\hat{\tau}^F\left(\tau^H\right)$. 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 supermodular or submodular (i.e., whether $\partial^2 v^j/\partial\tau^H\partial\tau^F > 0$ or $\partial^2 v^j/\partial\tau^H\partial\tau^F < 0$).[27] 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 $\partial^2 v^j(\cdot)/\partial\tau^H\partial\tau^F = 0$.

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 $\mu^{F,H}$. From equation (13) and the concavity of $v^H(\cdot)$, it is clear

[27] In particular, these reaction functions are given by

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

and

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

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 policy $\hat{\tau}^H$, while the effect on the Foreign equilibrium policy $\hat{\tau}^F$ depends on whether the functions $v^j(\cdot)$ 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 policy $\hat{\tau}^H$ (and again an effect on the Foreign policy $\hat{\tau}^F$ 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 policy 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.

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 $\mu^{F,H}$.

We have so far focused on the effects of an increase in the influence power $\mu^{F,H}$ of Foreign over Home, but it should be clear that the analysis of an increase in $\mu^{H,F}$ is analogous. We can summarize this discussion as follows (see Antràs and Padró i Miquel, 2008, for a more detailed proof):

Lemma 2 *In any stable equilibrium, an increase in $\mu^{F,H}$ (respectively, $\mu^{H,F}$) 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 $j = H, F$.*

Our discussion above has emphasized the role of influence power in determining the extent of policy distortion. The system of equations in (13) and (14) unveils a second important force shaping this distortion. In particular, let us refer to the term $\left|\frac{\partial v^j(\tau^H,\tau^F)}{\partial \tau^k}\right|$ as the *policy externality effect* of country k in country $j \neq k$.[28] 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 other geopolitical considerations orthogonal to power. For instance, in the international trade model developed in the next section, these externality effects will be partly determined by the volume of trade costs across countries which can be affected by geography and hence not have a clear relationship with power. Using analogous steps to those used in the proof of Lemma 2, we find that:

Lemma 3 *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, Lemma 3 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 recall 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 may explain why short lived increases in significance, such as voting power in the UN Security Council, initiate influencing activities by foreign powers.[29] As stated in Lemma 3, this increase in foreign influence will force country H parties to propose a platform closer to the interests in F.[30] 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.

[28] 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 $\left|\frac{\partial v^j(\tau^H,\tau^F;\varkappa'_{k,j})}{\partial \tau^k}\right| > \left|\frac{\partial v^j(\tau^H,\tau^F;\varkappa_{k,j})}{\partial \tau^k}\right|$ $\forall\left(\tau^H,\tau^F\right)$. 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 $\partial v^j\left(\tau^H,\tau^F\right)/\partial \tau^j$.

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

[30] 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 2, which applied to a change in influence power, also characterize the nature of the responses to changes in a country's policy externalities.

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. In order to simplify the exposition, in the main text we characterize 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 $j = H, F$. In Appendix A.3, we cover the general case with non-separabilities.

By differentiating (13) and (14), it is easy to show the following proposition (see the Appendix for a formal proof):

Proposition 2 *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:*

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

Part 1 of Proposition 2 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 generate an increase in aggregate world welfare, as long as this power does not become overwhelming or predatory (i.e., 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 $\left(\mu^{H,F}, \mu^{F,H}\right)$ that provide a Pareto improvement with respect to the case with no foreign influence whatsoever? Proposition 2 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 $\tau^H, \tau^F \in \Psi$. In this case, countries are symmetric in all respects except for their endowment of influence power, i.e., $\mu^{H,F} \neq \mu^{F,H}$. Figure 2 presents the set of attainable welfare levels in such a case. Examination of (13) and (14) reveals that the Pareto possibility

