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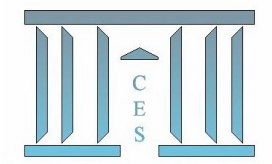

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Abstract

Firms are actively involved in the formation of policies. So far, the literature has focused on the relationship between exposure to the competition and the level of protection. The ability of lobbies to achieve a more favorable policy is then directly related to the reaction of their welfare to the policy. This monotonic relationship contradicts the idea that all lobbies do not have the same efficiency. Indeed, this efficiency cannot be uniquely driven by the exposure to competition. This paper proposes an original approach of the lobbying activity taking into account that lobbies' efficiency is heterogeneous. Just as there are some skilled and unskilled cards players. This paper highlights two types of efficiency, the passive and the active. First, according to the sensitivity of the government to the policy, two lobbies equally affected by the policy may pay different contributions to obtain the same protection level. Second, if the active efficiency is introduced, then two lobbies exhibiting the same sensitivity to the policy may obtain two different equilibrium policies.

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1 Introduction

Standard endogenous protection models are equivalent to adding a weight higher than one to the domestic producer surplus of organized sectors in domestic government's objective functions (See Bagwell and Staiger, 2001, for instance). As foreign producer surplus are logically not part of the host government objective, foreign lobbies have necessarily a lower influence on domestic policies than their domestic counterparts. This contradicts recent empirical findings. For instance, Desbordes and Vauday (2007) show that foreign multinational entreprises (MNE) are more influent than pure domestic firms and that they are as influent than domestic MNE on a large sample of developing countries. Another consequence of this formalization is that among the organized sectors, the relationship between exposure to imports and protection is monotonic. The higher the effect of the trade policy on the sectors' welfare, the higher the level of protection of this sector. This would then imply that the efficiency of lobbying has nothing to do with the protection level each lobby obtains. Yet, the lobbying activity may yield various degrees of success that could depend on the strategy a lobbyist has for instance. Subtleties that may not be captured when assuming that the effect of lobbies on their protection is equal to the effect the trade policy has on its welfare. These two aspects suggest that lobbying efficiency is heterogeneous.

Beyond simply considering that weights are exogenously given as heterogeneous, this paper develops a model with endogenous heterogeneity of lobbying efficiency. The seminal work of Grossman and Helpman (1994)[1] helps to illustrate the now well known effects due to the political relationship at work when determining the protection level. The government's taste for private gains opens the door to firms asking for protection. Through the payment of contributions to the government, import competed firms obtain a higher tariff. Similarly, export oriented firms pay for higher subsidies. The truthful equilibrium (Bernheim and Whinston, 1986) they describe increases the weight organized lobbies have on the decision. The optimal policy (the protection) they derive is then increasing in the inverse import ratio (in the case of a tariff). Imai *et al.*

[1]The abbreviation G & H 94 will be used instead of the full names and year.

(2008) propose to estimate directly this relationship and find no evidence that the Protection For Sale (PFS) model predicts accurately the political equilibrium in the US. Despite their results, as they put it, should be interpreted carefully, there seems to have a non monotonic relationship between the inverse import ratio and the protection. In fact, these results do not refute that most exposed sectors obtain a higher protection. They simply "observe" this is not the case. I argue that these results, combined with the observation that apparently disadvantaged lobbies such that foreign ones can achieve a greater influence, are due to a heterogeneity in efficiency (or experience) of the lobbying activity. Moreover, it seems logical to assume that what could make the difference between lobbies and thereby what represents the efficiency is that the offer lobbies make to the government may affect the final contribution level they pay. This has the strong advantage to represent a very general view of this strategic aspect since it does not require any additional assumption on the way the offer influences the contribution level.

A strategic lobbying should differentiate the ability of two lobbies similarly affected by a trade policy to obtain the policy they wish. Hence, the variable this paper considers as the means to achieve greater influence is the contribution schedule. The lobbies' welfare maximization yields an optimal contribution schedule that is taken into account by the government when setting the trade policy. I propose two complementary effects. First, the offer of the lobbies is assumed to influence the contribution they will pay only through the effect the offer has on the government policy choice; the influence is then *indirect or passive*. In that case, the result of G & H 94 holds. Second, I intend to encompass the role of the heterogeneity in lobbying efficiency. Being more efficient means that two strictly equivalent lobbies in terms of gross of contribution welfare may not have the same success in a political relationship with a government. Then the offer a lobby makes influences *indirectly and directly* the contribution it will pay. This active efficiency induces the equilibrium policy to also depend on the government's objective function characteristics.

First, the relationship between firms[2] and the government yields an "independently" designed contribution schedule, which impacts the lobbies' power over the decision of the government.

[2]The words firm and lobby will be used interchangeably. Indeed, the share of the population the lobbies represent is assumed to be negligible.

The resulting equilibrium trade policy depends on the sensitivities of the lobbies *and* of the government to the trade policy. I find that Pure Domestic firms pay less than all other types of firm in order to obtain the truthful level of protection. MNE's face the opposed situation. This result contrasts sharply with the previous results in this literature and is consistent with the idea that a same trade policy can be derived from firm influence or from the sensitivity of the government to firms profits, that is the passive efficiency. This first result highlights a first aspect of heterogeneity since the truthful level of protection may be obtained more or less easily. Two similar lobbies for which the effect of the policy is the same (i.e they obtain strictly the same truthful policy) may pay different contributions.

Second, using the fact the contribution schedule is the endogenous variable, I introduce the endogenous lobbying efficiency. It results that not only the contribution schedules are affected but also the level of optimal policy. This level is, all else equal, lower than its truthful value in a Large Open Economy and higher in a Small Open Economy. Moreover, despite MNE's are very unfavored since they have to pay relatively more than other firms, they may obtain a better policy than other firms through the strategic lobbying in a Large Open Economy. Hence, to sum up, this paper first highlights the heterogeneity in efficiency in order to obtain a given policy, namely the truthful one. Then it shows that heterogeneity in efficiency also yields different policy levels. This suggests that lobbying activity is not as simple as an auction.

The remaining of the paper is organized as follows. Section 2 develops the general framework. Section 3 exposes the result linked to a non strategic offer. This offer become strategic in section 4 and a comparison with the G & H 94 outcome is proposed in section 5. The last section briefly discusses the results and concludes.

2 General framework

The common agency framework of G & H 94 involves a kind of cooperation between firms and the government as the latter sets the trade policy independently of the efficiency of the lobbies influence. The truthful equilibrium developed by Bernheim and Whinston (1986) explains this

mechanism: the government acts as an auctioneer to sale protection. This menu auction induces lobbies to design a contribution schedule that reflects truthfully the effect of the trade policy on their welfare which is mainly driven by imports competition. That is, lobbies maximize their net welfare with respect to the trade policy and this yields the shape of the contribution schedule. The equilibrium trade policy is obtained through the maximization of the joint welfare of the lobbies and the government. In this model, lobbies correspond then to multiple principals and the government to the agent of a common agency type framework.

