Pareto-Efficient Trade and Domestic Policies under International Lobbying Activities

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Abstract

This paper examines in a two-country model under what conditions political donations establish Pareto-efficient trade and domestic policies. I consider two cases for international lobbying activities: multilateral political donations and international special interest groups. The analysis shows that Pareto-efficient policies are employed when each ruling party values the amount of cross-border donations and the sum of domestic welfare and domestic donations with the same weight in its objective function in the case of multilateral political donations, and when each ruling party only considers donations as the component of its objective function in the case of international special interest groups.

JEL Classification: F13, H21

Key words: Cross-border Donations, International Special Interest Group, Truthful Equilibrium, Pareto-Efficiency

1. Introduction

Some countries, including Japan, have regulations regarding political funding which prohibit national political parties from accepting contributions from foreign sources. In practice, however, it is relatively easy to circumvent these regulations through local subsidiaries of foreign corporations and international non-governmental organizations.1 With foreign investment rising sharply any kind of foreign special interest groups gain advantage through their local subsidiaries serving as a conduit for foreign funds to local political parties.

International lobbying activities like foreign political donations and international activities of special interest groups (SIGs) both function to let political parties know preferences of foreign natural and juridical persons organizing SIGs, and political donations play an important role in wielding their influence on each party. In that sense there is no reason to distinguish them. However, researchers often analyze the effect of foreign political donations theoretically and empirically, while international SIGs are seldom examined. For example,
Gawande, Krishna, and Robbins (2006) and Kee, Olarreaga, and Silva (2007) showed that foreign lobbying has had a significant impact on lowering U.S. trade barriers. Endoh (2012) presented the conditions under which Pareto-efficient tariffs are attained by admitting foreign lobbying. The first aim of this paper is to extend their framework to consider the case of international SIGs. International SIGs are the organizations established by some SIGs in different countries so as to contribute funds as domestic donations to all ruling parties (RPs) in these countries. This paper aims to set up the political architecture for making the most of the potential benefit of international SIGs and to present the conditions in which Pareto-efficient policies are realized and the sum of welfare is maximized.

The second aim of this paper is to examine the effect of international lobbying activities on policy outcome under the condition of multiple policy targets and multiple policy tools, and to confirm that efficient outcome is established even in this setting. As multiple targets and tools, I consider a two-country model of trade with the existence of nonpecuniary externalities from production, and two policy tools, trade and domestic policies, are introduced. The economic environment of the model is along the lines of Ederington (2001), Conconi (2003), Limão (2005), and Lai (2006), among others, who studied trade and domestic policies in large open countries with the presence of negative externalities arising from their production or consumption. Copeland and Taylor (2004) give a survey of policy targeting literature on trade and externality.

The organization of this paper is as follows: Section 2 presents the basic economic structure of two countries involved in trade with each other with the existence of nonpecuniary externalities from production. Section 3 examines the conditions in which multilateral political activities lead ruling parties to choose Pareto-efficient trade and domestic policies and maximize the sum of the two countries’ welfare. Section 4 considers the case of international SIGs organized by both home and foreign local interest groups. Section 5 concludes the paper and discusses policy implications.

2. The model

The model used in this paper is a simple extension of Endoh (2012) to examine the existence of international SIGs and nonpecuniary externalities. The model of Endoh (2012) is based mainly on Grossman and Helpman (1994) for the model of endogenous policy determination and on Prat and Rustichini (2003) for the concept of weakly truthful equilibrium in a multi-principal multi-agent model. Although they don’t consider strategic interdependency between agents, my model shows that, under certain circumstances, the efficient equilibrium

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1) Following are some examples of regulation which allow foreign residents to give political donations through subsidiaries in countries where politicians are prohibited from accepting donations directly from foreigners. Canada allows political contributions from any corporation or association that carries on business in the country. In the United States of America (U.S.), U.S.-incorporated foreign-owned companies may establish political action committees (PACs), which have the right to make limited campaign contributions provided that they are registered with the Justice Department in accordance with The Foreign Agents Registration Act, and PACs could contribute foreign funds to U.S. electoral campaigns. In Japan, The Political Funds Control Law was amended in 2006 and enacted in the next year to allow foreign-controlled firms whose shares are more than half owned by foreigners to make political donations as long as they are listed on a stock exchange in Japan and are headquartered in the country.
is attained even under the existence of strategic relationships.

Consider a two-country multi-good general equilibrium model of trade. Two countries, home (no*) and foreign (*), produce and trade competitively $N+1$ goods. Good 0 is a numeraire good, which is traded freely across countries and serves to settle the balance of trade. Numeraire good 0 is produced by labor alone, with constant returns to scale. I choose units so that a world and domestic price of good 0 is equal to one. It is assumed that aggregate labor supply, $L$, is large enough to sustain a positive output of good 0. This implies that wage rates in numeraire terms are equalized to one across countries.

Each of the non-numeraire goods $i = 1, 2, \ldots, N$ is produced by labor and a sector-specific input, with constant returns to scale. Specific inputs are available in inelastic supply. RPs in the home and foreign countries use a vector of specific import tariffs (trade policy) $\tau = (\tau_1, \ldots, \tau_N)$ and a vector of specific production taxes (domestic policy) $t = (t_1, \ldots, t_N)$ as policy instruments. The local producer price of good $i$ in terms of the numeraire good 0 is thus given by $p_{i*} = p_{iw} + \tau_i - t_i$, and the local consumer price of good $i$ is $p_{ic} = p_{iw} + \tau_i$, where $p_{iw}$ is the world price. With a wage rate equal to one, the total rent $R_i$ accruing to the specific factor in sector $i$ depends only on the local producer price of the good, and thus can be expressed as $R_i(p_{ic})$. Industry supply is then given by $Y_i(p_{ic}) = \partial R_i/\partial p_{ic}$. The production of non-numeraire goods are assumed to be accompanied by international negative externalities as by-products in both countries. This decreases the welfare of individuals in both countries in a nonpecuniary manner.

The country is populated by a number of $H$ individuals, who have identical preferences with their utility functions taking the following form:

$$u(c_0, c_1, \ldots, c_N, Z) = c_0 + \sum_{i=1}^{N} u_i(c_i) - Z,$$

where $c_0$ and $c_i$ are the consumption of numeraire good 0 and non-numeraire good $i$, respectively. $u_i(c_i)$ is assumed to be twice differentiable, increasing, and strictly concave. $Z$ is total nonpecuniary externalities negative to the country’s welfare from the production of non-numeraire goods, and the degree of $Z$ is a function of the outputs in both home and foreign countries as follows:

$$Z(\tau, t, \tau^*, t^*) = \sum_{i=1}^{N} \left[ \eta_{id} Y_i \left( p_{i*}(\tau_i, t_i, \tau_i^*, t_i^*) \right) + \eta_{ic} Y_i^* \left( p_{ic*}(\tau_i, t_i, \tau_i^*, t_i^*) \right) \right],$$

where $\eta_{id} > 0$ is the parameter of nonpecuniary negative externality which represents the extent to which domestic production of good $i$ decreases the utility of individuals. $\eta_{ic} > 0$ is the parameter of cross-border externality from the production of good $i$ in the other country.