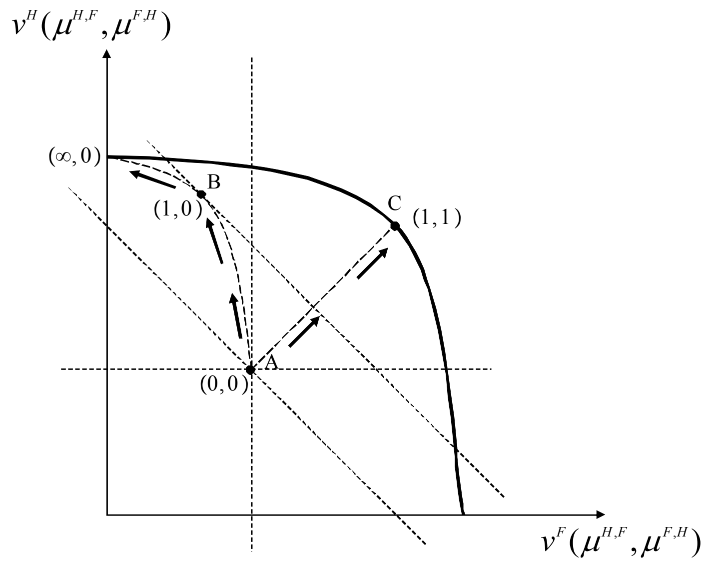

Figure 2: Welfare Effects of Foreign Influence

frontier is generated by distributions of power of the following family: $\left(\mu^{H,F}, \mu^{F,H}\right) = (\omega, \frac{1}{\omega})$, for any $\omega \in (0, +\infty)$. When power is distributed in such way, (13) and (14) 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 $\left(\mu^{H,F}, \mu^{F,H}\right) = (0, 0)$ 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 $\left(\mu^{H,F}, \mu^{F,H}\right) = (1, 0)\Delta$ and consider taking Δ from 0 to $+\infty$. Proposition 2 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. Intuitively, increasing the power of one country helps internalize an externality and therefore increases world welfare. All the gains, 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 $\left(\mu^{H,F}, \mu^{F,H}\right) = (0, 0)$ and trace the path of the welfare distribution as the power distribution evolves according to $\left(\mu^{H,F}, \mu^{F,H}\right) = (1, 1)\Delta$. In this case, both countries are increasing their capacity to influence foreign elections at the same time, and *both* externalities are being 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 $\mu^{H,F}$ and $\mu^{F,H}$ – with $\left(\mu^{H,F}, \mu^{F,H}\right) \in [0,1] \times [0,1]$ – that leave Home and Foreign indifferent between a world with foreign influence and a world without foreign influence (i.e., $\mu^{H,F} = \mu^{F,H} = 0$). The fact that these curves are upward sloping follows from part 1 of Proposition 2. For instance, the larger is $\mu^{F,H}$, the lower is welfare at Home in the equilibrium with foreign influence, so the larger is the $\mu^{H,F}$ needed to restore indifference with the case of no foreign influence. Finally, the fact that these two curves intersect only at $\left(\mu^{H,F}, \mu^{F,H}\right) = (0,0)$ is ensured by part 2 of Proposition 2 (i.e., by the fact that world welfare must be higher at any point $\left(\mu^{H,F}, \mu^{F,H}\right) \in (0,1] \times (0,1]$). Figure 3 graphically illustrates that a world with foreign influence will Pareto dominate a world without foreign influence only when influence power imbalances are not too large.

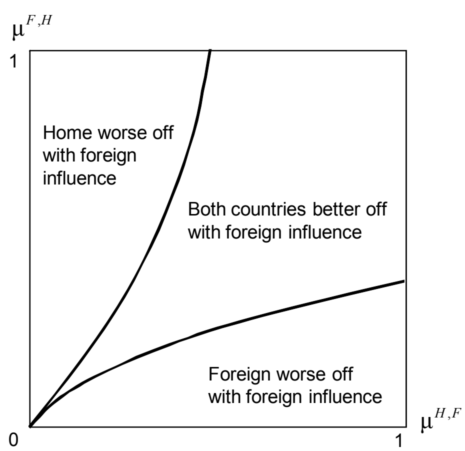

Fig. 3: Balance of Power and Pareto Gains

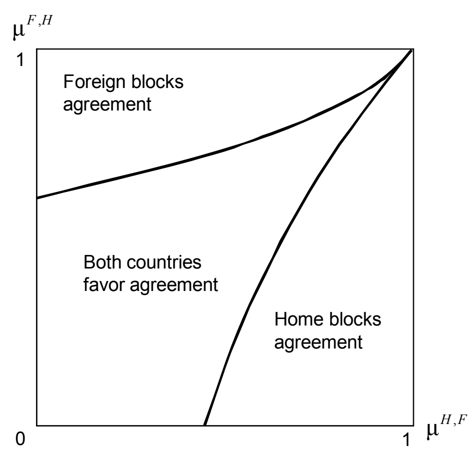

Fig. 4: Power and International Agreements

That foreign meddling can be Pareto-improving is a noteworthy 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 as 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 agreements that set 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 $v^j\left(\hat{\tau}^j\left(\mu^{H,F},\mu^{F,H}\right),\hat{\tau}^k\left(\mu^{H,F},\mu^{F,H}\right)\right)$ 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 2 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. Nevertheless, 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 $\mu^{H,F}=1$ and $\mu^{F,H}=0$. According to the results above, political parties in Foreign feel pressured to announced a policy $\hat{\tau}^F$ that maximizes aggregate world welfare, while politicians at Home 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 $\mu^{F,H}$ 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 $\mu^{H,F}=0$ and $\mu^{F,H}=1$, it is the Foreign country that opposes the agreement. Imagine now situations in which political power is more balanced (i.e., $\mu^{H,F}\approx\mu^{F,H}$). 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 $\left(\mu^{H,F},\mu^{F,H}\right)\in[0,1]\times[0,1]$ such that both countries would favor an agreement.[31] With the maintained assumption that the functions $v^H(\cdot)$ and $v^F(\cdot)$ are symmetric, it is easy to show that the point $\left(\mu^{H,F},\mu^{F,H}\right)=(0,0)$ 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. This result embodies a strong intuition: if, absent an agreement, weak countries are already forced to acquiesce with the interests of powerful countries, the latter have little to gain from concerted moves to world welfare maximizing policies.