The effect of the lobbies on the equilibrium policy with influence in G & H 94 is neither driven by the efficiency of Special Interest Group (SIG) nor by the maximization program of the government. In a sub-games perfect Nash equilibrium, these two effects are present when there is no cooperation between the government and the lobbies. In G & H 94, since lobbies and the government have the same strategic variable (the tariff) and since the government is the actor that chooses the trade policy, cooperation with the agent is necessary. This cooperation concretises in the equilibrium where the welfare of the lobbies and of government are jointly maximized with respect to the tariff. As Goldberg and Maggi (1999) explained, the "menu auction" set-up of G & H 94 indeed yields the same equilibrium output than a Nash bargaining game.

The form we adopt in this paper is a sub-game perfect Nash equilibrium. At the first stage, by maximizing their welfare with respect to the contribution schedule lobbies design a contribution schedule which represents the offer they make to the government. The latter then chooses the optimal policy in the second stage. Finally, in the third stage which is let implicit, firms compete.

As in Ornelas (2005), lobbies are assumed to represent a negligible share of the population. Hence lobbies are only composed by firms. Therefore, there are no strategic interactions between lobbies through the consumer surplus of the lobby members. This implies that an action of a lobby does not directly diminish the welfare of the other lobbies. In addition, I keep from adopting one particular type of competition. Depending on the studied subject, it is more useful to adopt price competition as in Bagwell and Staiger (1999), where they study competition between countries at the GATT tariffs negotiations, or quantity competition as in Ornelas (2005)

who studies the strategic implementation of Free Trade Areas (Henceforth FTA) or monopolistic competition as in Rebeyrol and Vauday (2008) who develop a political economy framework on regulation adoption.

The present paper is based on the more possible general framework. The idea is to simply consider the various actors and the effects the policy may have on their welfare. As a consequence, I will present each actor involved in the game and the possibilities this paper encompasses. In the remaining, I will focus on the case of a trade policy. However, this framework would perfectly apply to other problematics in political economy. The unique requirement is to know (or assume) the effects the studied policy may have on the welfare of the different actors of the game. The following presents some stylized representations.

2.1 Firms

Firms can have various reactions with respect to the trade policy, depending on their status. Generally, the welfare of a firm is equal to $W_i = \Pi_i - C_i$, where Π_i is the profit of firm i and C_i, the contribution she pays to the government.

2.1.1 Pure Domestic Firms

Pure Domestic Firms are defined as firms that uniquely operate on the domestic market. The theory as well as the empirical works have proven that these types of firms are always interested in an increase in the protection (See Grossman and Helpman, 1994; Bagwell and Staiger, 1999, for instance). However, we will differentiate two types of Pure Domestic Firms. First, the Pure Domestic Firms, simply, that are indeed interested in a raise of protection, but the effect of this increase is marginally decreasing. As a consequence, their profit function, with respect to the trade policy, is what we label a square-root type function, that is concave and increasing. These firms are labeled PD.

The other category of Pure domestic firms gathers firms highly exposed to imports or in danger, they are therefore labeled PDID (Pure Domestic firms In Danger). Therefore, we assume

these firms have a marginal effect of a raise in the protection that is increasing. This is aimed to represent the idea that a small tariff is not enough to have a large effect on their profits. Their profit has therefore the form of a skyrocket or exponential function, that is convex and increasing.

2.1.2 Multinational Firms

These firms, by definition, operate in at least one other country. The literature has also provided strong support that a protectionist measure will probably generate a retaliation by commercial partners. Hence, a Multinationale may be interested in an increase in the protection up to a threshold. From this threshold, its profit may decrease because of possible retaliations abroad. Hence, the profit functions of these firms, labeled MNE, have the form of an inverted U-shape function.

We distinguish here another type of MNE. This category gathers MNE that have so large interests in other countries that their profits decrease if a protection is set. This could also be understand as Foreign Multinational (As in Desbordes and Vauday, 2007). Therefore, this last type of firms labeled VLMNE (Very Large Multinational) exhibits profit functions that have the form of a one over square-root function. Obviously, this last type has a reason to exist uniquely in a Large Open Economy. It has no interest to be protected, the eventual political game will then occur in order to circumvent the government's willingness to implement the protection. As the welfare of VLMNE is strongly decreasing, this would occur in a Large Open Economy where the consumers and the trade policy revenues depend (strongly) positively on the trade policy.[3]

2.2 Social Welfare

The social welfare has the following form

$$W = CS + \lambda \sum \Pi_i + T_i \tag{1}$$

[3]Otherwise, the equilibrium does not exist.

where CS is the consumer surplus, $\sum \lambda \Pi_i$, the producer surplus and T denotes the trade policy revenues, that may either be positive or negative depending on the type of policy instrument (e.g a subsidy or a tariff).

The theory of the optimal tariff, initiated by Bickerdicke (1907) and Johnson (1953-1954), suggests that a large country may transfer a part of the distortions induced by its protection policy to the rest of the world through its effect on the world prices. Hence, a large open economy may tolerate a positive optimal tariff for instance. This type of economy, labeled LOE, has then a welfare function that has the form of an inverted U-shape curve.

To the contrary, a small open economy (SOE) has no social incentive to implement a tariff. Since its social optimal policy is free trade, its welfare function has the form of one over square-root curve.

2.3 Government Objective function

The government has a linear benthamite objective function given by

$$G = W + \alpha \sum_{i=1}^{N} C_i(\tau) \tag{2}$$

where W represents aggregate, gross-of-contribution welfare. C_i represents the contribution paid by firm i to obtain the most favorable policy. The parameter α_i represents the relative weight of the contribution in the welfare. In this paper, one should precisely assume that α_i measures the preference of the government for private revenues since the lobbying efficiency will be determined endogenously. This parameter can be compared to the coefficient a in G & H (94).[4]

In a locally truthful framework, around the equilibrium, we have $\frac{\partial W_i}{\partial \tau_i} = \frac{\partial C_i}{\partial \tau_i}$. This corresponds to a locally truthful equilibrium. Consequently, when the government maximizes its objective

[4]In their article, a is the relative weight of the social surplus. Here for analytical purpose, it is assumed that it is the relative weight of the private revenues. Hence $a = 1/\alpha$.

function, the following equality holds:

$$\nabla W(\tau_i^*) + \alpha \sum_{i=1}^{N} \nabla C_i(\tau_i^*) = 0$$
$$\nabla CS(\tau_i^*) + \nabla T_i(\tau_i^*) + \nabla(\lambda + \alpha) \sum \Pi_i(\tau_i^*) = 0 \quad (3)$$

Therefore, in a G & H 94 framework, the objective function has necessarily the form of an inverted U-shape.

2.4 Representation of the functions

Let derive a polynomial function $h(\tau_i)$, τ_i being a policy. Its derivative with respect to τ_i, h', is decomposed into two components, one that depends on τ_i and an other that is constant with respect to τ_i. They will be respectively labeled h'_τ and $h'_{-\tau}$. Since the policy is a positive value, the coefficient of the non constant part has the same sign than the second order derivative (SOD). Hence, for instance, an inverted U-shape function has necessarily a negative $h'_{-\tau}$ and a positive h'_τ. The first order derivative (FOD) turns from being positive to being negative; this characterizes the presence of an optimum. Hence, for a low τ_i, the positive constant part is larger than the negative non constant part. And as τ_i increases, this increases the non constant part which finally overcomes the constant part. The same reasoning holds for the other functions. We do not discuss the U-shape function since it does not correspond to any actor type. A table in the appendix presents the full nomenclature and the corresponding actors. The following lemma sums up all the possibilities.