Provided that income always exceeds expenditure on the nonnumeraire goods, the domestic demand for good $i$ can be expressed as a function of local consumer price alone, i.e., $D(p_{ic})$. Net import demand is then $M(p_{ic}, p_{ia}) = D(p_{ic}) - Y_i(p_{ic})$. The world untaxed price, $p_{iw}$,

2) The home and the foreign countries have similar economic structures, so I don’t refer to them for the foreign country explicitly in this section.
3) When the country is a net importer of good $i$, $\tau_i > 0$ and $t_i < 0$ mean an import tax and an import subsidy, respectively. When the country is a net exporter of good $i$, $\tau_i > 0$ and $t_i < 0$ denote an export subsidy and an export tax, respectively.
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is determined by the market-clearing condition:

\[ M_i(\tau_i, t_i, p_{iw}) + M_i^*(\tau_i^*, t_i^*, p_{iw}) = 0. \]  \hspace{1cm} (3)

From equation (3), we can derive an expression for world equilibrium prices as a function of trade and domestic policies in the two countries, i.e., \( p_{iw}(\tau_i, t_i, \tau_i^*, t_i^*) \).

Domestic welfare is defined as the total amount of labor income, rent, tariff revenue, and consumer surplus, plus the negative effect of externalities.

\[
W(\tau, t, \tau^*, t^*) = L + \sum_{i=1}^{N} R_i(\tau_i, t_i, \tau_i^*, t_i^*) + \sum_{i=1}^{N} \tau_i M_i(\tau_i, t_i, \tau_i^*, t_i^*) + \sum_{i=1}^{N} t_i Y_i(\tau_i, t_i, \tau_i^*, t_i^*) + H \left[ \sum_{i=1}^{N} c_i(\tau_i, t_i, \tau_i^*, t_i^*) - \sum_{i=1}^{N} p_{iw} c_i(\tau_i, t_i, \tau_i^*, t_i^*) \right] - HZ(\tau, t, \tau^*, t^*). \]  \hspace{1cm} (4)

When each country determines trade taxes and production taxes in a unilateral way in order to maximize its domestic welfare, taking the policy choices of its trading partner as given, best-response functions for home country policies, \( \tau_i^{BR} \) and \( t_i^{BR} \), and for foreign country policies, \( \tau_i^{BR*} \) and \( t_i^{BR*} \), are derived as

\[
\tau_i^{BR} = \left( \frac{p_{iw}}{e_i^{M_i}} \right) = \left( H \eta_{ie} \frac{e_i^{Y_i}}{e_i^{M_i} m_i^*} \right), \quad t_i^{BR} = H \eta_{id}, \quad \tau_i^{BR*} = \left( \frac{p_{iw}}{e_i^{M_i}} \right) = \left( H \eta_{ie} \frac{e_i^{Y_i}}{e_i^{M_i} m_i^*} \right), \quad t_i^{BR*} = H \eta_{id}
\]

where

\[
e_i^{M_i^*} = \left( \frac{\partial D_i^*}{\partial p_{iw}^*} \right) = \left( \frac{\partial Y_i^*}{\partial p_{iw}^*} \right), \quad e_i^{Y_i^*} = \left( \frac{\partial Y_i^*}{\partial p_{iw}^*} \right) > 0, \quad m_i^* = M_i^*,
\]

\[
e_i^{M_i} = \left( \frac{\partial D_i}{\partial p_{ic}^*} \right) = \left( \frac{\partial Y_i}{\partial p_{ic}^*} \right) = \left( \frac{\partial Y_i}{\partial p_{is}^*} \right) = \left( \frac{\partial Y_i}{\partial p_{is}^*} \right) = \left( \frac{\partial Y_i}{\partial p_{is}^*} \right) = \left( \frac{\partial Y_i}{\partial p_{is}^*} \right) > 0, \quad m_i = M_i.
\]  \hspace{1cm} (5)

\( \tau_i^{BR} \) and \( \tau_i^{BR*} \) are determined from two motivations through the change of the terms of trade. \( p_{iw} / e_i^{M_i} \) and \( p_{iw} / e_i^{M_i} \) represent familiar expressions of optimal tariff, coming from the market power to change the terms of trade. When home country is the importer and foreign country is the exporter of good \( i \), for example, \( p_{iw} / e_i^{M_i^*} > 0 \) and \( p_{iw} / e_i^{M_i} < 0 \), which means both home and foreign countries have an incentive to levy positive tax when good \( i \) crosses the border in order to improve their terms of trade.

\( -H \eta_{ie} \frac{e_i^{Y_i^*}}{e_i^{M_i^*} m_i^*} \) and \( -H \eta_{ie} \frac{e_i^{Y_i}}{e_i^{M_i} m_i} \) represent the negative externalities from the production of the other country, which trade taxes affect through the change of the terms of trade. These terms are always positive, since \( e_i^{M_i^*} m_i^* < 0 \) and \( e_i^{M_i} m_i < 0 \) are satisfied whether the country is the exporter or importer of good \( i \). Therefore, \( \tau_i^{BR} \) and \( \tau_i^{BR*} \) are higher than optimal tariffs at any choice of other policies in order to improve their terms of trade.

4) It is possible for total externalities to have a more general form concerning the output of goods, as long as strong concavity of utility functions concerning policy instruments is preserved. If the reader interprets negative externalities as environmental pollution, it might be natural to consider that total externalities are the function of accumulated pollutants produced from past economic activities. The aspect of accumulated externalities, however, is beyond this comparative static analysis.

5) See appendix A for derivation of these results.
order to lower the international price of good \(i\) and make a trading partner reduce its production.\(^6\) \(t_i^{BR}\) and \(t_i^{BR*}\) are only to counter the local negative externality from domestic production to domestic welfare, and are independent of any other policies.

As for Pareto-efficient policies, Pareto-efficient home policies, \(\tau^{PE}_i\) and \(t^{PE}_i\), and foreign policies, \(\tau^{PE*}_i\) and \(t^{PE*}_i\), have well-known forms: \((\tau^{PE}_i, \tau^{PE*}_i)\) is any set of \(\tau_i\) and \(\tau^*_i\) which satisfies \(\tau_i = \tau^*_i\), \(t^{PE}_i = H\eta^{id}_i + H\eta^{id^*}_i\), and \(t^{PE*}_i = H\eta^{id^*}_i + H\eta^{id^*}_i\).\(^7\) Pareto-efficient trade policies completely eliminate the terms-of-trade motivations, and make net trade barriers become zero so as not to distort trade flows. Pareto-efficient domestic policies, on the other hand, are targeted at rectifying all distortions from domestic production, and fully internalize externalities from production.

3. Multilateral political donations

In this section I consider the case of multilateral lobbying, in which each SIG is permitted to give its donations to both domestic RP (that is, domestic donation) and other country’s RP (cross-border donation), and provide some conditions under which multilateral lobbying helps the equilibrium trade and domestic taxes to become Pareto-efficient.

