

# Private Interest Based Multilateral Loans\*

Julien REYNAUD<sup>†</sup> and Julien VAUDAY<sup>‡</sup>

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## Abstract

Firms' interests are nowadays disseminated worldwide. When a country is facing a crisis, many foreign firms' interests may be threatened. This paper investigates the effect domestic lobbying may have on International Financial Institutions (IFIs) loans decisions or multilateral loans. This paper also explores the interconnections between political and diplomatic interests. The main result is that lobbying may raise the probability of a consensus for two reasons. First, its position may be closer of the mean position of the international community. Second, it can increase the range over which its government gains if the loan is granted. Lastly, a high diplomatic proximity with the country facing the crisis may reduce the effect of lobbying whereas the share of the population the lobby represents increases the positive effect of lobbying on the probability of reaching a consensus.

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<sup>†</sup>University Paris I

<sup>‡</sup>CNRS - University Paris XIII, CEPN (UMR 7234). 99 av. J-B Clement, 93430 Villetaneuse, France. E-mail: julien.vauday@univ-paris13.fr.

# 1 Introduction

A now quite proliferating literature on endogenous policy formation highlights the important role of lobbies. They are not, of course, the unique force that drives policies but they should not be ignored. The theoretical (Grossman and Helpman, 1994; Mitra, 1999; Ornelas, 2005; Bombardini, 2008) as well as the empirical (e.g Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000) works have robustly contributed to the recognition of the role of lobbies in trade related issues. In many cases, if not all, lobbies are found to influence negatively some outcomes. In parallel, many firms are multinational that operate in many countries, either through exports or through Foreign Direct Investments (FDI). Consequently, firms' interests are disseminated worldwide.

When a country is facing a crisis and then comes to an IFI or an informal group of countries (e.g the Paris Club) in order to obtain a loan, the financial health of many firms may be at stake. So why lobbies could not influence their respective governments to obtain that a country facing a crisis gets a loan to preserve their interests located there? This paper is an attempt to encompass this idea. Lobbies may have an interest closer to those of the international community than is the one of their country of origin. Hence, lobbying could help reaching a consensus which would represent a rather counterintuitive result. Moreover, as shown in several studies (e.g Barro and Lee, 2005, in the case of the IMF), political considerations enter the IFIs decisions. Shoyer (2003) has shown that diplomacy may affect some decisions at the World Trade Organization (WTO). Hence international politics and national politics may have intertwined effect on IFIs decisions.

This paper focuses on a static approach, despite we acknowledge the importance of dynamics in this topic. Voting exchange is probably a widely used practice, as well as outside-IFI/financial concessions to convince a country to vote for a given loan. In this paper, to keep things simple, we will consider a very simple approach of multilateral consensus. Indeed, it appears that negotiations on a day to day basis are much more settled with consensus than with a formal voting procedure. In addition, we are mostly interested in the conditions under which a consensus

is reachable.

Then, a simple political economy framework is introduced to assess the extent to which lobbies may influence the decision of the IFIs. This paper follows an international political economy approach and we show the effect of political economy on the optimal loans and on the probability of reaching a consensus. Then we show the effect of diplomacy, distinguishing between the diplomatic proximity with the country facing the crisis and the diplomatic proximity with the other countries, thus introducing a systemic effect of the crisis. Finally, the interactions between both aspects are studied.

We show that the domestic politics, understood here as the presence of lobbying, does not necessarily conduct to a decrease of the probability a consensus will be reached. Two effects are at work. The first effect is an expected one. If lobbies' interests are closer to those of the international community, their political action moves the optimal loan of their country of origin towards the optimal loan of the international community. The second effect is more surprising, at an optimal loan unchanged for the country they influence, lobbies still have an effect on the probability a consensus will be reached. The reason is that their presence may increase the gain of the government independently of the size of the loan thus increasing its propensity to accept a consensus. Logically, the bargaining power of lobbyists is found to reduce the probability of consensus whereas their profits not affected by the crisis, their wealth, has an opposed effect. The larger are their interests not affected by the crisis, the more likely is the consensus to occur. In other words, the financial health of the industry that influences the government has a positive effect on the probability a consensus will be reached by enlarging the range over which a decision yields a positive outcome for the government. The reason of that is that a Grossman and Helpman (1994)'s like framework amounts to introducing the welfare of organized sectors two times in the considerations of the government. First, since they are representing the producers interest, their surplus is present, known as the *producer surplus*. And second, as lobbyists, they reintroduce their welfare because as is well-known, a truthful equilibrium implies a maximization of the joint objectives of the government and the lobby.

A good way to figure out the implication of these results is to consider the firms of this

model are banks. Through their worldwide investments, they obviously have many interests disseminated all around the world. Moreover, they are probably the most exposed firms to any crisis a country could face. As a matter of fact, recently, despite the German people was against bailing out Greece, the German government finally decided to agree to the bail out. Not surprisingly, German banks were the most exposed foreign banks in Greece. An interpretation from this paper is that the lobbying of the German banks has moved the position of Germany towards the position of the European community. This influence of German banks would come from two effects. First, their preferred loan was closer to the one of the European Union. Second, their importance in Germany, the size of the banking sector, beyond their exposure to the crisis, has been overweighed thanks to their action as lobbyists, therefore increasing the range over which the German government was ready to bargain.