Lemma 1 *1. Regarding firms,*

- *MNE are characterized by* $\{f'_\tau < 0, f'_{-\tau} > 0\}$ *(Inverted U-shape),*
- *pure domestic (PD) firms by* $\{f'_\tau < 0, f'_{-\tau} > 0\}$ *where* $|f'_\tau| < |f'_{-\tau}|/\tau$ *(Increasing and concave) or*

- $\{f_{\tau}^{'} > 0\}$ *where* $|f_{\tau}^{'}| > |f_{-\tau}^{'}|/\tau$ *(increasing and convex) when they are highly exposed, or "in danger" (PDID).*
- *A more extreme case would be what we could call Very Large MNE (VLMNE), characterized by* $\{f_{\tau}^{'} > 0, f_{-\tau}^{'} < 0\}$ *where* $|f_{\tau}^{'}| < |f_{-\tau}^{'}|/\tau$ *(Decreasing and convex).*

2. *As for the social welfare, Large Open Economies (LOE) correspond to* $\{W_{\tau}^{'} < 0, W_{-\tau}^{'} > 0\}$ *(Inverted U-shape) and Small Open Economies (SOE) to* $\{W_{\tau}^{'} > 0, W_{-\tau}^{'} < 0\}$ *where* $|W_{\tau}^{'}| < |W_{-\tau}^{'}|/\tau$ *(Decreasing and convex).*

3. *The condition that ensures a maximum exists in the G & H 94 framework is that* $G(\tau_i)$ *has an inverted-U shape. This corresponds to* $\{G_{\tau}^{'} < 0, G_{-\tau}^{'} > 0\}$.[5]

The actors having been presented, we shall next see how they will interact together. This is mostly driven by the political game, and *a fortiori* the relation, that occurs between them.

2.5 Political framework

The definition of the contribution differs from those previously used in the literature. The contribution is *defined* as the primitive of the contribution schedule. The contribution represents what is effectively paid, whereas the contribution schedule represents the rule that allows the government to determine what it will get depending on the chosen trade policy. Therefore, the contribution schedule is the rule that defines how the contribution evolves with respect to the trade policy.

The contribution schedule is denoted c_i. To sum up, we have the following definition

$$C_i'(\tau_i) \equiv c_i \tag{4}$$

Since the contribution is the primitive of the contribution schedule, the former may take an infinity of forms. Indeed, the contribution is the sum of a constant and a function of the trade

[5]The maximization program proposed in this paper does not require this assumption on $G^{'}$. It would indeed be possible to study other forms for $G(\tau_i)$.

policy vector. Bernheim and Whinston (1986), Grossman and Helpman (1994) and Laussel and Breton (2001) have extensively studied the share of the political rent that occurs through the constant. We aim here at studying ways through which the second component may affect the equilibrium trade policy.

In order to design the optimal contribution schedule, firms take into account the government's reaction to their choices. The model is then solved by backward induction, starting with the government's maximization of the welfare function with respect to the trade policy.[6] Formally, the optimal trade policy is:

$$\tau_i^* = f(c_i) \tag{5}$$

This function has no particular specification.

The government's policy choice depends on the firms' proposed contribution schedule. Their objective is to exert the most efficient influence through lobbying activity in order to obtain the highest protection rate at the lowest possible "price". As the next sections emphasize, through the use of the strategic contribution schedule, firms are able to modify entirely the objective function of the government. Contrary to G & H 94, the contribution of lobbies will not uniquely increase the weight granted to the profit of the organized sectors.

In the first stage, firm i maximizes the following welfare function

$$W_i = \Pi_i - C_i \tag{6}$$

where C_i is the contribution they expect to pay. A firm maximizes its profit with respect to the contribution schedule such that:

$$\nabla\Pi(c_i^*) - \nabla C_i(c_i^*) = 0 \tag{7}$$

The contribution schedule is shaped to optimally respond to the trade policy choice of the

[6]Since the competition stage is let implicit.

government. Each firm maximizes its profit with respect to the contribution schedule itself and not to the tariff. This differs then, at first sight, from the PFS game in which lobbies determine the policy level that maximizes their welfare. As we shall see, this will allow to introduce the intuitive idea that the offers formulated by lobbies influence the contribution they pay. In simple words, asking somebody something nicely or not should yield a different reaction. This is the representation of the lobbying efficiency.

2.6 Design of the contribution schedule

Whereas the framework of G & H 94 is not strongly based on the contribution schedule but rather on the contribution in itself, this paper proposes here to introduce the way how this contribution schedule is designed, considering its design influences the contribution firms pay.

As it has been argued before, all lobbies should not have the same influence on the equilibrium policy, all else equal. I propose that the contribution schedule influences *directly* the level of the contribution and not only *indirectly* through its effect on the equilibrium policy.

At the equilibrium, when firm i designs its optimal contribution schedule, the maximization program is the following

$$\begin{aligned} \frac{dW_i}{dc_i} &= 0 \\ &\Leftrightarrow \\ \frac{\partial \Pi}{\partial \tau}\frac{\partial \tau}{\partial c_i} &= \frac{\partial C}{\partial c_i} + c_i \frac{\partial \tau}{\partial c_i} \end{aligned} \tag{8}$$

The first term of the right hand side is therefore the active efficiency effect whereas the second one is the passive effect.

3 Non strategic offer

The non strategic offer corresponds here to an offer that does not influence the level of the contribution directly. This means that the contribution schedule has no *direct* effect on the level

of the contribution, that is $\frac{\partial C}{\partial c_i} = 0$ in equation (8). In that case, I have that $\frac{\partial \Pi}{\partial \tau} = c_i$.

Lemma 2 *The optimal contribution set by a firm in order to influence the government follows the rule*

$$c_i^* = \frac{\partial \Pi_i}{\partial \tau_i^*}(\tau_i(c_i)) \tag{9}$$

The derivative of the profit with respect to the policy depends on τ_i that depends on the contribution schedule (from the government stage). Consequently, the optimal contribution schedule is an implicit function and is not locally truthful.