Home country has \(K\) national SIGs which are formed by its people. The welfare of \(j\)-th national SIG is \(W^j(\tau, t, \tau^*, t^*)\), \(j = 1, 2, \ldots, K\). Also, foreign country has \(K^*\) national SIGs, and the welfare of \(j^*\)-th national SIG is \(W^{*j^*}(\tau, t, \tau^*, t^*)\), \(j^* = 1, 2, \ldots, K^*\). Neither the preference of each SIG for tariffs and production taxes nor the number of constituent members of it matters. There are three critical assumptions about SIGs which I accept in this section.

First, Assumption 1. **National SIGs are well organized in both countries, and every individual belongs to one of the national SIGs.**

This assumption assures that there is no free-rider of political activities and also avoids double-counting of individuals’ welfare. Second,

Assumption 2. **\(W^j\) and \(W^{*j^*}\) are assumed to be twice differentiable and strictly concave.**

Assumptions 1 and 2 together assure

\[
W_{\tau_i} = \sum_{j=1}^{K} W^j_{\tau_i}, \quad W_t = \sum_{j=1}^{K} W^j_t, \quad W_{\tau^*_i} = \sum_{j=1}^{K} W^j_{\tau^*_i}, \quad W_{t^*_i} = \sum_{j=1}^{K} W^j_{t^*_i} \tag{5a}
\]

\[
W^{*j^*}_{\tau_i} = \sum_{j^*=1}^{K^*} W^{*j^*}_{\tau_i}, \quad W^{*j^*}_t = \sum_{j^*=1}^{K^*} W^{*j^*}_t, \quad W^{*j^*}_{\tau^*_i} = \sum_{j^*=1}^{K^*} W^{*j^*}_{\tau^*_i}, \quad W^{*j^*}_{t^*_i} = \sum_{j^*=1}^{K^*} W^{*j^*}_{t^*_i} \tag{5b}
\]

where \(\tau_i\), \(t_i\), \(\tau^*_i\), and \(t^*_i\) at the lower right of \(W, W^j, W^{*j}\), and \(W^{*j^*}\) represents that these welfare functions are partially differentiated by them. And third,

\(^6\) I assume a set of best-response functions \(t_i^{BR}\) and \(t_i^{BR*}\) has a unique and stable equilibrium.

\(^7\) See appendix B for derivation of these results.
Assumption 3. All national SIGs make both domestic donations and cross-border donations to home and foreign RPs.

Each national SIG decides its amount of donation to home and foreign RPs, which are in the position to set policy, in order to maximize the SIG’s welfare. The SIGs are assumed not to contribute to any opposition parties in a country. The home and foreign RPs, on the other hand, choose their taxes \((\tau, t)\) and \((\tau^*, t^*)\), respectively, to maximize a weighted sum of donations from SIGs and aggregate national welfare, with the other country’s trade and domestic policies as given. The donation schedule of each SIG is all completely observable to any individuals regardless of nationality, as in Prat and Rustichini (2003). Readers may think that this information assumption regarding contribution schedules idealizes the real political arena too much, seeing that in most countries it is often claimed that there is less transparency in political funding and weak enforcement of a freedom-of-information system. If cross-border donations are permitted, however, each SIG could establish political ties directly with RP in a trading partner country, and could naturally have some access to information about other SIGs’ donation schedules to it. I assume here that contracting to donate to any RP enables each SIG to gain information about other SIGs’ contracts with that RP, regardless of SIGs’ and RPs’ nationality. In that sense, there is no need to distinguish home and foreign information sets, thanks to the penetration of SIG into the other country’s political arena by using cross-border donations.\(^8\)

The decision-making process is analyzed as the following two-stage game. First, each SIG chooses its own bilateral contract schedules to home and foreign RPs, simultaneously and noncooperatively. \(j\)-th SIG in the home country offers to home RP a schedule of home tariff vector, \(\tau\), home production tax vector, \(t\), and the amount of domestic donation, \(C^{Dj}\), while at the same time offers to foreign RP a schedule of foreign tariff vector, \(\tau^*\), foreign production tax vector, \(t^*\), and the amount of cross-border donation, \(C^{Cj}\). The publicly observable domestic contract offered to home RP, \(C^{Dj}\), can be written as \(C^{Dj}(\tau, t, \tau^*, t^*) = C^{Dj}(\tau, t)\), since each home SIG predicts how the shift of \(\tau\) causes foreign RP to change \(\tau^*\), how the shift of \(t\) causes home RP to change \(\tau\) and foreign RP to change \(\tau^*\), and how \(t^*\) is determined independently regardless of \(\tau\) and \(t\), using the knowledge of best-reaction functions: \(\tau^{BR}, t^{BR}, \tau^{BR*}\), and \(t^{BR*}\). The same argument applies to the publicly observable cross-border contract offer to foreign RP, \(C^{Cj}(\tau, t, \tau^*, t^*) = C^{Cj}(\tau^*, t^*)\). Similarly, \(j\)-th SIG in the foreign country chooses \(C^{Dj*}(\tau^*, t^*)\) to the foreign RP and \(C^{Cj*}(\tau, t)\) to the home RP. Second, after accepting the SIGs’ offer, home RP and foreign RP choose \((\tau, t)\) and \((\tau^*, t^*)\), respectively, to maximize the value of their objective functions, simultaneously and noncooperatively.\(^9\)

Home RP’s objective function in the case of multilateral political donations, \(G^{MD}(\tau, t; \tau^*, t^*)\), and that of foreign RP, \(G^{MD*}(\tau^*, t^*; \tau, t)\), are the weighted sum of the local gross welfare and the total amount of donations local RP accepts, as follows:

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\(^8\) In their two-country model, Grossman and Helpman (1995) assume that contribution schedules cannot be observed abroad and explain the validity of that assumption. Once cross-border donations are allowed, however, this assumption does not look plausible, since now each SIG can observe at least one contribution schedule that RP in the other country concludes, that is, the contribution schedule between them. This is another ground for supporting the suitability of complete information assumption in the text.
\[ G^{MD}(\tau, t; \tau^*, t^*) \equiv W(\tau, t, \tau^*, t') + \alpha \sum_{j=1}^{K} C^{D_j}(\tau, t) + \beta \sum_{j'=1}^{K^*} C^{C_{j'}}(\tau, t), \]  

(6a)

\[ G^{MD^*}(\tau^*, t'; \tau, t) \equiv W^*(\tau, t, \tau^*, t') + \alpha^* \sum_{j=1}^{K} C^{D_{j^*}}(\tau^*, t') + \beta^* \sum_{j=1}^{K^*} C^{C_j}(\tau^*, t'), \]  

(6b)

where \( \alpha \) and \( \alpha^* \) are the home and foreign RP’s weights on domestic donations, respectively, and \( \beta \) and \( \beta^* \) are those on cross-border donations. I assume these four parameters are all positive so that all the donations to the home RP, \( C^D_j \) and \( C^C_{j^*} \), and those to the foreign RP, \( C^{D_{j^*}} \) and \( C^C_j \), have positive weights in \( G^{MD}(\tau, t; \tau^*, t') \) and \( G^{MD^*}(\tau^*, t'; \tau, t) \). The RP of the home (foreign) country chooses \( \tau \) and \( t \) (\( \tau^* \) and \( t^* \)) to maximize equation (6a) (equation (6b)), with \( \tau^* \) and \( t^* \) (\( \tau \) and \( t \)) considered to be given.