Another aspect this paper explores is the role of diplomatic proximity in the possibility to reach a consensus. A quite recent literature is interested in highlighting how governments may influence each others as in Antràs and Padró i Miquel (2011). Hence, despite this paper does not propose a sophisticated way to introduce diplomacy, it allows it to be present in a very general way in order to underline the possible interplays with the domestic political economy. The idea lying behind this is that diplomacy is related to a systemic effect of a financial crisis. That is, if firms of a country close to another country in terms of diplomatic ties are threatened, the second country may wish a higher loan despite it is not directly strongly affected by the crisis.

The main result to this respect is that diplomatic proximity with the country facing the crisis generally reduces the effect of the lobbying activity. The inverted causality is also present. A small bargaining power of lobbies is proven to reduce the effect of a high diplomatic proximity with a country wishing a large loan. A large bargaining power of lobbies reduces the effect of a high diplomatic proximity with a third country wishing a low loan.

Finally, we explore as in Grossman and Helpman (1994) the effect of the population share represented by lobbies on these effects. We show that the fact the lobby represents a non negligible share of the population reinforces the positive political effect on the probability of reaching a consensus.

The remaining of the paper is organized as follows. The next section exposes the international political economy approach. The third section introduces the idea of consensus over a loan. The domestic political economy framework is introduced and its results derived in section 4 whereas section 5 discusses the question of the diplomacy and the population share represented by lobbies. The penultimate section makes explicit the expected consequences on the probability of reaching each type of consensus. The last section proposes some extensions and briefly concludes.

## 2 An international welfare approach

### 2.1 Diplomatic proximity

In a recent paper, Antràs and Padró i Miquel (2011) study the influence a foreign country can have on the domestic policies of another one. We kind of follow this idea but from a more diplomatic point of view. A country is assumed here to have the following objective function:

$$H_i = W_i + \sum_{j \neq i} \alpha_{ij} W_j \quad (1)$$

where  $H_i$  is the objective function of the government of country  $i$ ,  $W_i$  is the social welfare of country  $i$  and  $\alpha_{ij}$  is the weight government  $i$  grants to the welfare of country  $j$ . The closer both countries are, the higher  $\alpha_{ij}$ . This coefficient is exogenous and aims at capturing diplomatic or geopolitical considerations that are independent on the trade effects that channel through profits. This function is also quite comparable to the utility function of Lahiri and Raimondos-Møller (2000) in which the parameters weighting the utility of the citizens in others countries are a measure of altruism.

Broadly, this functional form is aimed at encompassing the idea that diplomatic proximity should affect the decision of a country. Intuitively, and that is what will prevail in this paper, a closer proximity between any two countries should increase the incentive of one of them to grant a loan to the other if it is facing a crisis. Moreover, it echoes some systemic concerns as one of them should have a greater incentive to grant a loan if its diplomatic partners have many

interests at stake in a third country that faces a crisis.

## 2.2 The country facing a crisis

We consider that when a country  $j$  is facing a crisis, its welfare suffers a sudden loss. We are not interested in this paper in representing a crisis using some complex mechanisms that may create it.

As it is obvious, the country may be helped because of a systemic risk as every welfare depends on local firms whose profits may depend on the crisis. So there are some direct incentives to rescue the country and some others that are indirect. In other words, a country could wish helping another one because its firms are threatened or because the situation of some local firms in the country facing the crisis may affect its firms' profits. But it also may be willing to do so because the country facing a crisis is a diplomatic friend or because it is a diplomatic friend of a diplomatic friend whose firms are threatened.

## 2.3 Firms

In each country, there is a continuum of firms. We assume that each firm's profit can be disaggregated into a sum of the profits according to the location of their source.<sup>1</sup> For instance, a country is assumed to be able to split its profit into Europe and USA as two independent profit centers. This assumption seems simplifying as it comes to mind that the profit from country  $i$  may be affected by the situation in country  $j$ . For simplicity, we assume that if 50% of the profit in country  $i$  depends on what is going on in country  $j$ , then this share is attributed to country  $j$ .

We denote these shares  $\mu_{kij}$ . They indicates that firm  $k$ , originating from country  $i$ , generates a share of  $\mu_{kij}$  of its profit in country  $j$ , directly and/or indirectly. The sum of these parameters is equal to one for each firm.

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<sup>1</sup>It is interesting to note that a misperception of these stakes by geographical origin could introduce a tricky story in political economy frameworks.

## 2.4 Gain for country $i$ when helping country $j$

First, the question of the cost of helping country  $j$  needs to be addressed. Here, we will take our inspiration from the Fund; it has the most developed structure and we have already proven that geopolitics has a determinant role in its lending decision in Reynaud and Vauday (2009). In particular, the contribution to the Fund does not depend on the situation of this or that country asking for a loan. So we simply will consider that the cost for the country is equal to  $\beta_i S_j$  if a loan of an amount  $S_j$  is granted to country  $j$ , where  $\beta_i$  is the voting share (or quota in the case of the IMF) of country  $i$ . The quota is the share of the Fund a country “owes” and therefore an expense of  $S_j$  amounts to an expense of  $\beta_i S_j$  for the country  $i$ .