In the remaining of the section, I will use $\Pi(.)$ instead of $\Pi_i(.)$, τ instead of τ_i and so on in order to ease the reading.[7] I shall recall that each derivative with respect to τ_i is a sum of a part that depends on τ_i, labeled $\Pi_\tau^{'}$ for instance, and a part that does not depend on τ_i, labeled $\Pi_{-\tau}^{'}$. I extract the c_i's from the right hand side and obtain the following result:

$$\begin{aligned}
c_i &= \Pi^{'}(\tau) \\
&\Leftrightarrow \\
c_i &= \frac{\Pi_\tau^{'}}{\tau}\tau + \Pi_{-\tau}^{'} \\
&\Leftrightarrow \\
c_i &= \left(\frac{\Pi_\tau^{'}}{\tau}\right)\frac{CS_{-\tau}^{'} + \lambda\Pi_{-\tau}^{'} + T_{-\tau}^{'} + \alpha c_i}{(-CS_\tau^{'} - \lambda\Pi_\tau^{'} - T_\tau^{'})/\tau} + \Pi_{-\tau}^{'} \\
&\Leftrightarrow \\
c_i &= \frac{\Pi_\tau^{'}(-CS_{-\tau}^{'} - \lambda\Pi_{-\tau}^{'} - T_{-\tau}^{'}) + \Pi_{-\tau}^{'}(CS_\tau^{'} + \lambda\Pi_\tau^{'} + T_\tau^{'})}{CS_\tau^{'} + (\lambda+\alpha)\Pi_\tau^{'} + T_\tau^{'}}
\end{aligned} \tag{10}$$

The term $\frac{\Pi_\tau^{'}}{\tau}$ is, by definition, the coefficient of terms depending on τ in the first order derivative divided by a constant equal to the power of τ in the original function. As a consequence, this times τ is exactly the expression of the fact that τ is still present in the right hand side. It is then possible to make appear the derivatives of the social welfare and of the government objective

[7] Moreover, once the government's objective function is derived with respect to τ_i, only Π_i, CS_i and T_i are present in the derivative.

function:

$$c_i = \Pi^{'}_{\tau}\left(-\frac{W^{'}_{-\tau}}{G^{'}_{\tau}}\right) + \Pi^{'}_{-\tau}\left(\frac{W^{'}_{\tau}}{G^{'}_{\tau}}\right) \tag{11}$$

Where $W^{'}_{-\tau}$, $W^{'}_{\tau}$ and $G^{'}_{\tau}$ follow the notations exposed above for the social welfare and the government objective function, respectively. The contribution schedule is truthful if and only if

$$\begin{cases} -\frac{W^{'}_{-\tau}}{G^{'}_{\tau}} &= 1 \\ \frac{W^{'}_{\tau}}{G^{'}_{\tau}} &= 1 \end{cases} \tag{12}$$

which yields $0 = W^{'}_{-\tau} + W^{'}_{\tau} \Leftrightarrow \partial W/\partial\tau = 0$, that is around the social optimum. Otherwise, the contribution schedule as defined in this paper is different.

Using the lemma 1, it is possible to determine who pays more or less. The coefficient of the lobbies' profit function, $\Pi^{'}_{-\tau}$, is positive (negative) when the country is a LOE (SOE). Moreover, either the contribution schedule is not a function of τ, the coefficient $\frac{W^{'}_{\tau}}{G^{'}_{\tau}}$ is then equal to 1 (SOE) and -1 (LOE), respectively (i); or it is, the coefficient is then smaller than 1 in absolute value if the Second Order Derivative (SOD) of the contribution is positive (ii); the inverse if it is negative (iii). I focus on the second case as it seems to better correspond to situations that could happen. When $\Pi^{'}_{-\tau} > 0$, then second term of the RHS is smaller than in the truthful contribution schedule, the effect being larger when the country is a SOE. When $\Pi^{'}_{-\tau} < 0$, the second term is never smaller, the effect is less strong if the country is a LOE.

When we look at the sign of the SOD of the lobbies' profit, then the coefficient is either positive if the country is a LOE or negative if the country is a SOE. Hence, if $\Pi^{'}_{\tau} > 0$, we are certain the contribution schedule is smaller than a truthful one when the country is a SOE.[8] Similarly, if $\Pi^{'}_{\tau} < 0$, it may be lower if the country is a LOE such that $|W^{'}_{-\tau}| > |G^{'}_{\tau}|$.

Proposition 1 *(i) Pure Domestic firms "In Danger" pay less in Small Open Economies and may pay less in a Large Open Economy*

[8]It may also be smaller in a LOE if $|W^{'}_{-\tau}| < |G^{'}_{\tau}|$, but this is rather difficult to interpret economically.

(ii) Pure Domestic firms, given that they are characterized by $|\Pi'_\tau| < |\Pi'_{-\tau}|/\tau$*, are more likely to pay less than MNE, especially in Small Open Economies*

(iii) MNE are more likely to pay less in Large Open Economies

(iv) Very Large MNE are more likely to pay more.

In order to ease the understanding of the above proposition, table 1 sums up all the situations. We now turn to the comparison with the truthful equilibrium output. We are going to proceed

		c_i weaker than the truthful outcome	
	Corresponding type	Small Open Economy	Large Open Economy
$\Pi'_{-\tau} > 0$	MNE/PD	Yes (Higher)	Yes
$\Pi'_{-\tau} < 0$	VLMNE	$\emptyset$	No
$\Pi'_\tau > 0$	VLMNE/PDID	Yes	Possibly
$\Pi'_\tau < 0$	MNE/PD	No	Possibly

In parentheses is indicated whether the effect is higher for the corresponding type of country.

Table 1: Effects on the contribution schedule

as follows. First, it will be proved that the methodology together with the non strategic offer, that the contribution schedule only affects *indirectly* the level of the contribution, yield the same optimal policy despite the non truthful contribution schedule. In the next section, I intend to expose what would happen whether one assumes that the contribution schedule may also affect the level of the contribution *directly*. Both outputs are compared in the antepenultimate section.

The objective function of the government with n firms is given by:

$$G = \sum_{i=1}^{n} CS_i(\tau_i) + \lambda \sum_{i=1}^{n} \Pi_i(\tau_i) + \sum_{i=1}^{n} T_i(\tau_i) + \alpha \sum_{i=1}^{n} C_i(\tau) \tag{13}$$

We then derive the objective function of the government:

$$\frac{\partial G}{\partial \tau_i} = CS_i^{'}(\tau_i) + \lambda \Pi_i^{'}(\tau_i) + T_i^{'}(\tau_i) + \alpha c_i = 0 \tag{14}$$

This allows to express the optimal trade policy:

$$\tau^* = \frac{CS_{-\tau}^{'} + \lambda \Pi_{-\tau}^{'} + T_{-\tau}^{'} + \alpha c_{\tau_i}}{(-CS_{\tau}^{'} - \lambda \Pi_{\tau}^{'} - T_{\tau}^{'})/\tau} \tag{15}$$

The unique function that is not partitioned is the contribution schedule.

From this result, it is possible to write directly the truthful equilibrium result (denoted with the subscript tf), using that around the equilibrium $c_i = \frac{\partial \Pi_i}{\partial \tau_i} = \Pi^{'}$.

$$\tau_{tf}^* = \frac{CS_{-\tau}^{'} + (\lambda + \alpha)\Pi_{-\tau}^{'} + T_{-\tau}^{'}}{(-CS_{\tau}^{'} - (\lambda + \alpha)\Pi_{\tau}^{'} - T_{\tau}^{'})/\tau} \tag{16}$$

From the optimal policy τ^*, we now have an equation of τ that depends on c_i. It is then reintroduced in the next step (when each lobby designs its optimal contribution schedule). It is necessary to recall here that the contribution is defined as a function such that $\frac{\partial C(c_i, \tau_i(c_i))}{\partial \tau_i} = c_i$.