I solve this two-stage game backwards. At the second stage, the home RP decides \( \tau \) and \( t \), and the foreign RP decides \( \tau^* \) and \( t^* \), to maximize their objective functions. Differentiation of equation (6a) with respect to \( \tau \) and \( t \), and that of equation (6b) with respect to \( \tau^* \) and \( t^* \), create the first-order conditions for maximization of objective functions for the home RP as equations (7a) and (7b), and for the foreign RP as equations (7c) and (7d), respectively.

\[ G_{\tau^i} \equiv W_{\tau^i} + \alpha \sum_{j=1}^{K} C^{D_j}_{\tau^i} + \beta \sum_{j'=1}^{K^*} C^{C_{j'}}_{\tau^i} = 0, \]  

(7a)

\[ G_{t^i} \equiv W_t + \alpha \sum_{j=1}^{K} C^{D_j}_t + \beta \sum_{j'=1}^{K^*} C^{C_{j'}}_t = 0, \]  

(7b)

\[ G_{\tau^*_i^*} \equiv W^*_{\tau^*_i^*} + \alpha^* \sum_{j=1}^{K} C^{D_{j^*}}_{\tau^*_i^*} + \beta^* \sum_{j=1}^{K^*} C^{C_j}_{\tau^*_i^*} = 0, \]  

(7c)

\[ G_{t^*_i^*} \equiv W^*_{t^*_i^*} + \alpha^* \sum_{j=1}^{K} C^{D_{j^*}}_{t^*_i^*} + \beta^* \sum_{j=1}^{K^*} C^{C_j}_{t^*_i^*} = 0. \]  

(7d)

Next, at the first stage, each SIG chooses its contract offer. To calculate the equilibrium of contracts, I employ the idea of “truthful” equilibrium in Bernheim and Whinston (1986),

9) In this paper, I assume that a single ruling party has a full ability to set its home import tariffs and production taxes at an arbitrary level. This assumption fits well especially with a one-party government in a parliamentary system, where the Cabinet is mostly composed of statesmen from the ruling party which gains the majority of seats on its own, and naturally the prime minister is from the ruling party. In this system, the ruling party’s political views are close to those of the Cabinet, and on a variety of issues the ruling party has the power to determine the policy the Cabinet will take. To consider the case of a coalition government in a parliamentary system or of a presidential system, this model might need some modification. In the case of a presidential system, for example, we sometimes see the situation that the president of a country belongs to the minority, and therefore the majority cannot wield sufficient influence on the process of forming policies in the executive branch.

10) The form \( G^{MD}(\tau, t; \tau^*, t') \) means that \( G^{MD} \) is the function of \( \tau \) and \( t \), with \( \tau^* \) and \( t^* \) as given; the RP of the home country uses \( \tau \) and \( t \) as policy instruments, but it cannot manipulate a foreign country’s policy instruments \( \tau^* \) and \( t^* \) directly. The same argument applies to \( G^{MD^*}(\tau^*, t'; \tau, t) \). Readers might think there exists asymmetry between the SIGs’ and the RPs’ ability to foresee the strategic implications of the local trade and domestic policies on the other country’s policies, but actually there does not; since the SIG is the first mover of this two-stage game, each SIG benefits from being allowed to take into consideration the strategic relationship of policies when it decides its amount of donation, prior to the RP’s decision.
which is applied to a model of endogenous policy determination by Grossman and Helpman (1994). Truthful equilibrium needs to be jointly efficient for SIGs and the RP. Joint efficiency means that $G^{MD}$ and $G^{MD*}$ are maximized, subject to constraints on the levels of each SIG’s welfare anchor, $W^j$ for $j$-th SIG and $W^{*j}$ for $j^*$-th SIG. In equilibrium, the following equations are satisfied concerning the contract schedules of $j$-th SIG and $j^*$-th SIG.\(^{11}\)

$$C_{Dj}^j (\tau, t) + C_{Cj}^j (\tau^*, t^*) = W^j (\tau, t, \tau^*, t^*) - \bar{W}^j,$$  

(8a)

$$C_{Dj}^{*j} (\tau^*, t^*) + C_{Cj}^{*j} (\tau, t) = W^{*j} (\tau, t, \tau^*, t^*) - \bar{W}^{*j}.$$  

(8b)

These conditions are the same as the definition of weakly truthful transfers by Prat and Rustichini (2003). Each SIG decides the menu of monetary contribution to both home and foreign RPs and the request of their tariff and production tax vectors under the constraint of equations (8a) and (8b).

After simple calculations, we have the following equations which are satisfied for all SIGs in truthful equilibrium of contract offers. \(^{12}\)

$$C_{Dj}^j = W^j_{ti}, \quad C_{Dj}^{*j} = W^{*j}_{ti}, \quad C_{Cj}^j = W^j_{ti}, \quad C_{Cj}^{*j} = W^{*j}_{ti},$$  

(9a)

$$C_{Dj}^{*j} = W^{*j}_{ti}, \quad C_{Dj}^{*j} = W^{*j}_{ti}, \quad C_{Cj}^{*j} = W^{*j}_{ti}, \quad C_{Cj}^{*j} = W^{*j}_{ti}.$$  

(9b)

That is, when SIGs design their donation schedules to home and foreign RPs, all they need to take into consideration is the direct effect of home and foreign tariffs and production taxes on their welfare. Strategic relationships between countries and policies have no role to play in the case of multilateral lobbying, because such an indirect effect is properly replaced by a direct effect. This feature of multilateral lobbying promotes efficiency of policy formation in the home and foreign country. This result shows the potential benefit of multilateral political donations.

Substitute equations (9a) and (9b) into equations (7a) to (7d), considering equations (5a) and (5b), and we can rewrite the first-order conditions for maximization of objective functions for home and foreign RPs as $W^j_{\tau} + \omega W^j_{\tau^*} = 0$, $W^j_{\tau} + \omega W^{*j}_{\tau^*} = 0$, $W^{*j}_{\tau} + \omega^* W^{*j}_{\tau^*} = 0$, and $W^{*j}_{\tau} + \omega^* W^{*j}_{\tau^*} = 0$, where $\omega = \beta/(1 + \alpha)$ and $\omega^* = \beta^*/(1 + \alpha^*)$ are the relative weights on cross-border donations with respect to local welfare plus domestic donations for the home and foreign RPs, respectively. $\omega$ and $\omega^*$ represent the extent to which home and foreign RPs are sensitive to the welfare of the trading partner relative to the domestic one when they decide their trade and domestic policies. Each RP takes into account the impact of its trade and domestic policies on the welfare of the other country through cross-border donations, which makes the RP more cooperative with the other country. This also shows the benefit of multi-

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\(^{11}\) To exclude the case in which an RP might donate to a SIG, and therefore the contribution would be negative, I focus on equilibrium where all SIGs make a positive amount of political contributions to the RP.

\(^{12}\) See appendix C for derivation of these results.
lateral political donations.