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

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 $\left(\mu^{H,F},\mu^{F,H}\right)$. This assumption ensures that as long as $\mu^{H,F}=\mu^{F,H}$, we have $\hat{\tau}^{H}=\hat{\tau}^{F}$ and therefore $v^{H}=v^{F}$. Note, however, that (13) and (14) 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 $\mu^{H,F}$ and $\mu^{F,H}$.

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 $\tau^{H},\tau^{F}\in\Psi$. As a consequence, even with equal influence power ($\mu^{H,F}=\mu^{F,H}$), $\hat{\tau}^{F}$ will be much more distorted relative to the zero-influence benchmark than $\hat{\tau}^{H}$. It is then possible that the proposed balanced increase in the distribution of power, $\left(\mu^{H,F},\mu^{F,H}\right)=(1,1)\Delta$ in Figure 2, might not lead to Pareto gains, as F might be made worse of as Δ increases. To gain intuition, consider the example of river pollution. If F is an upstream country, its pollution affects the downstream country H, but the converse is not true. It then follows that balanced increases of power will force F to reduce pollution but will have no effect on H. Hence F will be worse off and H better off –and world welfare will increase as long as $\Delta<1$.

If asymmetries in policy externalities are sufficiently important, the power configurations that lead to Pareto gains take the shape of Figure 5 instead of that in Figure 3.

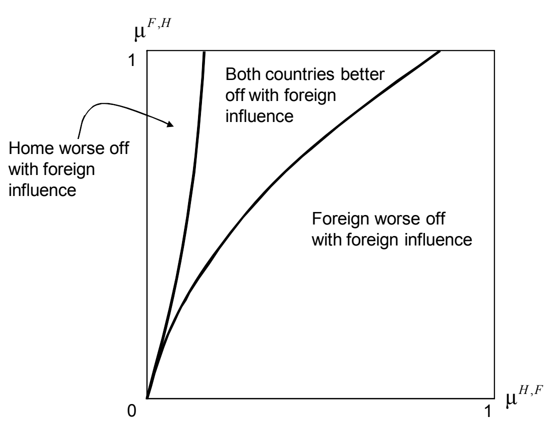

Fig 5: Pareto Gains and Asymmetries

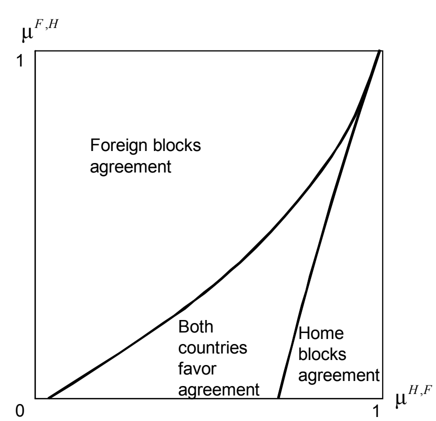

Fig 6: International Agreements and Asymmetries

For foreign influence to lead to welfare gains for country F, its influence power has to be greater than country H's: $\mu^{F,H}>\mu^{H,F}$. This greater power is needed to counteract the fact that its policies generate more externalities and are therefore more conducive to foreign meddling. Again, it follows that $\left(\mu^{H,F},\mu^{F,H}\right)=(1,1)$ does not always yield a Pareto improvement with respect to the situation without any foreign influence. 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 only if the distribution of power is sufficiently aligned with the policy externality effects of the two countries.[32] Inspection of Figures 3 and 5 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 balance in order to prefer the move to the world welfare maximizing policies that imply a greater effort on the side of F than on the side of H – recall the river pollution example. 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.[33]

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 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.

[32] 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.

[33] 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 $\left|\frac{\partial v^H(\tau^H,\tau^F)}{\partial \tau^H}\right| >> \left|\frac{\partial v^F(\tau^H,\tau^F)}{\partial \tau^F}\right| \forall \tau^H, \tau^F$. It is easy to see that such asymmetry can generate outcomes very similar to those in Figures 5 and 6.

Throughout this section, we have focused on 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 economic model developed in section 4 features such separability and hence some of the results derived above will carry immediate implications for our more specific model in that section. In Appendix A.3, we however discuss the more general case in which the function $v^j\left(\tau^H, \tau^F\right)$ features non-separabilities.

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.