The denominator of c_i is the same than τ_{tf}^*. Therefore, introducing the optimal contribution schedule in τ^* allows to compare the numerator of τ_{tf}^* and the following expression:

$$\frac{(-CS_{-\tau}^{'} - \lambda \Pi_{-\tau}^{'} - T_{-\tau}^{'})(CS_{\tau}^{'} + (\lambda + \alpha)\Pi_{\tau}^{'} + T_{\tau}^{'}) - \alpha \left[\Pi_{\tau}^{'}(-CS_{-\tau}^{'} - \lambda \Pi_{-\tau}^{'} - T_{-\tau}^{'}) + \Pi_{-\tau}^{'}(CS_{\tau}^{'} + \lambda \Pi_{\tau}^{'} + T_{\tau}^{'})\right]}{CS_{\tau}^{'} + \lambda \Pi_{\tau}^{'} + T_{\tau}^{'}} \tag{17}$$

After having factorized by $(-CS_{-\tau}^{'} - \lambda \Pi_{-\tau}^{'} - T_{-\tau}^{'})$, this last equation is indeed equal to the numerator of τ_{tf}^*.

Proposition 2 *When the contribution schedule does not affect directly the contribution, the optimal trade policy (τ^*) is equal to the locally truthful equilibrium.*

Hence, it is possible to rank firms from the more inclined to obtain a raise of the protection (PDID) to the less inclined ones (VLMNE) along with their opportunities to propose less than

a truthful contribution schedule. Taken together, propositions 1 and 2 then support the view that, in order to obtain a "truthful protection", firms highly exposed pay less than the others. As a consequence, a first insight is that in spite of a "truthful" relationship between the exposure to imports penetration and the level of protection, the relationship between the contributions and the protection level is not "truthful". This section shows that some firms pay less than others in order to obtain a protection of an equal efficiency, measured by its truthfulness. This is the passive efficiency effect. However, I argue that another effect is at work, namely the active lobbying efficiency.

4 Adding a direct influence of the contribution schedule

In the G & H 94 framework, the government is assumed to grant a positive weight a to the social welfare, composed by the consumer surplus, the producer surplus and the gains and losses due to the trade policies implemented. The political economy framework highlights that an organized lobby's welfare enjoys a total weight of $1 + a$ in the government objective function. By definition, the welfare of a lobby that represents a foreign firm or sector is not in the social welfare. Consequently, despite this sector is organized, its influence on the government, measured by the weight granted to its welfare in the objective function, is equal to one. Hence, this framework would imply that all domestic organized sectors are more influent than the foreign ones. Moreover, if a is higher than one, even the unorganized domestic sectors are more influent than the foreign organized sectors. I intend here to introduce an endogenous efficiency of lobbies that could explain how some lobbies less favored by the government may obtain a high protection.

I have shown that for a standard function in economics, that is a polynomial, and given that c_{τ_i} is very general and may depend on τ_i, the optimal policy is the truthful one when the contribution schedule has no direct effect on the level of the contribution. However, using this methodology highlights that this is a particular case that induces all lobbies similarly affected by a trade policy to be strictly equally effective with respect to the trade policy they obtain through their political relations with the government despite some have to pay more than others.

Formally, $\frac{\partial W_i}{\partial \tau_i} = \frac{\partial W_j}{\partial \tau_j}$ implies that the effect on both equilibrium trade policies, τ_i and τ_j, is the same. Yet, the fact that both lobbies are similarly affected by a trade policy should not imply that these two lobbies have the same financial power or have a similar efficiency in the lobbying activity. One lobby may hire a more efficient lobbyist than the other does. One of the two lobbies may be led by a person who has important connections with the government and many other reasons.

I propose that this is due to the idea that the offer made by the lobbies, the contribution schedule, has a direct effect on the level of the contribution. This effect will allow to introduce an heterogeneity of the lobbying efficiency. Consequently, this implies that $\frac{\partial C}{\partial c_{\tau_i}} \neq 0$. This is simply the representation of the fact that the same offer made while smiling or not will not have the same effect. If one refers to the International Political Science, authors as Joseph S. Nye (1990) or Baldwin (1979) have emphasized that

> "Some countries are better in converting their resources into effective influence, just as some skilled card players win despite weak hands" (Joseph S. Nye, 1990)

I believe this holds for lobbies. That is, two players having the same cards in hand with exactly the same amount on the poker table and on their banking accounts, with the same financial characteristics, will not face the same issue. Going on in the poker metaphor, some players succeed in bluffing whereas others do not and this is not only due to the effect of winning the pot on their welfare. This implies that the offer, the raise, is not the unique effect that explains the probability of success.

I then derive the same method in order to obtain the value of c_{τ_i} given that $\frac{\partial C}{\partial c_{\tau_i}} \neq 0$:

$$c_{\tau_i} = \frac{\Pi'_\tau(-CS'_{-\tau} - \lambda\Pi'_{-\tau} - T'_{-\tau}) + \Pi'_{-\tau}(CS'_\tau + \lambda\Pi'_\tau + T'_\tau) + (CS'_\tau + \lambda\Pi'_\tau + T'_\tau)^2}{-\alpha(CS'_\tau + (\lambda+1)\Pi'_\tau + T'_\tau)} \tag{18}$$

In order to compare both equilibrium contribution schedules, it is convenient to use another notation of this value of c_{τ_i} and the truthful value of c_{τ_i} that yields the truthful equilibrium, denoted $c^{tf}_{\tau_i}$. From the equation that corresponds to the maximization of the firm with respect

to the contribution schedule, I have that

$$c_{\tau_i} = \frac{\partial \Pi}{\partial \tau_i} - \frac{\partial C}{\partial c_{\tau_i}} / \frac{\partial \tau_i}{\partial c_{\tau_i}} \tag{19}$$

Since the contribution schedule is the derivative of the contribution with respect to the trade policy, I assume for the following that $\frac{\partial C}{\partial c_{\tau_i}} = \tau_i$.[9] It is possible to find some examples of functions that have such property, the simplest being a contribution that would be linear such that $C = c_{\tau_i}\tau_i + B$, the constant would be then equal to one.

Using this property,

$$\begin{aligned} c_{\tau_i} &= \frac{\partial \Pi}{\partial \tau_i} - \tau_i / \frac{\partial \tau_i}{\partial c_{\tau_i}} \\ &\Leftrightarrow \\ 1 &= \frac{\partial \Pi}{\partial \tau_i}\frac{1}{c_{\tau_i}} - \frac{\tau_i}{c_{\tau_i}} / \frac{\partial \tau_i}{\partial c_{\tau_i}} \\ &\Leftrightarrow \\ 1 &= \frac{\partial \Pi}{\partial \tau_i}\frac{1}{c_{\tau_i}} - \frac{1}{e_\tau} \\ &\Leftrightarrow \\ c_{\tau_i} &= \frac{\partial \Pi}{\partial \tau_i}\left(\frac{e_\tau}{1+e_\tau}\right) \end{aligned} \tag{20}$$

where e_τ is defined as the elasticity of τ with respect to c_{τ_i}. This last equation can be rewritten as follows:

$$c_{\tau_i} = c_{\tau_i}^{tf} + \frac{1}{\alpha}(CS_\tau^{'} + \lambda \Pi_\tau^{'} + T_\tau^{'}) \tag{21}$$

This last equation refers to two standard hypotheses mentioned in Desbordes and Vauday (2007). Governments may give more voice to firms that contribute strongly to growth or that may