The simplicity of this assumption may surprise. However, for instance, the IMF almost never spends the integrality of its available money in a year, despite such a case has been under consideration during the 2007-2009 global crisis when large IMF members came to the Fund with large financing needs. Consequently, it is hard to consider that a country could be reluctant in voting for a given loan because it fears that no money will be available when a much closer country will come to the IMF to ask for a loan. So this is different from Lahiri and Raimondos-Møller (2000) that have an endogenous amount that has to be split into two recipient countries. In our paper, the amount is implicitly determined endogenously by the decision process of the IFI.

So now, what is the gain to help country  $j$  for country  $i$ ? The gain may be divided in several distinct channels and all these gains have to be compared to the cost of the loan,  $\beta_i S_{ij}$ . First, there is a direct gain for helping country  $j$  through domestic firms.

$$\sum_k^m \mu_{kij} [\Pi_{ki}(S_{ij} > 0) - \Pi_{ki}(S_{ij} = 0)] \quad (2)$$

where  $S_{ij}$  is the amount country  $i$  would lend to country  $j$ .  $\Pi_{ki}$  is the profit of a firm  $k$  originating from country  $i$  and  $\mu_{kij}$  is the share of this profit realized in country  $j$  either directly or indirectly through local firms. So this gain measures by how much the profits of domestic firms would be increased if the loan is granted to country  $j$ .  $S_{ij}$  is the loan amount country  $i$  would like to grant

to country  $j$ .

Second, there is a diplomatic gain which is equal to

$$\alpha_{ij}[W_j(\sum_k \mu_{kjj}\Pi_{kj}(S_{ij} > 0)) - W_j(\sum_k \mu_{kjj}\Pi_{kj}(S_{ij} = 0))] + \alpha_{ij}S_{ij} \quad (3)$$

The last term is the direct effect of the crisis, the two other ones being the effect through the domestic firms' of country  $j$ . So if the loan may help improving the situation of country  $j$ 's firms which is a diplomatic friend, then country  $i$  will be more likely to lend a large loan.

Finally, there is a systemic gain that passes through the firms of other countries.

$$\sum_{h \neq i,j} \alpha_{ih}W_h(\sum_k \mu_{khj}\Pi_{kh}(S_{ij})) - \sum_{h \neq i,j} \alpha_{ih}W_h(\sum_k \mu_{khj}\Pi_{kh}(S_{ij} = 0)) \quad (4)$$

This last gains corresponds to the fact that country  $i$  may be willing to help country  $j$  if country  $j$ 's situation is affecting strongly some firms of the country  $i$ 's close diplomatic friends. For simplicity, we assume that the crisis uniquely hits profits. The generality of the results is clearly left unchanged as adding the consumer surplus or the government revenues would just make equations coarser.

### 3 The multilateral decision making process

The previous section has exposed what would be the position of a country that would vote for an amount  $S_{ij}$ . However, this is not how things are going on in a multilateral decision process. First, the decision is based on consensus, i.e. there is no formal voting at the executive board but rather a policy discussion during which executive directors express their opinions. Second, and this is related, it is probable that the decisions simultaneously concern the agreement to grant a loan as well as its amount. Therefore, we will study what happens if the country wants to maximize the difference of welfare with respect to the size of the loan compared to the null loan situation.



So the government seeks to maximize the difference between the welfare it obtains and what it would obtain if no loan is granted. Consequently, the constant term (with respect to  $S_{ij}$ ) in  $H_i(\cdot)$  disappears. The maximization program of the government is:

$$\begin{aligned} \max_S [H(S) - H(S = 0)] \\ \Leftrightarrow \max_S G(S) \end{aligned} \quad (5)$$

which yields

$$-\sum_k \mu_{kij} \frac{\partial \Pi_{kij}(S_j)}{\partial (S_j)} - \sum_{h \neq i, j} \alpha_{ih} \sum_k \mu_{khj} \frac{\partial \Pi_{khj}(S_j)}{\partial (S_j)} - \alpha_{ij} \sum_k \mu_{kjj} \frac{\partial \Pi_{kjj}(S_j)}{\partial (S_j)} = \alpha_{ij} - \beta_i \quad (6)$$

The optimal loan country  $i$  wants to grant to country  $j$  is labeled  $S_{ij}^*$ . The three terms stand for the effects of the three gains above mentioned. The first one is the effect the loan has on the domestic firms' profit, the second one is the effect the loan has on the country hit by the crisis, weighted by the diplomatic proximity. Finally, the third term is the effect the loan has on the firms of all the other countries also weighted by the respective diplomatic proximity.  $\alpha_{ij}$  in the right hand side is the direct effect of the loan. In value, the welfare of country  $j$  is increased by  $S_{ij}$ , also weighted by the diplomatic proximities. As a consequence, without entering into the details, one could expect  $\beta_i$  to be higher than  $\alpha_{ij}$  otherwise a country would always wish a positive loan except if the crisis had hit many competitors of the domestic firms which would imply a negative effect of the loan on the domestic firms's profit.