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:

$$u^j = c_0^j + \sum_{i=1}^{2} u_i^j\left(c_i^j\right), \quad j = H, F \tag{15}$$

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

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

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 (percentage) import tariff (to be derived below).

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 (15) is that aggregate welfare in country j can be written as

$$v^j(\mathbf{p}) = I^j(\mathbf{p}) + S^j(\mathbf{p}), \tag{16}$$

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

$$I^j = 1 + \Pi_1^j\left(p_1^j\right) + \Pi_2^j\left(p_2^j\right) + R^j\left(\boldsymbol{\tau}, \mathbf{p}^W\right), \tag{17}$$

where

$$R^j\left(\boldsymbol{\tau}, \mathbf{p}^W\right) = \begin{cases} \left(\tau_2^H - 1\right) d_2 p_2^W \left(c_2^H\left(p_2^H\right) - y_2^H\left(p_2^H\right)\right) & \text{if} \quad j = H \\ \left(\tau_1^F - 1\right) d_1 p_1^W \left(c_1^F\left(p_1^F\right) - y_1^F\left(p_1^F\right)\right) & \text{if} \quad j = F \end{cases} \tag{18}$$

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

$$S^j(\mathbf{p}) = \sum_{i=1}^{2} \left[u_i^j\left(c_i^j\left(p_i^j\right)\right) - p_i^j c_i^j\left(p_i^j\right)\right]. \tag{19}$$

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

$$d_i M_i^j\left(p_i^j\right) \equiv d_i\left(c_i^j\left(p_i^j\right) - y_i^j\left(p_i^j\right)\right) = y_i^{-j}\left(p_i^W\right) - c_i^{-j}\left(p_i^W\right) \equiv X_i^{-j}\left(p_i^W\right) \text{ for } j \neq -j. \tag{20}$$

[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.

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 (16) together with equations (17) through (20).

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:

$$\max_{\tau^H}\ \Pi_2^H\left(p_2^H\right)+\left(\tau^H-1\right)d_2p_2^W\left(c_2^H\left(p_2^H\right)-y_2^H\left(p_2^H\right)\right)+u_2^H\left(c_2^H\left(p_2^H\right)\right)-p_2^Hc_2^H\left(p_2^H\right),$$

subject to $p_2^H=\tau^Hd_2p_2^W$ 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 program we find the standard formula:

$$\tilde{\tau}^H-1=\frac{1}{\xi_2^F}\equiv\frac{X_2^F\left(p_2^W\right)}{p_2^WX_2^{F\prime}\left(p_2^W\right)}. \tag{21}$$

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 (21). Given our results in Proposition 1, the Home optimal tariff now solves:

$$\begin{aligned}\max_{\tau^H}\ &\Pi_2^H\left(p_2^H\right)+\left(\tau^H-1\right)d_2p_2^W\left(c_2^H\left(p_2^H\right)-y_2^H\left(p_2^H\right)\right)+u_2^H\left(c_2^H\left(p_2^H\right)\right)-p_2^Hc_2^H\left(p_2^H\right)\\&+\mu^{F,H}\left[\Pi_2^F\left(p_2^W\right)+u_2^F\left(c_2^F\left(p_2^W\right)\right)-p_2^Wc_2^F\left(p_2^W\right)\right],\end{aligned}$$

subject again to $p_2^H=\tau^Hd_2p_2^W$ 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

$$\hat{\tau}^H-1=\left(1-\mu^{F,H}\right)\frac{1}{\xi_2^F}\equiv\left(1-\mu^{F,H}\right)\frac{X_2^F\left(p_2^W\right)}{p_2^WX_2^{F\prime}\left(p_2^W\right)}. \tag{22}$$

Note that when $\mu^{F,H}=0$, the Foreign country does not exert any influence at Home, and naturally we obtain the same expression as in equation (21). Conversely, when $\mu^{F,H}=1$, 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, 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 $\mu^{F,H} \in (0,1)$, we have that Home's optimal tariff is still positive but lower than the optimal one when $\mu^{F,H} = 0$. 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. An interesting feature of this result is that it corresponds to the empirical findings in Broda, Limao and Weinstein (2008), who establish a positive correlation between import tariffs and inverse export supply elasticities for WTO non-members, but with a coefficient markedly lower than that implied by standard theory.

To gain a better understanding as to how the foreign influence weights $\mu^{H,F}$ and $\mu^{F,H}$ 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) and Maggi and Rodriguez-Clare (2007). More specifically, we assume that the utility functions u_i^j in (15) 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]

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

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

[36] In the extreme case in which $\mu^{F,H} > 1$, our theory predicts that the Home country will adopt an import subsidy. In this section, we assume throughou that $\left(\mu^{H,F}, \mu^{F,H}\right) \in [0,1] \times [0,1]$.