[9] If one puts aside the constant due to the power of τ, I suggest this is a good approximation. Formally, the welfare is equal to $W = \Pi - C_i$, where C_i is the primitive of c_{τ_i}. Hence, $W = \Pi - Prim[c_{\tau_i}(\tau)]$. If C_i is a polynomial, transforming the contribution schedule into its primitive amounts, approximately, to multiply by a constant times τ. Another argument is provided in appendix.

seriously hurt the social welfare (through the threat to relocate for instance). It is important to note that the assumption is not that the effect on the social welfare should be introduced in the lobbies' offer. The assumption just states that the offer influences *directly* the contribution's level, and this is the result. In addition, it is possible to compare this result to the contribution schedule that is not truthful but that yields the G & H 94 locally truthful outcome, denoted $c_{\tau_i}^{GH}$.[10]

$$c_{\tau_i} = c_{\tau_i}^{GH} + \frac{(W_\tau^{'})^2}{\alpha G_\tau^{'}} \tag{22}$$

We then derive the following proposition:

Proposition 3 *If all components of the contribution have the same power. That is, when* $\frac{\partial C}{\partial c_{\tau_i}} = \kappa_i \tau_i$ *where* κ_i *is a constant. If* $\kappa_i = 1$*, then the equilibrium contribution schedule is*[11]

$$c_i^* = \frac{\partial \Pi_i}{\partial \tau_i} \left(\frac{e_{\tau_i}}{e_{\tau_i} + 1} \right)$$

Where $e_{\tau_i} = \tau_i^{'}(c_i^*) c_i^* / \tau_i(c_i^*)$ *is the elasticity of the trade policy to the contribution schedule. Alternatively, the equilibrium contribution schedule is*

$$c_{\tau_i} = c_{\tau_i}^{GH} + \frac{(W_\tau^{'})^2}{\alpha G_\tau^{'}}$$

Hence, the strategic contribution schedule is always lower than the contribution schedule previously defined.[12]

Hence this proposition establishes as a rule that, depending on the reaction of the government to the contribution schedule, the social welfare effect, the contribution schedule designed will be more or less large. The consequences of the direct effect of the contribution schedule on the

[10] The truthful contribution schedule would be equal to $\partial \Pi / \partial \tau$.

[11] When $\kappa \neq 1$, the results hold qualitatively.

[12] As already evoked, the framework developed in this paper does not require G to be concave. Hence conclusions would be more subtle considering this. However, I use this assumption as an approximation of the fact that the government's objective function has a maximum.

contribution is then, as the equation (22) highlights, the introduction of the effect the trade policy has on the social welfare in the optimal contribution schedule. When this effect is nil, which corresponds to $\frac{\partial^2 W}{\partial^2 \tau_i} = 0$, then the equilibrium contribution schedule is the one of the previous section. Remark that this result is still close to the one of G & H 94. However, in their paper, the social welfare effect in the contribution schedule comes from the hypothesis that lobbies are owned by non negligible shares of the population. In this paper, this comes from the efficiency effect. It is important to note that whatever the assumption on the approximation of $\partial C/\partial c_i$, the social welfare effect would be introduced by the heterogeneous efficiency.

In a nutshell, the effect of the trade policy on the social welfare affects the design of the contribution schedule. Hence, the determination of the equilibrium is not just affected by an additional weight on the profits of the organized sectors in the social welfare. Therefore, considering that the offers of the lobbies influence directly the level of the contribution, which is a more realistic conception of the lobbying activity, introduces some new effects that may distort the equilibrium trade policy.

5 Comparison with the locally truthful protection outcome

From the proposition just above and the additivity nature of the optimal policy due to the benthamite government objective function, it is obvious that the difference between both optimal policies is explained by the differences between the two contribution schedules presented in the previous sections.

The notations τ and τ_{tf} will denote the outcome of the previous section and the locally truthful outcome, respectively.

When one introduces the second optimal contribution schedule in (15), it is possible to compare both outcomes:

$$\tau^* = -\frac{W'_{-\tau}}{W'_\tau/\tau} + \frac{\alpha\tau}{W'_\tau}\left(c^{tf}_{\tau_i} - \frac{(W'_\tau)^2}{\alpha G'_\tau}\right) \tag{23}$$

Proposition 4 *The "strategic" trade policy is given by*

$$\tau^* = \tau_{tf} - \tau_i \frac{W'_\tau}{G'_\tau} \tag{24}$$

which implies that:[13]

(i) $\tau^* > \tau_{tf}$ *when the country is a Small Open Economy*

(ii) $\tau^* < \tau_{tf}$ *when the country is a Large Open Economy*

Hence, generally, strategic lobbying helps all firms (with distinct efficiencies) to achieve a higher protection in small open economies whereas the opposite is true in large open economies. This corresponds to the fact that despite some protectionist tendencies exist in leading Developed Economies, they exhibit lower trade protection than most Developing Countries. Of course, this depends on the effect of the trade policy on the social welfare.

Here, I have considered situations where LOE may socially gain from the implementation of the policies. It could well be a norm. Whether it has no social enhancing effects, as in Rebeyrol and Vauday (2008), or it has, this would correspond to the Small Open Economy and the Large Open Economy, respectively.

More importantly, when looking at the equilibrium protection levels, we indeed find that around an anchor defined by τ_{tf}, some firms may obtain more or less protection depending on the situation of the domestic economy. If the second term of the RHS of equation (24) is negative, which corresponds to a large economy, then the higher the effect of the trade policy on the domestic economy in absolute value, the higher the protection. Under standard assumptions on the signs of the SOD of the consumer surplus, the profit and the trade revenues or spending, we can argue that strategic lobbying allows MNE to obtain more protection whereas pure domestic firms would obtain less than without strategic lobbying in a Large Open Economy. A sector

[13] Again, these conclusions crucially depend on the sign of G'_τ.

in which consumer are strongly hurt by the trade policy, which is the sign of a sector highly threatened by imports, also obtains more. This is the sign of the importance of strategic lobbying.

In proposition 3, when the elasticity tends to zero, the protection becomes very low. The elasticity is higher when the reaction of the import demand to the trade policy is weak and more generally when $|CS'_\tau + \lambda\Pi'_\tau + T'_\tau|$ is large. Then the protection is lower when the SOD of the social welfare is large in absolute value. However, effects can vary across firms. As it is obvious, for a given effect of the trade policy on the welfare of a firm or a lobby, the total effect can be the same with a large $|T'_\tau|$ and a low $|CS'_\tau|$ or the inverse. This is coherent with the findings of Imai *et al.* (2008) who show that the relationship between the inverse of imports penetration ratio and the protection is not linear.

Proposition 5 *The effect of a large import penetration ratio on the equilibrium policy can be compensated by a low reaction of the consumer surplus to the trade policy and conversely.*

The following firms gain (or loose less):

- *In a small open economy,*
  1. *where $CS'_\tau + T'_\tau < 0$, favored firms are first VLMNE and then PDID. This situation does not allow MNE and PD to exist.*
  2. *where $CS'_\tau + T'_\tau > 0$, the ranking from the lowest to the highest gain is:*
     MNE - PD - VLMNE - PDID.
- *In a large open economy,*
  1. *where $CS'_\tau + T'_\tau > 0$, favored firms are first PD and then MNE. This situation does not allow VLMNE and PDID to exist.*
  2. *where $CS'_\tau + T'_\tau < 0$, the ranking from the smallest to the largest loss is:*
     MNE - PD - VLMNE - PDID.