### 3.1 Consensus

We define two additional values. Let  $\underline{S}_{ij}$  and  $\overline{S}_{ij}$  be respectively the lowest bound and the highest bound over which the expected objective function of country  $i$  is positive, under the assumption that the objective function is quadratic in the argument  $S_{ij}$ . As one will see, the real assumption is that the objective function  $H(\cdot)$  is third order. We further denote  $\underline{S}_{ij} = S_{ij}^* - \theta_i^l$  and  $\overline{S}_{ij} = S_{ij}^* + \theta_i^r$ .

We consider for the moment a very broad notion of consensus. Hence, we consider that as soon as there is a common value such that, considering two countries  $i$  and  $h$ ,  $S_{ij}^* > S_{hj}^*$  and that  $\underline{S}_{ij} > \overline{S}_{hj}$ , then those two countries are able to reach an agreement. We discuss in more details the question of consensus at the end of the paper.

### 3.1.1 The bounds and the optimum

With polynomial of degree 2,  $\theta_{ij}^r = \theta_{ij}^l = \theta_{ij}$ . A noticeable aspect is that two elements are active in each bound. First, there is the optimal loan of both countries, and there are the bounds of the interval over which both countries have an interest in granting the loan to country  $j$ . The highest  $\underline{S}_{ij}$  depends on  $S_{ij}^*$  and on  $\theta_{ij}^l$ . The lowest  $\overline{S}_{ij}$  depends on  $S_{ij}^*$  and on  $\theta_{ij}^r$ .

These values come from equation (5) and the following equation:

$$G(S_j) = 0 \tag{7}$$

Finally there is a requirement for the optimum solution of country  $i$  without political economy. The optimal loan of country  $i$  must be such that the mean of the differences to the optimal values of all diplomatic partners is lower than  $S_{ij}^* + \alpha_{ij}W_j$ .<sup>2</sup>

**Lemma 1** *Under the assumption that the objective functions are of the type  $G = aS_{ij}^2 + bS_{ij} + c = 0$ . Maximizing this function amounts to obtaining  $S_{ij}^* = -\frac{b}{2a}$ . The two values that cancel out this function are given by  $S_{ij}^* \pm \frac{\sqrt{b^2 - 4ac}}{2a}$ . The constant only has an effect on the bounds, whereas  $a$  and  $b$  have an effect on both.*<sup>3</sup>

The effect of  $b$  over  $S_{ij}^*$  depends on the sign of  $a$ . The effect over  $\overline{S}_{ij}$  has the same sign if  $b$  is positive.<sup>4</sup>

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<sup>2</sup>See in appendix

<sup>3</sup>The fact the constant has only an effect on the bounds holds of course for every function form. We use quadratic functions for their simplicity.

<sup>4</sup>One should note that an increase in  $b$  has a positive effect on the upper bound and on the optimal loan whereas it has a negative effect on the lower bound if  $c$  is negative and a positive effect on the lower bound if  $c$  is positive. So if  $c$  is positive (which says that the welfare is positive even with a nil loan which is more likely), an increase in  $b$  indeed yields an increase of the range but not such that it ensures that both bounds evolve in order to yield a positive effect. Thus it depends on the position of the country with respect to all the other countries.

### 3.2 Benchmark case: no lobbying

We are mainly going to study the conditions that may ensure two countries may succeed in reaching an agreement on a consensus basis. The consequences over a potential  $n$  countries setting are developed at the end of the paper. Note that, as a mind exercise, one could assume that one of the two countries represents all the other countries to decide. In order to do so, the range over which this “country” would accept to reach a consensus is the one over which, if it does exist, all the countries have a positive evolution of their welfare.

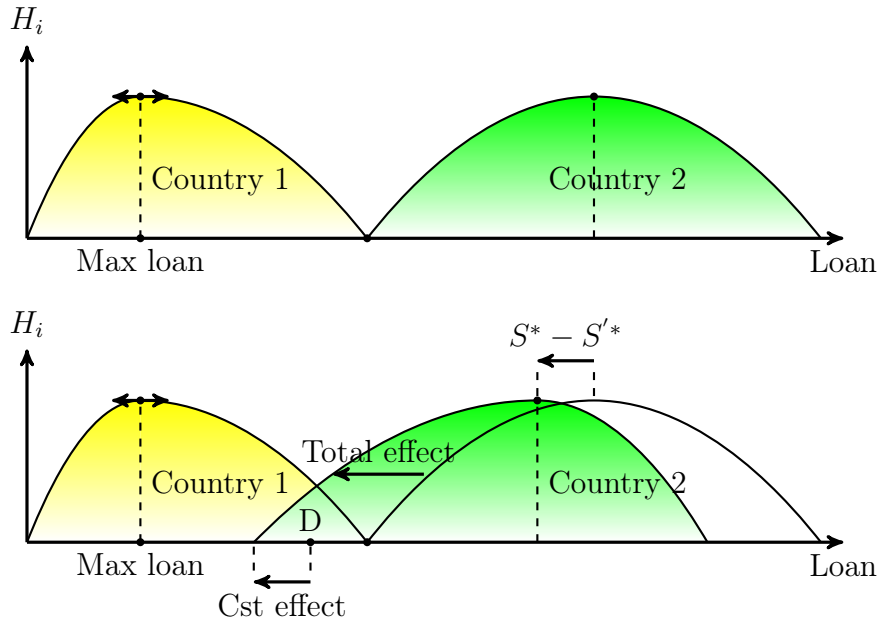
To illustrate our approach, we first start by presenting the benchmark case without any organized active lobby. So we have the following equality

$$\frac{\partial W_i}{\partial S_{ij}} + \frac{\partial \sum_{j \neq i} \alpha_{ij} W_j}{\partial S_{ij}} = 0$$

We also have  $\theta_{ij}^r$  and  $\theta_{ij}^l$  such that  $H_i(S_{ij}) > 0$  iff  $S_{ij} \in [S_{ij}^* - \theta_{ij}^l; S_{ij}^* + \theta_{ij}^r]$ .