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

relative to the Foreign country.[38]

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

$$X_2^F = a - \alpha_S + (b + \beta)\, p_2^W, \tag{23}$$

while Home imports are

$$M_2^H = \lambda \left(\alpha_L - a - (b + \beta)\, \tau^H d p_2^W \right).$$

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

$$p_2^W = \frac{\lambda d\,(\alpha_L - a) + \alpha_S - a}{(b + \beta)\,(\lambda d^2 \tau^H + 1)}. \tag{24}$$

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).[39] Combining equations (21) and (23) we can then express the optimal tariff $\hat{\tau}^H$ as a function of exogenous parameters:

$$\tilde{\tau}^H - 1 = \frac{(\alpha_L - a) - (\alpha_S - a)\, d}{(\alpha_L - a) + (\alpha_S - a)\left(\frac{1}{\lambda d} + d\right)}. \tag{25}$$

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:

$$\tilde{\tau}^F - 1 = \frac{(\alpha_L - a) - (\alpha_S - a)\, d}{(\alpha_L - a) + \left(\frac{\lambda}{d} + d\right)(\alpha_S - a)}, \tag{26}$$

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 (22) and (23) we find that in such a case, the Home and Foreign import

[38] It is easiest to think of λ as capturing economic size. It would also be straightforward to interpret λ as a measure of population size, with some suitable modifications to the political game in section 2 (details upon request).

[39] 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.

tariffs are given by:

$$\hat{\tau}^H - 1 = \frac{\left(1-\mu^{F,H}\right)\left(\alpha_L - a - d\left(\alpha_S - a\right)\right)}{\left(\alpha_L - a\right) + \left(\alpha_S - a\right)\left(\frac{1}{\lambda d} + d\left(1-\mu^{F,H}\right)\right)} \tag{27}$$

and

$$\hat{\tau}^F - 1 = \frac{\left(1-\mu^{H,F}\right)\left(\alpha_L - a - \left(\alpha_S - a\right) d\right)}{\left(\alpha_L - a\right) + \left(\alpha_S - a\right)\left(\frac{\lambda}{d} + \left(1-\mu^{H,F}\right) d\right)} \tag{28}$$

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

$$\Gamma^j = \frac{\tilde{\tau}^j - 1}{\hat{\tau}^j - 1} - 1 > 0, \quad j = H, F, \tag{29}$$

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

Proposition 3 *The distortion in each country's tariff is increasing in the political power of the other country ($\partial\Gamma^j/\partial\mu^{k,j} > 0$), decreasing in the relative size of this country ($\partial\Gamma^H/\partial\lambda < 0$, $\partial\Gamma^F/\partial\lambda > 0$), and also decreasing in the distance d between the two countries.*

The first result is intuitive and follows directly from Lemma 2. 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 $\mu^{F,H}$ of Foreign. Similarly, the Foreign tariff is decreasing in $\mu^{H,F}$. 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 Lemma 3.[40] More specifically, the size of the negative externality generated by each country is decreasing in the distance between Home and Foreign, and therefore it is not surprising that the extent to which these tariffs will be distorted by foreign influence is lower when distance is higher. This result is interesting because it predicts that the strongest effects of foreign influence should occur between relatively close countries. Neighbors therefore take each other interests into account to a larger extent, which might be a reason why regional trade agreements are easier to materialize.

Our final result is that the effect of influence in relatively large countries is smaller, even when they are not more politically powerful (in terms of the μ's). The reason for this is that the absolute change in aggregate welfare in large countries is bigger than in small countries for every given change in policy. As a consequence, a given level foreign influence threat

[40] 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., $\partial v^j(\cdot)/\tau^j$.

obtains a larger policy tilt in a small country than in a large country. In addition, the absolute welfare change in a small influencer is small, which reduces the foreign influence threat on the large country.

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 (see however the more general Proposition 4 below and its proof in the Appendix).

Our economic model also 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 $\mu^{H,F} = \mu^{F,H} = 0$) because Foreign will block it. In those situations, free trade will only be achievable whenever, despite its large size, Foreign is worse off without the agreement. This, in turn, can only happen when Foreign's influence power is small relative to Home so that, in the absence of agreement, Foreign is forced to impose a small tariff on Home. Hence, when λ is small, a free trade agreement will only be signed when $\mu^{F,H}$ is low relative to $\mu^{H,F}$, in a manner analogous to our illustration in Figure 6.

Another way to state the previous result is that the achievement of free trade requires a negative correlation between size and influence power. This broad insight can be further formalized in the case in which trade frictions are sufficiently small (so d is close to 1). In that case, we have that a country will opt out of free trade whenever its influence power exceeds a particular threshold level, with the threshold being inversely related to the economic size of the country.[41]

[41] When trade frictions are large, it continues to be the case that a country will opt out of free trade whenever its influence power exceeds a particular threshold level $\widetilde{\mu}^{j,k}$ which relates to economic size. But in that case, one can only establish that $\widetilde{\mu}^{j,k} = 0$ when the country is infinitely large and $\widetilde{\mu}^{j,k} = 1$ when the country is infinitely small, which is qualitatively similar to the second statement in Proposition 4 but far weaker.