\( W_i + \omega W_i^* = 0 \) and \( W_i + \omega W_i^* = 0 \) define best-reaction functions of home country under multilateral political donations, \( \tau_i^{MD} \) and \( \tau_i^{MD*} \), while \( W_i^* + \omega W_i^* = 0 \) and \( W_i^* + \omega W_i^* = 0 \) define those of foreign country, \( \tau_i^{MD*} \) and \( \tau_i^{MD*} \), which are written as follows:

\[
\tau_i^{MD} = (1 - \omega) \frac{p_{M_i}}{e_i} + \omega \tau_i + \left( \omega \tau_i - \omega H^* \eta_{iw} - H^* \eta_{iw} \right) \frac{e_i^{y*}}{m_i e_i^{M*}}, \tag{10a}
\]

\[
\tau_i^{MD*} = (1 - \omega^*) \frac{p_{M_i}}{e_i} + \omega^* \tau_i + \left( \omega^* \tau_i - \omega^* H^* \eta_{iw} - H^* \eta_{iw} \right) \frac{e_i^{y*}}{m_i e_i^{M*}}, \tag{10c}
\]

\[
t_i^{MD} = H^* \eta_{id} + \omega H^* \eta_{iw}, \tag{10b}
\]

\[
t_i^{MD*} = H^* \eta_{id} + \omega^* H^* \eta_{iw}. \tag{10d}
\]

Comparing with \( t_i^{BR} \) and \( t_i^{BR*} \), \( t_i^{MD} \) of equation (10b) and \( t_i^{MD*} \) of equation (10d) have additional positive terms of cross-border externalities to the trading partner country, with a weight of \( \omega \) and \( \omega^* \), in order to internalize them partially. Therefore \( t_i^{MD} > t_i^{BR} \) and \( t_i^{MD*} > t_i^{BR*} \) are always satisfied. As for trade policies, \( \tau_i^{MD} \) of equation (10a) and \( \tau_i^{MD*} \) of equation (10c) have three terms. The first terms, \( p_{M_i}/e_i^{M*} \) and \( p_{M_i}/e_i^{M} \), represent optimal tariffs, with a weight of \( (1 - \omega) \) and \( (1 - \omega^*) \). The second terms, \( \tau_i^* \) and \( \tau_i \), are trading partner country’s tariff, which reflects a Pareto-efficient condition, with a weight of \( \omega \) and \( \omega^* \). The last terms represent the partial international substitutability between trade and domestic policies which arise from mutually taking the other country’s welfare into consideration when each RP decides its policies under multilateral lobbying.

Let’s take a close look at the third term of the right hand of equation (10a), for example, to see how multilateral political donations have home RP replace home trade policy with foreign domestic policy to cope with nonpecuniary cross-border externality arising from the foreign country. Foreign RP levies higher production tax on good \( i \) in the case of multilateral political donations, \( t_i^{MD*} \), than that in the case of no donations, \( t_i^{BR*} \), by \( \omega^* H^* \eta_{iw} \), in order to reduce negative externality from foreign domain to home country. Levying \( t_i^{MD*} \), however, makes the production of good \( i \) in foreign country smaller than the optimal level for the maximization of foreign country’s national welfare \( W^* \). Home RP realizes this situation through cross-border donations from foreign country, and reduces its tariff on good \( i \), \( \tau_i^{MD} \), in order to boost the international price and make foreign country increase its production. Since \( e_i^{y*}/m_i e_i^{M*} < 0 \) is always satisfied, as \( \omega^* \) increases, so the value of the third term decreases, through the increase of \( \tau_i^{MD*} \). Also, as \( \omega \) increases, so the value of the third term decreases, since \( t_i^* > H^* \eta_{iw}^* \) from equation (10d). Or, by simply substituting equation (10d) into the third term of the right hand of equation (10a) to have \( (\omega \omega^* - 1)e_i^{y*}/m_i e_i^{M*} \), we see that the increase of \( \omega \) and/or \( \omega^* \) decreases the value of this term, and that of \( \tau_i^{MD} \). It implies that the more weight each RP puts on cross-border political donations, the more it has the incen-

\[13) \text{See appendix D for derivation of these results.}\]
tive to decrease its trade taxes.

It is straightforward to see that when \( \omega = \omega^* = 1 \), that is, each RP values the sum of domestic components and foreign component in its objective function with the same weight \( (1 + \alpha = \beta) \), four first-order conditions in the case of multilateral political donation become those for the maximization of world welfare, that is, for Pareto-efficient policies: \( W_t + W^*_t = 0, W^*_t + W^*_t = 0, W^*_t + W^*_t = 0 \), and \( W^*_t + W^*_t = 0 \). Naturally, substitute \( \omega = \omega^* = 1 \) into equations (10a) – (10d) then we see all \( t_{MD}, t_{MD^*} \), and \( t_{MD^*} \) equal to the condition of Pareto-efficient policies described at the end of Section 2. This leads us to the following statement.

Result 1. Under Assumptions 1, 2, and 3, each country chooses Pareto-efficient trade and domestic policies if and only if \( \omega = \omega^* = 1 \).

4. International SIGs

The role of international SIGs, organized by some SIGs in different countries, in determining trade and domestic policies in the Grossman-Helpman model was originally examined by Conconi (2003). We analyze the effect of forming international SIGs in the context of my model as follows. Some home and foreign SIGs form an international coalition and aim at maximizing an unweighted sum of their welfare by giving political contributions to both the home and foreign countries. There are \( K^{**} \) international SIGs in the world, and the welfare of the \( j^{**} \)-th international SIG is \( W^{**}(\tau, t, t^*) \), \( j^{**} = 1, 2, \ldots, K^{**} \). Here we conduct our analysis in a political environment similar to that in the case of multilateral political donations and accept the following three assumptions: Assumptions 1 and 2, and

Assumption 4. All national SIGs belongs to one International SIG, and all International SIGs make donations to both home and foreign RPs.

These assumptions assure that all individuals can express their preference to both home and foreign RPs correctly through their political donations.

Each international SIG designs its donation to home and foreign RPs. The decision-making process is the same as that in the previous section. First, each international SIG chooses its contract schedules to home and foreign RPs, simultaneously and noncooperatively. Contribution schedules of \( j^{**} \)-th international SIG to home and foreign RPs are \( C^{H^{**}}(\tau, t) \) and \( C^{F^{**}}(\tau^*, t^*) \), respectively. They are observable to any SIGs, just as in the previous section. Second, after accepting the international SIGs’ offer, home RP and foreign RP choose \( (\tau, t) \) and \( (\tau^*, t^*) \), respectively, in order to maximize the following objective functions:

\[
G^{IG}(\tau, t; \tau^*, t^*) \equiv W(\tau, t, \tau^*, t^*) + \gamma \sum_{j^{**}=1}^{K^{**}} C^{H^{**}}(\tau, t),
\]

\[
G^{IG^*}(\tau^*, t^*; \tau, t) \equiv W^*(\tau, t, \tau^*, t^*) + \gamma^* \sum_{j^{**}=1}^{K^{**}} C^{F^{**}}(\tau^*, t^*),
\]

(11a) (11b)
where $\gamma$ and $\gamma^*$ are the home and foreign RPs’ weights on donations from international SIGs, respectively, and both are positive.