Two countries  $i$  and  $h$  have the capacity to reach an agreement iff  $S_{hj}^* - \theta_{hj}^l < S_{ij}^* + \theta_{ij}^r$ .

As a consequence, all parameter modifications that allow the ranges of both countries to overlap are generating the possibility of reaching the consensus over one value of the loan to grant to country  $j$ . The following graph illustrates this.



As illustrated on the graphs above, reaching a consensus is possible as soon as both areas are overlapped. Then, following a move on the left of the country 2's curve, for any exogenous reason as for instance a worsening in the diplomatic relationship between country 2 and the country asking for a loan, some points, as point D, are in both areas. The move of the maximum loan of country 2 has not the same magnitude than the move of the intersection between the curve of country 2 and the horizontal axis. As indicated, there is an effect labeled "constant effect" (Cst on the graph) that plays on the bounds and not on the maximum value, as the lemma 1 highlights.

We are interested in a move to the right of the range of country  $i$ , considering that there is no move from country  $h$ . According to lemma 1, such a move could be created by an increase in  $b$  or  $c$ , and a decrease in  $a$ .

How could we interpret this? As explained above, as the objective function is a difference between two government's objective functions, then the coefficient  $a$  of the objective function is the coefficient of terms  $S_{ij}^3$  (respectively  $S_{ij}^2$  and  $S_{ij}$  for  $b$  and  $c$ ). Then the coefficient  $a$  is hard to interpret as it represents a complex effect. It is more easy to figure out what could mean  $b$ . A standard double effect is that the crisis will both reduce demand and prices. As a consequence, the loan could raise the demand and prices, hence having a double beneficial effect. As for  $c$ , the crisis could lower the wages, therefore diminishing the cost of production, the loan could then increase the total cost of production, everything else being equal.

Considering the effects on the optimal policy  $S_{ij}^*$  may be explained according to either equation 2, 3 or 4. So either a higher direct effect on the firms originating from country  $i$  located in country  $j$  (the one facing the crisis). Or an effect via the diplomatic proximity towards country  $j$  or finally a systemic gain through the firms originating from the other countries combined with the diplomatic ties of country  $i$  with these countries. If for instance a country close to country  $i$  makes an announcement saying that their firms are more exposed than one thought, this would induce a move in the right direction of the optimal loan (and/or the bounds) of country  $i$  (the opposed announcement would of course induce a move in the wrong direction). One could notice incidentally that this kind of information disclosure could be a vector of foreign

influence complementary to those explored in Antràs and Padró i Miquel (2011).

These however are mostly some structural parameters that are hard to modify in order to allow a consensus to be reached. To the contrary, one will see that the emergence of a political relationship such that lobbying is a conjunctural element that has a direct effect on both the optimal loan and the range over which a country would accept to compromise. Moreover, this direct effect will cut the direct equivalence between the amplitude of the crisis, the firms' exposure to the crisis and the size of the loan. Despite it may seem distortive at first sight, one will see that the consensus based decision may be favored by the presence of lobbying.

## 4 Political economy

We now turn to the political economy part, the core of the paper. We are going to describe what happens to one given country  $i$  that has to decide whether lending to country  $j$  or not. In a second step, in the penultimate section, we will infer the effect on two possible types of consensuses and we will also refer to a modified (and simplified) version of the median voter theory.

We first start with a very general discussion. Following Grossman and Helpman (1994), two elements are central in the political game. In their framework, the optimal policy is determined by the following equality

$$-\phi \frac{\partial W_i}{\partial S_j} = \sum_k \frac{\partial W_{ki}}{\partial S_j} \quad (8)$$

where  $W_{ki}$  is the welfare of firm  $k$  originating from country  $i$  and  $\phi$  is the weight the government grants to social gains compared to private revenues. In other words, the equilibrium policy is locally truthful as it comes from the fact that  $\frac{\partial C_{ki}}{\partial S_j} = \frac{\partial W_{ki}}{\partial S_j}$ , where  $C_{ki}$  is the contribution of firm  $k$  to the government of country  $i$ . Hence, in addition to what influences the government in its decision, every aspect that influences the welfare of active firms or lobby is influencing the optimal loan the country  $i$  will wish.

The political relationship also necessitates to share a constant between the government and the lobbies. As Grossman and Helpman (1994) explain, by definition, the contribution being the primitive of contribution schedule, it necessarily involves the welfare of lobbies minus a constant, as lobbies cannot pay more than they have. So for the moment, we consider there are two parts in the contribution a lobby offers. There is a variable part aimed at increasing the government's incentive to wish a high loan. There also is a constant part taken as a broad reward from the lobby.