Proof. The optimal tariff is given by

$$\tau^* = \frac{\left[-\frac{W'_{-\tau}}{W'_\tau}\right]}{1+\left[\frac{W'_{-\tau}}{G'_\tau}\right]+\frac{\alpha}{W'_\tau}c_{GH}}$$

The numerator is the social optimum. The term in bracket in the denominator is the strategic effect and the last term of the denominator is the indirect effect. There is no Π'_τ in the numerator. Instead, there is a Π'^{-1}_τ in the denominator. Hence, the effect of Π'_τ is positive.

Then, as Π'_τ is increasing, τ increases too. Hence the first term is positive in a LOE and negative in a SOE. As a consequence, in a LOE where $CS'_\tau + T'_\tau < 0$, the effect of Π'_τ is unambiguously positive on the difference with τ_{GH}. In a SOE where $CS'_\tau + T'_\tau > 0$, the effect is unambiguously negative.

If one compares $-\frac{CS'_\tau+\lambda\bar{\Pi}'_\tau+T'_\tau}{CS'_\tau+(\lambda+\alpha)\bar{\Pi}'_\tau+T'_\tau}$ and $-\frac{CS'_\tau+\lambda\bar{\bar{f}}'_\tau+T'_\tau}{CS'_\tau+(\lambda+\alpha)\bar{\bar{f}}'_\tau+T'_\tau}$, the second is higher iif $\bar{\bar{f}}'_\tau > \bar{f}'_\tau$ when $CS'_\tau + T'_\tau > 0$.

Therefore, the ranking from the most favored to less favored is from the firms characterized by the highest Π'_τ to the lowest when $CS'_\tau + T'_\tau > 0$. This ranking is reversed when $CS'_\tau + T'_\tau < 0$. Note that if $CS'_\tau + T'_\tau > 0$, then $\Pi'_\tau << 0$ for a LOE to exist, since it is characterized by $W'_\tau = CS'_\tau + \lambda\Pi'_\tau + T'_\tau < 0$. Similarly, if $CS'_\tau + T'_\tau < 0$, then $\Pi'_\tau >> 0$ for a SOE to exist. ■

Corollary 1 *Two firms sharing the same welfare function may not obtain the same protection level. This depends on the effects they respectively have on the rest of the social welfare.*

Proof. The difference is equal to $\tau_i \frac{CS'_\tau+\lambda\Pi'_\tau+T'_\tau}{(CS'_\tau+(\lambda+\alpha)\Pi'_\tau+T'_\tau)}$.

An increase in Π'_τ reduces the difference, i.e makes the SOE and the LOE trade policies closer to τ_{tf}. If $\tau_i > 1$, then an increase in CS'_τ or T'_τ to the contrary increases the difference.

In addition, it is obvious that an increase in Π'_τ may be compensated, and even more, by a decrease in CS'_τ or T'_τ.

In a static approach, this means a firm very exposed to imports, whose profit therefore increases sharply in the trade policy, may achieve a lower protection because consumers or trade

policy revenues do not react strongly to the trade policy.

It is easy to show that the derivative of $-\frac{CS'_\tau+\lambda\Pi'_\tau+T'_\tau}{(CS'_\tau+(\lambda+\alpha)\Pi'_\tau+T'_\tau)}$ with respect to f'_τ is equal to $\frac{\alpha(CS'_\tau+T'_\tau)}{(G'_\tau)^2}$.

The differential of $\tau_i\frac{CS'_\tau+\lambda\Pi'_\tau+T'_\tau}{(CS'_\tau+(\lambda+\alpha)\Pi'_\tau+T'_\tau)}$ with respect to f'_τ is equal to $\frac{W'_\tau}{G'_\tau}\frac{d\tau}{df'_\tau}-\frac{\alpha(CS'_\tau+T'_\tau)}{(G'_\tau)^2}$. The sign of the first term both depends on the type of the economy and on the nature of the firm. The second one depends on the sign of the SOD of the sum of the consumer surplus and the trade policy revenues. ■

Despite a higher contribution level, strategic lobbying may help MNE to achieve a higher protection than PD firms in a Large Open Economy. This is true for given CS'_τ and T'_τ. As they may vary across sectors, they may actually compensate the relationship exposed in the above proposition. The meaning of $CS'_\tau + T'_\tau$ being high and positive is that the sum of the policy revenues and of the consumer surplus is either an inverted U-shape, which is unlikely, or a strictly decreasing function in τ. Then, MNE may loose their advantage from the strategic lobbying because the policy has strong and bad effects on the rest of the economy.

This highlights that under strategic lobbying, even the "truthful" relationship between exposure to imports and the level of protection does not hold. The fact lobbies are able to use their importance in the economy, implied by the effect their offers have on the level of contribution they pay, magnifies or impedes their influence. This result is the first that offers a theoretical formalization that allows some lobbies to achieve a more influential relationship than others. Compared to τ_{tf}, defined by a truthful relationship that implies a direct causality between the import penetration ratio and the protection of a given sector, this result explains why some firms may obtain more or less than the truthful relationship predicts.

5.1 Contributions level

As this paper's framework uses derivative to yield the equilibrium policies, the possibility of the presence of a constant in the contribution has not been discussed. As in G & H 94 however, there are no reasons that the contribution does not comprise a constant as it is the primitive of the contribution schedule.

Moreover, this constant has a strong impact on the sharing of the surplus the political relationship yields. Considering that point, this paper proposes no particular feature. As there is no ice cream clause, since lobbies only represent firms, there is no general equilibrium effect and no interaction between lobbies. As a consequence, the value of the constant is such that the government is made indifferent.

Considering the non constant part of the contribution. In the case of a non strategic offer, as defined in this paper, the contributions paid indubitably varies as the equilibrium policies are the same but the contribution schedules differ. The first proposition of this paper highlights that PDID will pay effectively less than they would have paid in the G & H 94 framework. However, the section 4 underlines that under strategic offers, one could pay more to obtain more since efficiency has a role.

5.2 The case of Foreign Lobbying

The last aspect to discuss in this paper is the case of foreign lobbies. Since their profits do not appear in the objective function of the government, the optimal policy they would obtain in a G & H 94 fashion political game would the one of the equation (17) where $\lambda_i = 0$. It is obvious that, all else equal, a foreign lobby will obtain a lower protection rate than its domestic counterpart.

As for the strategic offer, equation (25) underlines that the foreign lobby can have an advantage over its domestic counterpart that may overcome the absence of its profit in the government objective function. Indeed, there is not reason to believe that W'_τ/G'_τ is lower or higher if $\lambda = 0$. Switching from the domestic lobby situation to the foreign lobby one amounts to subtract $\lambda\Pi'_\tau$ from the numerator and from the denominator. It is easy to show that when we subtract the same amount from the numerator and the denominator of a fraction, the result may be higher or lower depending on whether the fraction is superior or inferior to one. The unique difference between the numerator and the denominator of W'_τ/G'_τ is $\alpha\Pi'_\tau$. If the latter is positive, then the ratio is lower than one; the opposite if negative. Consequently, if $\alpha\Pi'_\tau < 0$, then the ratio is higher in the case of a foreign lobby than in the case of a domestic lobby. Hence, foreign lobbies have an advantage over domestic lobbies in small open economies when $\alpha\Pi'_\tau < 0$ and in large

open economies when $\alpha\Pi_{\tau}^{'} > 0$.