We can summarize the results of this section as follows (see the Appendix for a formal proof):

Proposition 4 *For each country $j = H, F$, there exist a threshold $\widetilde{\mu}^{j,k} \in [0,1]$ such that if $\mu^{j,k} > \widetilde{\mu}^{j,k}$, then country j is better off under the non-cooperative equilibrium in tariffs than under free trade. Furthermore, if d is close enough to 1, the threshold $\widetilde{\mu}^{j,k}$ is necessarily decreasing in the relative size of country j (i.e., $\partial\widetilde{\mu}^{H,F}/\partial\lambda < 0$ and $\partial\widetilde{\mu}^{F,H}/\partial\lambda > 0$).*

It is interesting to note that, in the real world, we often seem to 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

In this paper, 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 and that a negative correlation between size and influencing power might be needed for efficiency to be achievable.

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 Lemma 1

Equation (5) 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 $\partial v^j\left(\tau_c^j, \tau^{-j}\right)/\partial \tau_c^j = 0$. To prove this, assume instead that (5) holds because

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

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

$$\alpha^j + \left(1-\alpha^j\right)\left(v^j\left(\tau_c^j,\tau^{-j}\right) - v^j\left(\tau_{-c}^j,\tau^{-j}\right)\right) \leq 0. \tag{30}$$

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

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

where the right-hand-side of the last inequality 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 (34) cannot be part of party c's best response function. In sum, we must have

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

and thus only $\partial v^j\left(\tau_c^j,\tau^{-j}\right)/\partial\tau_c^j = 0$ is consistent with the first-order condition in (5).

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

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

Given the concavity of the function $v^j\left(\tau_c^j,\tau^{-j}\right)$ and the fact that $\partial v^j\left(\tau_c^j,\tau^{-j}\right)/\partial\tau_c^j = 0$ 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 1

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

$$P_I^H = \frac{1}{2} + \gamma^H\left(v^H\left(\tau_I^H, \tau^F\right) - v^H\left(\tau_O^H, \tau^F\right) - \hat{e}^F\right) \tag{31}$$

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

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

$$\begin{aligned} &\left[\begin{array}{c} \alpha^H\gamma^H + \frac{1}{2}\left(1 - \alpha^H\right) + 2\left(1 - \alpha^H\right)\gamma^H\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right) \\ + \left(1 - \alpha^H\right)\phi^F\left(1 - \alpha^F\right)\left(\gamma^H\theta^H\right)^2\left(v^F\left(\tau_O^H, \tau^F\right) - v^F\left(\tau_I^H, \tau^F\right)\right) \end{array}\right] \times \frac{\partial v^H\left(\tau_O^H, \tau^F\right)}{\partial \tau_O^H} \\ &+ \left(\alpha^H + \left(1 - \alpha^H\right)\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right)\right)\phi^F\left(1 - \alpha^F\right)\left(\gamma^H\right)^2 \times \frac{\partial v^F\left(\tau_O^H, \tau^F\right)}{\partial \tau_O^H} = 0. \end{aligned} \tag{32}$$

This equation defines the Home's opposition best response function. Note that this equation is entirely symmetric to equation (10) 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 1.

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 (32) and the definition of $P_O^H = 1 - P_I^H$ in (31) to simplify) to obtain the following second-order-condition:

$$\begin{aligned} &\left[\alpha^H\gamma^H + \left(1 - \alpha^H\right)\gamma^H\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right)\right]\frac{\partial^2 v^H\left(\tau_O^H, \tau^F\right)}{\partial\left(\tau_O^H\right)^2} + \left(1 - \alpha^H\right)P_O^H\frac{\partial^2 v^H\left(\tau_O^H, \tau^F\right)}{\partial\left(\tau_O^H\right)^2} \\ &+ \left(\alpha^H + \left(1 - \alpha^H\right)\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right)\right)\phi^F\left(1 - \alpha^F\right)\left(\gamma^H\right)^2 \times \frac{\partial^2 v^F\left(\tau_O^H, \tau^F\right)}{\partial\left(\tau_O^H\right)^2} \\ &- \frac{2\left(1 - \alpha^H\right)^2 P_O^H}{\left(\alpha^H + \left(1 - \alpha^H\right)\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right)\right)}\left(\frac{\partial v^H\left(\tau_O^H, \tau^F\right)}{\partial \tau_O^H}\right)^2. \end{aligned} \tag{33}$$

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

$$\alpha^H + \left(1-\alpha^H\right)\left(v^H\left(\tau_O^H, \tau^F\right) - v^H\left(\tau_I^H, \tau^F\right)\right) > 0. \tag{34}$$

Hence, there can be at most one τ_O^H satisfying (34) 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 (34) but still satisfies the first-order condition in (32) and the second-order condition in (33), and translates into a larger value of W_O^H than the unique maximizer that satisfies (34). We can conclude this by noting that whenever (34) 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 (34) cannot be part of the opposition's best response function. This in turn implies that the solution to (10) 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 (34) 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 in Proposition 1.