Grossman and Helpman (1994) show it is possible to determine the value of the constant (i.e one per lobby) using the assumption of truthful everywhere contributions. That is,  $\frac{\partial C_{ki}}{\partial S_{ij}} = \frac{\partial W_{ki}}{\partial S_{ij}}$  is true, whatever the value of  $S_{ij}$ . A simplifying way to understand how this constant is shared is that it depends on the relative bargaining power of the government with respect to each lobby. For a formal explanation of the sharing of the constant, refer to Grossman and Helpman (1992). They however show that under this assumption and given the fact that all firms located in the country asking for the loan have convergent interests, lobbies should obtain all the political rent, thus the constant should be equal to zero for the government. Indeed, it should only be compensated in case of a social welfare loss, implying an only variable contribution. We discuss this possibility in the next section.

In this part of the paper, we consider a broader conception of the contributions, which are simply locally truthful. So they may indeed have a constant part which is not nil. The relative bargaining power of the government may, by itself, modify the range over which a consensus is reachable. Indeed, the higher is the bargaining power of the government, the larger is the constant the government obtains and this has an effect on the bound over which the objective function of the government is positive for  $S_j > 0$ . Everything else equal, a higher bargaining power of the government increases the value of  $G(S_j > 0)$ .

More precisely, switching from a nil loan to a positive one increases by  $C'_{ij}(S_j)$  the objective function of the government. From lemma 1, two effects are at work. First the constant part of the contribution, that depends on the relative bargaining power and reflects the situation of the lobby outside the crisis, modifies the two bounds by the same magnitude. Second, the

variable part has an undetermined influence over the bounds. If it is strictly increasing in  $S_j$ , then it should have a larger effect on  $\overline{S_{ij}}$ , since the effects through the optimum and through the constant (of  $a$  or  $b$ ) go in the same direction.

## 4.1 Effect on the optimal loan

Before entering the core arguments of the paper, it is necessary to highlight an obvious effect. As it has been explained, one can consider that in a relation country  $i$ /country  $h$ , the range of country  $h$  is the range over which all the countries benefit from a loan (or if impossible, the range over which most countries benefit from a loan). Everything that creates a move of any optimal loan towards the right direction may help concluding the agreement.

The proposition a lobby makes to the government is an incentive contract aiming at obtaining a convergence between the final public decision and the lobby's preference. If the preferred loan of the lobby is closer to the one of the international community, then its intervention will have a positive effect on the international community despite it creates a distortion in country  $i$ . Overall, this should have a positive effect on the world welfare, under the assumption made that all the other countries had already reached an agreement.

There is however the same shortcoming as usual about lobbying. Neglecting the fact all the other countries may also be subject to lobbies' influence is an obvious twist of the reality. Finally, if all countries are facing such influences, this may not help reaching an agreement. The question is simply the following: does the fact that a lobby in favor of a higher loan in a given country helps reaching an agreement increases the probability that another lobby in another country will act against the consensus?<sup>5</sup> In connection, we have assumed lobbies are myopic in the sense they do not have any idea of the effect the other lobbies in the other countries may have against the consensus. Indeed, if a lobby is certain that the consensus will not be reached, then it will not spend a single dollar in the lobbying activity. We let these questions for future research and turn to the other effects political economy may have.

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<sup>5</sup>In the case of two countries, if one assumes one of both countries is a pure social maximizer, then this would not be the case.

## 4.2 General effects: the case of the linear contribution

In the case of linearity, the contribution is strictly increasing in its argument, so  $a_c$  is nil,  $b_c$  is positive as is  $c_c$  where  $C = a_c S_{ij}^2 + b_c S_{ij} + c_c$ .<sup>6</sup>  $b_c$  comes from the lobby's welfare. So everything that could explain a positive effect of the loan over the lobby's welfare will have the following effects. Since the government's objective function is concave,  $a$  is negative and  $b$  is positive. So the effect of  $b_c$  is positive on the optimum. It is also positive on the upper bound.  $c$  represents the part of the objective function of country  $i$  that depends linearly on  $S_{ij}$ .<sup>7</sup> This corresponds to the constant (with respect to  $S_{ij}$ ) in the derivative of  $H(\cdot)$  with respect to  $S_{ij}$ . Concretely, this is a share of the government that is affected by the crisis but that is independent on the seriousness of the crisis. This is a first order effect of the crisis. For instance, a crisis reduces demand; the more serious the crisis, the larger the decrease in the demand, but in the same proportion. If the crisis hits the financial system because it is very large, then this aggravating effect passes through the remaining of the derivative. We can expect it is negative, except for countries that could suffer of a highly systemic risk due to the crisis in country  $j$ . The effect of  $a$  depends on that.