As a consequence, a foreign firms that has an incentive to be protected will benefit from the strategic lobbying, relatively to a domestic firm, in a small open economy. Hence, this supports the result obtained in Desbordes and Vauday (2007) in which most countries may be assimilated to small open economies and that shows that foreign MNE are as influent as their domestic counterpart.

6 Discussion and Conclusion

First, this model allows to very simply consider the cases of large and small open economies as well as it allows to study the influence of MNE and pure domestic firms. The effects highlighted in this paper exists whether the open economy is large or small, which is a nice result with respect to many aspects in economics. This reinforces the idea that this model is more about lobbying than endogenous trade policy determination. The latter being crucial in explaining the effects political relations have on the equilibrium policy in most other articles.

This paper argues that two effects may indeed be at stake. The pure domestic firms here have an advantage that comes from their exposure to competition from abroad whereas MNE may gain from their efficiency in the lobbying activity. The mechanism developed in this paper, that relates to the quality of the lobbies' influence, yields some plausible results. In many countries contributions to political parties are not allowed. Whereas "money has no smell", if lobbying takes place through networking the identities of the persons you negotiate with have a strong influence on the policy choice. The exposure of a firm or a sector is not the unique argument that may influence the decision maker. Despite this framework is not conceptually about this kind of lobbying, it brings insights that are close to these forms of political relations.

In addition, the model presented in this paper is very general. It is possible to consider all types of protection but not only. One could use this formalization to describe various political relations effects on domestic policy choices. The only thing needed is to have a precise idea of the effects the policy would have on the different components of the economy, on the government,

as well as on the other actors. In this paper, Π'_τ has been assumed to correspond to firms' welfare. However, it could well be the welfare of many other lobbying group such as consumers for instance.

This paper indeed sheds light on many aspects of the domestic and foreign political lives as it provides a quite general formalization. The literature has developed a lot of frameworks with which it is possible to know the effect of a given variable on profit, depending on the type of competition, or on the welfare for instance. This would be sufficient to establish what would be the effects of lobbying from Special Interest Groups on the level of a given policy choice.

Moreover, the fact the offer affects the path as it is proposed in this paper could also be useful in many other aspect of economics.[14] One could endogenously choose the quality ladder on which a firm will evolve for instance. Another conceivable use would be to allow firms productivity to be endogenous. Indeed, as argued in proposition 5, some firms could exhibit exactly the same reaction with respect to a given policy whereas they would finally not obtain the same policy level. Consequently, two firms having the same profit function may differ through this mechanism, which is quite simple.

Finally, we come back quickly on the case of a standard. As argued, if the norm is a social one (i.e a positive social optimum exists), then the level of the social norm would be lower under strategic lobbying. And it would be higher if the norm has no social enhancing effect. This is a quite expected result, at least commonly admitted. If the sector is mainly represented by productive firms, then the level is higher for a non social norm if it generates some revenues to the government. As showed above, when a sector is biased towards very productive firm (i.e a high Π'_τ) the level of the norm is higher. The strategic effect is clearly positive when $\Pi'_\tau > 0$ with a social norm. It is clearly negative with a non social norm if $\Pi'_\tau < 0$. The prediction of Rebeyrol and Vauday (2008) is that the level of a non social norm will increase if the sector is biased towards large productive firms. Indeed, if $\Pi'_\tau > 0$ and high, then as in their paper, $T'_\tau + CS'_\tau$ is probably negative. This may compensate the negative impact on the strategic effect and then may yield a positive strategic effect. All in all, we find that an increase in Π'_τ increases

[14] In this paper, the offer affects the value of the contribution.

the level of the norm, which is consistent with their findings.

To conclude, it appears that even when one relaxes the common agency framework, the locally truthful protection equilibrium is obtained. Formally, the most important assumption behind this result is related to the effects of the contribution schedule. Either the latter is supposed to influence directly the welfare of the lobbies, including the contribution itself, or only through its effect on the trade policy.

First this paper shows that behind the same protection levels than those found by G & H 94, they may have various stories. In particular, the distinction according to the reaction of the welfare of firms to the policy is very important, for instance MNE and Pure Domestic firms do not behave similarly. Second, this paper provides an explanation of the various situations of protection observed in the reality. In particular, the efficiency of the lobbying activity is found to increase the influence of firms. We also find that when the demand of imports reacts strongly to the trade policy, this induces the contribution schedule to fall. Thus inducing the government to increase in a smaller extent the tariff as the payoff associated to a raise of the trade policy is smaller. A raise of the 'socially' optimal tariff, that is the propensity of the government to be protectionist, increases the contribution schedule. Firms are induced to pay more for an identical increase of the trade policy.

Appendix

A Various functions forms

		Nature of the actor		
Function's shape $h(.)$	Corresponding characteristics	Government's Objective function $h(.) = G(.)$	Welfare $h(.) = W(.)$	Firms' profit $h(.) = \Pi(.)$
Inverted U-shape	$h'_\tau < 0$ and $h'_{-\tau} > 0$	LOE/SOE	LOE	MNE
U-shape	$h'_\tau > 0$ and $h'_{-\tau} < 0$	ø	ø	ø
Square root type	$h'_\tau < 0$ and $h'_{-\tau} > 0$ with $\lvert h'_\tau \rvert < \lvert h'_{-\tau} \rvert / \tau_i$	No max.	ø	PD
One over square root type	$h'_\tau > 0$ and $h'_{-\tau} < 0$ with $\lvert h'_\tau \rvert < \lvert h'_{-\tau} \rvert / \tau_i$	No game	SOE	VLMNE
Exponential type	$h'_\tau > 0$ with $\lvert h'_\tau \rvert > \lvert h'_{-\tau} \rvert / \tau_i$	No max.	ø	PDID
Plummet type	$h'_\tau < 0$ with $\lvert h'_\tau \rvert > \lvert h'_{-\tau} \rvert / \tau_i$	No game	VSOE	ø

Functions with respect to the trade policy τ_i
VSOE: Very Small Open Economy - Only coexists with PDID.
SOE: Small Open Economy
LOE: Large Open Economy
MNE: Multinational Entreprise
PD: Pure Domestic firm
PDID: Pure Domestic firm "In Danger"
VLMNE: Very Large Multinational Entreprise

Table 2: Corresponding type according to the nature of the actor

B On the good approximation of $\partial C/\partial c$

Consider the usual method to determine the value of a derivative. It amounts to study the limit of the ratio

$$t = \frac{f(x+h) - f(x)}{h}$$

when h tends to 0. Similarly, if we add a constant h to a function of $f(\tau)$, then the primitive switches from $F(\tau)$ to $F(\tau) + h\tau$. The difference between both primitives divided by h is equal to τ. The limit when $h \to 0$ is then τ.

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