A.3 Proof of Proposition 2 and the Case with Non-Separabilities

In this Appendix we will prove the following Proposition, which generalizes our results in Proposition 2 to the case of general, non-separable welfare functions:

Proposition 5 *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:*

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.*

Let us then proceed with the proof. Consider the effects of an increase in $\mu^{F,H}$ on Home and Foreign welfare (the case of an increase in $\mu^{H,F}$ is symmetric). Note that these are given by (again we drop the hats over equilibrium policies to simplify the algebra):

$$\frac{dv^H}{d\mu^{F,H}} = \frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F,H}} + \frac{\partial v^H\left(\tau^H,\tau^F\right)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F,H}} \tag{35}$$

$$\frac{dv^F}{d\mu^{F,H}} = \frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial \tau^H}\frac{d\tau^H}{d\mu^{F,H}} + \frac{\partial v^F\left(\tau^H,\tau^F\right)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F,H}}. \tag{36}$$

Part 1 of Lemma 2 immediately implies that the first term in the right-hand-side of (36) is positive. Using equation (13), it is straightforward to verify that part 1 of Lemma 2 also implies that the first term in the right-hand-side of (35) is negative.

When the functions $v^j(\cdot)$ are additively separable, part 2 of Lemma 2 implies that the second terms in the right-hand-side of both (35) and (36) are 0. We thus conclude $dv^H/d\mu^{F,H} < 0$ and $dv^F/d\mu^{F,H} > 0$, which confirms part 1 of Proposition 2.

Consider next the case of submodular welfare functions. In such a case, part 4 of Lemma 2 implies that the second term in the right-hand-side of (35) is negative, and coupled with (14), it also implies that the second term in the right-hand-side of (36) is positive. We thus obtain that for arbitrary submodular functions (not just separable ones), we still have that $dv^H/d\mu^{F,H} < 0$ and $dv^F/d\mu^{F,H} > 0$, as stated in part 1(a) of Proposition 5.

The case of supermodular welfare functions is a bit more complex because the first and second terms in the right-hand-side of (35) and (36) are of opposite signs (again this can be verified by appealing to Lemma 2). 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 $dv^H/d\mu^{F,H} < 0$ and $dv^F/d\mu^{F,H} > 0$. This justifies our statement part 1(b) in Proposition 5.

We next move on to discuss the effects of an increase in $\mu^{F,H}$ on aggregate world welfare. Combining equations (13), (14), (35) and (36), we can write:

$$\frac{d\left(v^H(\cdot)+v^F(\cdot)\right)}{d\mu^{F,H}} = \left(1-\mu^{F,H}\right)\frac{\partial v^F(\cdot)}{\partial\tau^H}\frac{d\tau^H}{d\mu^{F,H}} + \left(1-\mu^{H,F}\right)\frac{\partial v^H(\cdot)}{\partial\tau^F}\frac{d\tau^F}{d\mu^{F,H}}. \tag{37}$$

The sign of this effect obviously depends on whether $\mu^{F,H}$ and $\mu^{H,F}$ are larger or smaller than one. From our above discussion, part 1 of Lemma 2 immediately implies that the first term in the right-hand-side of (37) is necessarily positive whenever $\mu^{F,H} < 1$ and necessarily negative whenever $\mu^{F,H} > 1$. Hence, if the second term in the right-hand-side of (37) is small enough, we will obtain that world welfare is increasing in the influence power of any country j whenever $\mu^{j,k} < 1$ and is decreasing in this influence power for $\mu^{j,k} > 1$. Whenever the functions $v^j(\cdot)$ are additively separable, this second term is equal to 0 and we thus obtain part 2 of Proposition 2. Whenever the functions $v^j(\cdot)$ are supermodular, the term $\frac{\partial v^H(\cdot)}{\partial\tau^F}\frac{d\tau^F}{d\mu^{F,H}}$ will be non-negligible, but from our discussion above, Lemma 2 implies that it will necessarily be positive. This naturally leads to the result stated in part 2(a) of Proposition 5. This implies again that, relative to a world without foreign influence, world welfare is higher with the possibility of "moderate" foreign influence. Conversely, when foreign influence becomes predatory ($\mu^{j,k} > 1$ and $\mu^{k,j} > 1$), it may lead to reductions in world welfare.[42]