**Proposition 1** *If  $C = b_c S_{ij} + c_c$  and  $G = a S_{ij}^2 + b S_{ij} + c$ . If  $G$  is concave, then  $a < 0$  and  $b > 0$ .*

*Then an increase in  $b_c$  which is positive induces an increase of  $b$ .*

*This increase in  $b$  increases  $S_{ij}^*$ , increases  $\underline{S}_{ij}$ ,  $\overline{S}_{ij}$  and increases  $\overline{S}_{ij} - \underline{S}_{ij}$ .*

*So the lobbying activity increases the range over which reaching a consensus is possible through the effect the crisis has on the firms that have an interest in country  $j$ .*

The effect of the constant  $c_c$  is to decrease the lower bound and to increase the upper bound, by the same magnitude.

**Proposition 2** *When there is a political relationship, i.e lobbying is active, the higher the bargaining power of the government is, the larger the range over which country  $i$  will accept a consensus.*

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<sup>6</sup>The subscript  $c$  denotes that these parameters are those of the contribution.

<sup>7</sup>Because we have assumed the objective function of the government is of degree 3.



**Proof.** According to lemma 1, the constant only has an effect on the bounds. Increasing the bargaining power of the government amounts to increasing the constant part it gets from the political rent. Since  $a$  is negative, this increases both bounds under the assumption that  $G = aS_{ij}^2 + bS_{ij} + c$ .

The interval increases whereas the optimal loan value remains at the same level. The only possible effect is an increase of the probability of reaching a consensus or no effect at all. This depends on the type of consensus considered but also on the magnitude of the increase of the bargaining power of the government. ■

Assuming all countries can be ranked according to their  $S_{ij}^*$ 's. The effect of the bargaining power is the same, independently of the position of country  $i$  with respect to the other countries in the ranking of their  $S_{ij}^*$ 's. As for an increase in  $b_c$ , its effect on the probability a consensus will be reached is positive if country  $i$  is in the bottom of the  $S_{ij}^*$ -ranking and is negative if the country is in the top of this ranking. That is, what distinguishes between a “right move” and a “wrong move”, is that the effect should move the position of country  $i$  closer to more than the half of all countries.

For the moment, the share of population represented by lobbies is negligible. It could well be that a lobby has an optimal loan equal to zero because it has almost no interests in country  $j$  and because, as a consumer, it thinks it costs too much to the economy. A high diplomatic proximity with country  $j$  (facing the crisis) could also explain that the country  $i$  has a larger optimal loan than the lobbies do.

A last aspect that could change this effect is the fact all firms whose interests are threatened in country  $j$  are represented by lobbies or not. If only those weakly affected by the crisis are represented whereas others are not, the lobby should wish a lower loan than the government. As a consequence, once the political relationship has occurred, the optimal loan should decrease.

As for the probability of reaching a consensus, it depends on the position of the country compared to the other concerned countries. If, before any political pressures, the country of interest is already wishing a higher loan than the optimal one of the international community then, *ceteris paribus*, the effect of lobbying is to reduce the probability of consensus, under the

assumption the lobby wishes a higher loan.

### 4.3 Quadratic contributions

The quadratic functions work also very well. It is just harder to determine some effects of the lobbying as now lobbies contribution may increase the numerator or the denominator of the equilibrium loan  $S_{ij}^*$  as well as the bounds over which the country gains.

**Lemma 2** *With  $C = a_c S_{ij}^2 + b_c S_{ij} + c_c$  and  $G = a S_{ij}^2 + b S_{ij} + c$ .  $a < 0$  as  $S_{ij}^* \in [\underline{S}_{ij}, \overline{S}_{ij}]$ . The sign of the polynomial is the same than the one of  $-a$ . Since  $G(S_{ij}^*) > 0$ , then  $a < 0$ .*

*This is not true for  $a_c$  since it is not necessary that a firm exhibits a maximum optimal loan. She may well wish a loan “equal to infinity”.*<sup>8</sup>

So this lemma influences the effect of diplomacy on the optimum policy as the next section will underline it.

We write the objective program after the contribution has been paid.

$$G(S_{ij}) + \sum C_c(S_{ij}) = 0 \tag{9}$$

which is equivalent to

$$a S_{ij}^2 + b S_{ij} + c + a_c S_{ij}^2 + b_c S_{ij} + c_c$$

that finally yields

$$(a + a_c) S_{ij}^2 + (b + b_c) S_{ij} + c + c_c$$

The optimal loan is therefore

$$S_{ij}^* = -\frac{(b + b_c)}{2(a + a_c)} \tag{10}$$

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<sup>8</sup>As this is the case of linear contribution.

and the bounds are

$$S_{ij} = S_{ij}^* \pm \frac{\sqrt{(b + b_c)^2 - 4(a + a_c)(c + c_c)}}{2(a + a_c)} \quad (11)$$

For the government,  $a < 0$ . For the lobby, the constant has two components. A locally truthful contribution is such that  $C = \Pi_{ik} + \gamma_{ik}W_i - B_{ik}$  (the term  $\gamma_{ik}$  is the share of the population, see the next section). The last term is a negative constant and the first two terms also contain some constants that may either be negative or positive. Consequently, the overall effect is not obvious. First, there are no reasons to think  $a_c < 0$ . Indeed, if the lobbying activity has a marginally decreasing cost, then a lobby could find it always profitable to ask more.