After solving this game in the same way as the case of multilateral political donations, we have the first-order conditions for maximizing of $G^t_{IG}$ and $G^t_{IG^*}$ as $W_t + \psi W^*_t = 0$, $W^*_t + \psi^* W^*_t = 0$, and $W^*_t + \psi W^*_t = 0$, where $\psi = \gamma/(1 + \gamma)$ and $\psi^* = \gamma^*/(1 + \gamma^*)$.\(^{14}\)

Therefore, formulae for best-reaction functions of home and foreign policies in the case of international SIGs, $t^t_{IG}$, $t^t_{IG^*}$, and $t^t_{IG^*}$, are the same as $t^t_{MD}$, $t^t_{MD^*}$ and $t^t_{MD^*}$, respectively, except that $\omega$ and $\omega^*$ in equations (10a) - (10b) are replaced by $\psi$ and $\psi^*$. If $\gamma \to \infty$ ($\gamma^* \to \infty$), that is, when home (foreign) RP does not care less for its gross domestic welfare, then $\psi \to 1$ ($\psi^* \to 1$), and the same argument as the case of $\psi = \psi^* = 1$ holds asymptotically. This leads us to the following statement.

Result 2. Under Assumptions 1, 2, and 4, each country chooses Pareto-efficient trade and domestic policies when $\psi \to 1$ and $\psi^* \to 1$.

5. Conclusions and policy implications

Legitimization of foreign political donations and the acceptance of donations from international SIGs have little difference from the point of view that one country’s residents could use them to transmit directly their preferences on other countries’ policy decisions to their RPs, though the former is quite contrary to the current political trend. This paper presents a model to deal with both of them in a similar manner. It examines the characteristics of equilibrium economic policies, and clarifies the conditions in which multilateral political donations and international SIGs would help RPs to employ Pareto-efficient policies, in the situation that two countries have two policy tools, trade policy to cope with the terms-of-trade effect and domestic policy to handle nonpecuniary externality of production, and there is partial substitutability between them. The analysis shows that Pareto-efficient policies are adopted by RPs where externalities are completely internalized when each RP treats the sum of cross-border donations and the sum of domestic welfare and domestic donations alike in its objective function in the case of multilateral political donations, and when each RP only considers the sum of donations as the component of its objective function in the case of international special interest groups, under the conditions that all individuals in each country participate in the competition of lobbying activities by means of truthful multilateral donations, and that contribution schedules are observable to anyone regardless of nationality. This implies that foreign influences on RPs through donations from foreign SIGs or from international SIGs are not harmful per se for the formation of cooperative economic policies.\(^{15}\)

Observing the reasons for banning contributions from foreign sources in each country, we can summarize that the fear of losing national sovereignty and the right to political

\(^{14}\) See appendix E for derivation of these results.

\(^{15}\) This paper focuses on the Pareto-efficiency of policies. The choice of Pareto-efficient tariffs $(t^t_{PE}, t^{t*}_{PE})$ which would be Pareto-improving for all countries is beyond the scope of this paper, though it is an important subject in order to convert efficiently the potential benefit of multilateral lobbying into an actual benefit for each country.
self-determination lays the ground for the hostility. In the U.K., the ban on donations from abroad was embodied in 2000 after the controversy over foreign donations to Britain’s parties, especially to the Conservative Party. The report of the Committee on Standards in Public Life (Committee on Standards in Public Life, the U.K., 1998) listed some arguments concerning pros and cons of foreign donations, and the first-mentioned reason against them is that since political parties are involved in the domestic process taking place within the U.K., political parties should be confined to seeking financial support from those entitled to vote for them. In Singapore, which banned foreign donations in 2001, the Minister of Home Affairs uttered clearly the concern about foreign interference in a parliament speech on 22 May 2000: “Any Singaporean or organisation that allows himself or itself to be used by foreign elements, or collaborates or colludes with them to interfere in our internal affairs, is subverting the independence, integrity and sovereignty of the country. We must not allow this to happen. Politics in Singapore should be for Singaporeans only.”

Also, Austin and Tjernström (2003) mention that in Central and Eastern Europe, because of recent severe political disputes concerning territorial boundaries and citizenship, most of the post-communist countries are sensitive to external political influence, and that is why most of them have regulations of partial or complete ban on foreign contributions.

Despite these negative political attitudes toward foreign political donations, they potentially have a function to promote international policy cooperation in two ways, as donations from international SIGs have. First, natural and juridical persons in a country could use their donations to other countries’ RPs as tools to wield their influence on RPs directly, which would promote efficiency of policy formation. Second, the RPs of countries that are recipients of political contributions would take into account the impact of their policy on other countries’ residents, which would make them more sensitive to other countries’ welfare and, therefore, more cooperative with others. I also prove in this paper that these two benefits of international lobbying activities would help internalize the externalities arising from economic activities in each country, by replacing trade policy with domestic policy to handle externalities. In this sense, free international lobbying activities serve well as a catalyst for achieving a less-distorted world economy.

There are two main caveats concerning the policy implications of the model’s results. First, the conditions under which Pareto-efficient policies are adopted by RPs are too restrictive and hard to accept for citizens, especially the condition that each RP does not consider domestic welfare as the component of its objective function in the case of international special interest groups. Examination of the conditions which are less restrictive and more acceptable, as well as easier to institute in order to create a more cooperative and efficient world economy will be the target of further research. Second, more substantially, the model shows that for each RP not accepting political donations of international lobbying activities is the dominant strategy of a game whereby each RP independently chooses whether to accept them or not. That is, one RP does not have a unilateral incentive to accept donations of international lobbying regardless of whether other RP accepts them or not. If RPs were cooperative enough to both accept international donations so as to achieve globally efficient

16) Quoted from the website of the Ministry of Home Affairs, Republic of Singapore, available at http://www.mha.gov.sg/basic_content.aspx?pageid=66 [Accessed May 19, 2013].
tariffs, they could resolve the original prisoners’ dilemma problem of tariff setting to begin with.\(^{17}\) This characteristic makes the model hard to apply empirical analysis to, which interprets why accepting foreign donations is legal for some existing countries and is illegal for some others.

Appendix A: Derivation of best-response functions for home and foreign policies in the case of no donations

The unilaterally optimal trade and domestic policies on good \(i\) for home country satisfy the following first-order conditions with respect to \(\tau_i\) and \(t_i\): \(W_i^* \equiv \partial W / \partial \tau_i = 0\) and \(W_t^* \equiv \partial W / \partial t_i = 0\), where

\[
\frac{\partial W_t^*}{\partial \tau_i} = M_i \phi_i - \frac{\partial M_i^*}{\partial \tau_i} + t_i \frac{\partial Y_i^*}{\partial \tau_i} (1 - \phi_i) - H \left[ \eta_{id} \frac{\partial Y_i}{\partial \tau_i} (1 - \phi_i) - \eta_{ic} \frac{\partial Y_i^*}{\partial \tau_i} \phi_i \right], \tag{A.1}
\]

and \(\phi_i = -\partial p_{iv} / \partial \tau_i, \delta_i = \partial p_{iv} / \partial t_i, \phi_i \neq \delta_i\). Solving \(W_t^* = 0\) and \(W_t^* = 0\) for best-response functions on good \(i\), \(\tau_i^{BR}\) and \(t_i^{BR}\), using equation (3) and its partial derivatives with respect to \(\tau_i\) and \(t_i\), that is,