In the case of submodular welfare functions, the term $\frac{\partial v^H(\cdot)}{\partial \tau^F}\frac{d\tau^F}{d\mu^{F,H}}$ is negative and, theoretically, the overall effect of an increase in $\mu^{F,H}$ on world welfare may well be negative. Still, as stated in part 2(b) of Proposition 5, 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.4 Proof of Proposition 3

The results follow from simple differentiation. Combining equations (25), (26), (27), (28), and (29), we have

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

and

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

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

Next, note that

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

and

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

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

Finally, note that

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

and

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

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

[42] There is a subtle difference between the results with supermodularity and those with additive separability. In particular, in Proposition 2 it sufficed to assume that $\mu^{j,k} < 1$ in order to have a positive aggregate welfare effect of foreign influence, while we now need to assume also that $\mu^{k,j} < 1$.

A.5 Proof of Proposition 4

Let us focus on the Home country. Note that $\widetilde{\mu}^{H,F}$ is defined by

$$\Delta\left(\widetilde{\mu}^{H,F}\right) = v^H(1,1) - v^H\left(\hat{\tau}^H, \hat{\tau}^F\left(\widetilde{\mu}^{H,F}\right)\right) = 0.$$

The first part of the Proposition follows from $\partial v^H\left(\hat{\tau}^H, \hat{\tau}^F\left(\mu^{H,F}\right)\right)/\partial\mu^{H,F} > 0$ and $v^H\left(\hat{\tau}^H, \hat{\tau}^F(1)\right) = v^H\left(\hat{\tau}^H, 1\right) < v^H(1,1)$. Hence, there exist a threshold $\widetilde{\mu}^{H,F}$ over which Home is worse off.

There exist no simple way to verify the dependence of the threshold $\widetilde{\mu}^{H,F}$ on economic size, other than directly computing these welfare functions. Straightforward but tedious calculations yield that

$$\begin{aligned}\Delta\left(\mu^{H,F}\right) &= \frac{1}{2}\frac{d^4\lambda\left(a-\alpha_L-\left(a-\alpha_S\right)d\right)^2}{\left(b+\beta\right)} \times \\ &\left(\frac{\left(1-\mu^{H,F}\right)\left(2\lambda+\left(3-\mu^{H,F}\right)d^2\right)}{\left(\lambda+\left(2-\mu^{H,F}\right)d^2\right)^2\left(\lambda+d^2\right)^2} - \frac{\left(\mu^{F,H}+2d^2\lambda+1\right)\left(1-\mu^{F,H}\right)\lambda^2}{\left(1+\left(2-\mu^{F,H}\right)d^2\lambda\right)^2\left(d^2\lambda+1\right)^2}\right),\end{aligned}$$

which implies that the threshold $\widetilde{\mu}^{H,F}$ is implicitly defined by

$$1 = \frac{\left(\lambda+\left(2-\widetilde{\mu}^{H,F}\right)d^2\right)^2\left(\lambda+d^2\right)^2}{\left(1-\widetilde{\mu}^{H,F}\right)\left(2\lambda+\left(3-\widetilde{\mu}^{H,F}\right)d^2\right)}\frac{\left(\mu^{F,H}+2d^2\lambda+1\right)\left(1-\mu^{F,H}\right)\lambda^2}{\left(1+\left(2-\mu^{F,H}\right)d^2\lambda\right)^2\left(d^2\lambda+1\right)^2}.$$

It is straightforward to verify that when λ goes to zero (so Home becomes arbitrarily small), we have that $\widetilde{\mu}^{H,F} \to 1$, which implies that Home would agree to a move to free trade for any level of influence power $\mu^{H,F} \in [0,1]$. On the other hand, when Home becomes arbitrarily large ($\lambda \to \infty$), the implied threshold $\widetilde{\mu}^{H,F}$ becomes negative, which implies that Home would not agree to a move to free trade for any positive level of influence power $\mu^{H,F}$.

To further explore the role of λ in shaping the threshold $\widetilde{\mu}^{H,F}$, it becomes necessary to focus on the case of small natural trade barriers, or $d \to 1$. In such a case, the above implicit definition of the threshold simplifies to

$$1 = \frac{\left(\lambda+2-\widetilde{\mu}^{H,F}\right)^2}{\left(1-\widetilde{\mu}^{H,F}\right)\left(2\lambda+3-\widetilde{\mu}^{H,F}\right)}\frac{\left(\mu^{F,H}+2\lambda+1\right)\left(1-\mu^{F,H}\right)\lambda^2}{\left(1+\left(2-\mu^{F,H}\right)\lambda\right)^2}.$$

Straightforward differentiation yields that the first term in the right-hand-side is increasing $\widetilde{\mu}^{H,F}$, while both terms are also increasing in λ. Hence, by the implicit function theorem, we can conclude that $\widetilde{\mu}^{H,F}$ is decreasing in λ, as stated in the Proposition.

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