\[
\frac{\partial M_i}{\partial \tau_i} + \frac{\partial M_i^*}{\partial \tau_i} = 0, \quad \text{or} \quad \left( \frac{\partial D_i^*}{\partial \phi_i} - \frac{\partial Y_i^*}{\partial \phi_i} \right) (1 - \phi_i) - \left( \frac{\partial D_i}{\partial \phi_i} - \frac{\partial Y_i}{\partial \phi_i} \right) \phi_i = 0, \tag{A.3}
\]

\[
\frac{\partial M_i}{\partial t_i} + \frac{\partial M_i^*}{\partial t_i} = 0, \quad \text{or} \quad \left( \frac{\partial D_i}{\partial \delta_i} - \frac{\partial Y_i}{\partial \delta_i} (\delta_i - 1) \right) + \left( \frac{\partial D_i^*}{\partial \delta_i} - \frac{\partial Y_i^*}{\partial \delta_i} \right) \delta_i = 0, \tag{A.4}
\]

respectively, yields \(\tau_i^{BR} = \left( p_{iv} / \phi_i^* \right) - \left( H \eta_{id} e_i^{y*} / \phi_i^* m_i^* \right)\) and \(t_i^{BR} = H \eta_{id}\). The derivation of foreign best-response functions is found similarly.

Appendix B: Derivation of Pareto-efficient trade and domestic policies

Trade policy on good \(i\) in home country is Pareto-efficient when it satisfies the first-order condition of maximizing world welfare with respect to \(\tau_i\), \(W_t^* + W_t^* = 0\), where \(W_t^* \equiv \partial W / \partial \tau_i\) in equation (A.1) and \(W_t^* \equiv \partial W / \partial \tau_i\),

\[
\frac{\partial W^*}{\partial \tau_i} = M_i \phi_i - t_i \left( \frac{\partial D_i^*}{\partial \phi_i} - \frac{\partial Y_i^*}{\partial \phi_i} \right) \phi_i - \tau_i \left( \frac{\partial D_i}{\partial \phi_i} - \frac{\partial Y_i}{\partial \phi_i} \right) \phi_i - H \left[ \eta_{id} \frac{\partial Y_i}{\partial \tau_i} (1 - \phi_i) - \eta_{id} \frac{\partial Y_i^*}{\partial \tau_i} \phi_i \right]. \tag{A.5}
\]

Substituting equations (3) and (A.3), the first-order condition can be rewritten as:

\[
W_t^* + W_t^* = 0 : \frac{\partial M_i^*}{\partial \tau_i} \Omega_1 + \frac{\partial Y_i^*}{\partial \phi_i} (1 - \phi_i) \Omega_2 - \frac{\partial Y_i^*}{\partial \phi_i} \phi \Omega_3 = 0, \tag{A.6}
\]

\(^{17}\) I would like to express my gratitude to a referee of this paper for indicating this aspect of the results.
where \( \Omega_1 = \tau_i - \tau_i^* \), \( \Omega_2 = t_i - H \eta_{id} - H^* \eta_{ic}^* \), and \( \Omega_3 = t_i^* - H^* \eta_{id}^* - H \eta_{ic}^* \).

Similarly, first-order conditions of maximizing world welfare with respect to domestic policy in home country \( (t_i) \), trade policy in foreign country \( (\tau_i^*) \), and domestic policy in foreign country \( (t_i^*) \) are derived as follows:

\[
W_i^t + W_i^q = 0 : \frac{\partial M_i}{\partial t_i} \Omega_1 - \frac{\partial Y^t}{\partial p_{tu}} (1 - \delta_1) \Omega_2 + \frac{\partial Y^t}{\partial p_{tu}} \delta_1 \Omega_3 = 0, \tag{A.7}
\]

\[
W_i^t + W_i^q = 0 : \frac{\partial M_i}{\partial \tau_i^*} \Omega_1 - \frac{\partial Y^t}{\partial p_{tu}} \phi_i^* \Omega_2 + \frac{\partial Y^t}{\partial p_{tu}} (1 - \phi_i^*) \Omega_3 = 0, \tag{A.8}
\]

\[
W_i^t + W_i^q = 0 : \frac{\partial M_i}{\partial t_i^*} \Omega_1 - \frac{\partial Y^t}{\partial p_{tu}} \delta_i^* \Omega_2 - \frac{\partial Y^t}{\partial p_{tu}} (1 - \delta_i^*) \Omega_3 = 0, \tag{A.9}
\]

where \( \phi_i^* = \frac{\partial p_{tu}}{\partial \tau_i} \) and \( \delta_i^* = \frac{\partial p_{tu}}{\partial \tau_i} \), \( \phi_i^* \neq \delta_i^* \). Solving any three of equations (A.6)–(A.9) yields conditions for Pareto-efficient trade and domestic policies: \( (\tau_i^*, \tau_i^*) \) is any set of \( \tau_i \) and \( \tau_i^* \) which satisfies \( \tau_i = \tau_i^*, \tau_i^* = H \eta_{id} + H^* \eta_{hc}, \) and \( t_i^* = H \eta_{id} + H^* \eta_{ic} \).

Appendix C: Derivation of equations (9a) and (9b)

Since \( \tau_i^{BR} \) is a function of \( t_i, \tau_i^* \), and \( t_i^* \) through \( p_{tu}, \epsilon_i, \epsilon_i^*, \) and \( m_i^* \), and \( \tau_i^{BR} \) is common knowledge, each SIG predicts correctly how the shift of \( \tau_i, \tau_i^* \), and \( t_i^* \) by political contributions have home RP change \( \tau_i \) along its best-reaction function \( \tau_i^{BR} \). These effects are expressed as \( (d \tau_i / dt_i)|_{BR}, (d \tau_i / d \tau_i^*)|_{BR}, \) and \( (d \tau_i / d t_i^*)|_{BR} \), respectively. Similarly, \( (d \tau_i^* / d t_i)|_{BR}, (d \tau_i^* / d \tau_i)|_{BR}, \) and \( (d \tau_i^* / d t_i)|_{BR} \) represent how the shift of \( \tau_i, t_i, \) and \( t_i^* \) have foreign RP change \( \tau_i^* \) along its best-reaction function \( \tau_i^{BR*} \). In addition, \( t_i^{BR} \) and \( t_i^{BR*} \) are independent of any other policies. With these in mind, differentiating equation (8a) with respect to \( \tau_i, t_i, \tau_i^* \), and \( t_i^* \), and we have the following conditions which are satisfied for SIGs in truthful equilibrium of contract offers.

\[
C_{ti}^{t, t} + C_{ti}^{q, t} \frac{d \tau_i^*}{dt_i^{BR}} = W_i^t + W_i^q \frac{d \tau_i^*}{dt_i^{BR}}, \tag{A.10}
\]

\[
C_{ti}^{t, t} \frac{d \tau_i}{dt_i^{BR}} + C_{ti}^{q, t} \frac{d \tau_i^*}{dt_i^{BR}} = W_i^t \frac{d \tau_i}{dt_i^{BR}} + W_i^q \frac{d \tau_i^*}{dt_i^{BR}}, \tag{A.11}
\]

\[
C_{ti}^{t, t} \frac{d \tau_i}{dt_i^{BR}} + C_{ti}^{q, t} \frac{d \tau_i^*}{dt_i^{BR}} = W_i^t \frac{d \tau_i}{dt_i^{BR}} + W_i^q \frac{d \tau_i^*}{dt_i^{BR}} + W_i^j \frac{d \tau_i}{dt_i^{BR}}, \tag{A.12}
\]

\[
C_{ti}^{t, t} \frac{d \tau_i}{dt_i^{BR}} + C_{ti}^{q, t} \frac{d \tau_i^*}{dt_i^{BR}} + C_{ti}^{q, t} \frac{d \tau_i}{dt_i^{BR}} = W_i^t \frac{d \tau_i}{dt_i^{BR}} + W_i^q \frac{d \tau_i^*}{dt_i^{BR}} + W_i^j \frac{d \tau_i}{dt_i^{BR}} + W_i^j \frac{d \tau_i}{dt_i^{BR}}. \tag{A.13}
\]

Solving equations (A.10) to (A.13) produces equation (9a) immediately. The derivation of equation (9b) is exactly analogous to the above.
Appendix D: Derivation of best-response functions for home and foreign policies in the case of multilateral lobbying

The first-order condition for \( t_i \) and \( t_i^* \) in this case is as follows:

\[
W_{t_i} + \omega W_{t_i^*} = 0 : (1 - \omega) M_i^* \phi_i + \frac{\partial M_i^*}{\partial t_i} \left( t_i - \omega t_i^* \right) - \frac{\partial Y_i}{\partial p_i} \left( 1 - \phi_i \right) \left( t_i - H \eta_{id} - \omega H^* \eta_{ic} \right) + \frac{\partial Y_i^*}{\partial p_i} \phi_i \left( \omega t_i^* - \omega H^* \eta_{id}^* - H \eta_{ic} \right) = 0
\]  

(A.14)

\[
W_{t_i} + \omega W_{t_i^*} = 0 : (1 - \omega) M_i^* \phi_i - \frac{\partial M_i^*}{\partial t_i} \left( t_i - \omega t_i^* \right) + \frac{\partial Y_i}{\partial p_i} \left( \delta_i - 1 \right) \left( t_i - H \eta_{id} - \omega H^* \eta_{ic}^* \right) + \frac{\partial Y_i^*}{\partial p_i} \phi_i \left( \omega t_i^* - \omega H^* \eta_{id}^* - H \eta_{ic} \right) = 0
\]  

(A.15)

Substituting equation (A.14) into equation (A.15) and using equations (3), (A.3), and (A.4), we have \( t_{MD}^i = H \eta_{id} + \omega H^* \eta_{ic}^* \). Next, substitute it into equations (A.14) or (A.15) and rearrange it, then we have \( t_{MD}^i = \left( 1 - \omega \right) \rho_{iw} / \varepsilon_{i}^{M^*} + \omega \tau_i^* + \left( \omega t_i^* - \omega H^* \eta_{id}^* - H \eta_{ic} \right) \varepsilon_{i}^{M^*} / m_i \varepsilon_i^{M^*} \). The derivation of \( t_{MD}^i \) and \( \tau_i^* \) is found similarly.

Appendix E: Derivation of first-order conditions for maximization of objective functions for home and foreign RPs in the case of international SIGs

Differentiation of equation (11a) with respect to \( t_i \) and \( t_i^* \), and that of equation (11b) with respect to \( t_i^* \) and \( t_i^* \), create the first-order conditions for maximization of objective functions for the home RP as equations (A.16a), and for the foreign RP as equations (A.16b), respectively.

\[
G_{t_i}^{IG} \equiv W_{t_i} + \gamma \sum_{j^* = 1}^{K^*} C_{t_i}^{IJ^{**}} = 0, \quad G_{t_i^*}^{IG} \equiv W_{t_i^*} + \gamma \sum_{j^* = 1}^{K^*} C_{t_i^*}^{IJ^{**}} = 0, \quad (A.16a)
\]

\[
G_{t_i}^{IG} \equiv W_{t_i} + \gamma \sum_{j^* = 1}^{K^*} C_{t_i}^{Fj^{**}} = 0, \quad G_{t_i^*}^{IG} \equiv W_{t_i^*} + \gamma \sum_{j^* = 1}^{K^*} C_{t_i^*}^{Fj^{**}} = 0. \quad (A.16b)
\]

The condition of truthful equilibrium for \( j^* \)-th international SIG is

\[
C_{t_i}^{IJ^{**}} (\tau_i, t_i) + C_{t_i^*}^{Fj^{**}} (\tau_i^*, \tau_i^*) = W_{t_i}^{***} (\tau_i, t_i, \tau_i^*, \tau_i^*) - W_{t_i}^{***}, \quad (A.17)
\]

where \( W_{t_i}^{***} \) is the level of \( j^* \)-th international SIG’s welfare anchor. Define \( W_{t_i}^{***} (\tau_i, t_i, \tau_i^* \tau_i^*) \equiv W_{t_i}^{***} (\tau_i, t_i, \tau_i^* \tau_i^*) + W_{t_i^*}^{***} (\tau_i, t_i, \tau_i^* \tau_i^*) \), where \( W_{t_i}^{***} (\tau_i, t_i, \tau_i^* \tau_i^*) \) is the sum of welfare of home national SIGs which belong to \( j^* \)-th international SIG, and \( W_{t_i^*}^{***} (\tau_i, t_i, \tau_i^* \tau_i^*) \) is the sum of welfare of foreign national SIGs which belong to \( j^* \)-th international SIG. Differentiating equation (A.17) with respect to \( \tau_i, t_i, \tau_i^* \), and \( \tau_i^* \), and solve as appendix C to have
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\[ C_{ij} = W_{ij}, \quad C^{Jij} = W^{*ij}, \quad C^{Aij} = W^{**ij}, \quad C_{ij}^{A} = W_{ij}^{**}, \]

where
\[ W_{ij}^{**} = W_{ij}^{*} + W_{ij}, \quad W_{ij}^{**} = W_{ij}^{*} + W_{ij}, \quad W_{ij}^{**} = W_{ij}^{*} + W_{ij}, \quad \text{and } W_{ij}^{**} = W_{ij}^{*} + W_{ij}^{*}. \]

Naturally,
\[ W_{ij} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij} = \sum_{j=1}^{K} W_{ij}^{*}. \]
\[ W_{ij}^{*} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij}^{*} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij}^{*} = \sum_{j=1}^{K} W_{ij}^{*}, \quad W_{ij}^{*} = \sum_{j=1}^{K} W_{ij}^{*}. \]

Substitute equations (A.18) into equations (A.16a) and (A.16b), with considering equations (A.19a) and (A.19b), then we have \( W_{ij} + \psi W_{ij}^{*} = 0 \), \( W_{ij} + \psi W_{ij}^{*} = 0 \), \( W_{ij}^{*} + \psi W_{ij}^{*} = 0 \), and \( W_{ij}^{*} + \psi W_{ij}^{*} = 0 \), where \( \psi = y / (1 + \gamma) \) and \( \psi^{*} = y^{*} / (1 + \gamma^{*}) \).

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