If we focus on the case of a marginally increasing lobbying cost, the effect of lobbying depends on  $b_c$  and  $c_c$ . As already evoked, the fact  $b_c$  or  $a_c$  have an effect on the equilibrium loan a government wishes is not of primary interest since its effect on the probability to obtain a consensus depends on the relative position of the country with respect to the multilateral political loan (see the definition in a following section). Hence, we are interested in the effects on the bounds.

Considering  $b_c$ , the largest and positive it is, the largest are the two bounds if  $b > 0$ . If  $b < 0$ , then the largest and negative  $b_c$  is, the largest is the difference between the two bounds. Additionally, an increasing  $c_c$  depends only on the lobbies' welfare.

The objective of the government only depends on  $S_{ij}$ . Since  $G = W_i(S_{ij}) - W_i(S_{ij} = 0)$ , all terms of the welfare that do not depend on  $S_{ij}$  vanish. If  $c_c > 0$ , then it will increase the size of the interval between the two bounds. Logically, the constant due to the political relationship in itself is negative. Under the hypothesis of contributions truthful everywhere, the contribution is equal to the welfare of the lobby minus a constant  $B_j$  as showed by Grossman and Helpman (1994), applying the result of Bernheim and Whinston (1986). This constant is a measure of the relative bargaining power of the lobbies and when it is high this reduces the size of the interval. This is not surprising as it reduces the size of the gain of the government.

However,  $\Pi_{ki}$  does not fully depend on the crisis for most of the lobbies. If  $\Pi_{ki}(S_{ij} = 0) < 0$  then this indicates the constant in the welfare is negative. In that situation, the effect on the bounds is also negative. But most lobbies do not depend on the crisis so much that with a null loan their welfare is negative. Under this consideration,

**Proposition 3** *With a quadratic contribution, a political economy framework has a positive effect on the two bounds if at least one of the following statements is true:*

- $\Pi_{ki}(S_{ij} = 0) > 0$
- $a_c > 0$ , the lobby hence wants the largest possible loan. Implicitly, this is to say that the lobbying activity has not a marginally increasing cost.

Because  $C_{ki} = W_{ki} - B_{ki}$ , this means that the incentive contract a lobby proposes comprises a constant and a variable part. Technically, the constant part is at least equal to  $B_{ki}$  as  $C_{ki} > 0$ . If  $B_{ki}$  is inferior to the constant, then this means that a positive constant part is in the contribution. This constant part therefore increases the interval as well as the upper bound.

## 5 Diplomacy and population

The effect on the equilibrium policy needs here to be separated between the effect of the diplomatic proximity with the country that faces the crisis and the other countries. We use that  $W_j = a_j S_{ij}^2 + b_j S_{ij} + c_j$ .

### 5.1 Diplomacy proximity with the country facing the crisis

This country would obviously be favorable for the largest possible loan, so  $a_j > 0$ . Then, since  $a < 0$ , including  $a_j$  weighted by  $\alpha_{ij} > 0$  decreases the absolute value of the numerator of both the equilibrium value and the bounds. Additionally, it decreases the effect of the constant in the numerator of the bounds.<sup>9</sup> This is because the coefficient of the constant is  $a + a_c$ . If  $a_c$  remains

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<sup>9</sup>If one has to analyze the effect of the political economy in the country facing the crisis, the fact  $a_j$  is negative reverses the conclusion of the section above.

unchanged, the presence of  $a_j\alpha_{ij}$  increases  $a$  towards 0.

The decrease of  $|a|$  implies an increase of the equilibrium which is logical as this implies that the tighter the diplomatic links of a country  $i$  with the country  $j$  hit by the crisis, the larger the loan the country  $i$  wishes.

We next turn to the effect on the bounds. It reduces the effect of the political constant. If one admits that the magnitude of  $a_j$  is correlated to the magnitude of the crisis<sup>10</sup>, then the harder the crisis, the lower the effect of lobbying activity through the constant, everything else equal. This is also true for the magnitude of  $\alpha_{ij}$ . So interestingly, the diplomatic relationship with the country facing the crisis has a negative effect on the lobbying activity.

**Proposition 4** *An increase of the diplomatic proximity with the country facing the crisis reduces the effect of the lobbying*

As underlined in section 2.4, the diplomatic proximity is related to the sum of the profits of firms from country  $j$  that depend on the crisis (under our simplifying assumptions that the effects only pass through profits). A small crisis would then only have a marginal effect on the decision.

If the contribution is truthful everywhere. Then, following Grossman and Helpman (1994), since lobbies are not in competition (i.e convergence of interest under our assumption), the whole political rent should go to lobbies. In other words, they simply compensate the government for the difference between the value of the welfare under the political optimum of the government and the value of the welfare under their optimum. Therefore, the contribution is uniquely variable. Either the position of the lobbies is inferior to the one of the government or it is superior. In the first case, the inclusion of diplomacy would increase the compensation the lobbies should pay. In the second case, it would decrease it.

## 5.2 Diplomacy with the other countries

Other countries have gross-of-politics objective functions that have shapes similar to the shape of the objective function of our country of interest, namely country  $i$ . As a consequence, they

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<sup>10</sup>When  $a_j$  increases, this indicates a larger propensity of the country facing the crisis to ask quickly for a large loan.

are such that  $a_h < 0$  since they also exhibit a positive and finite optimal loan. So diplomatic relationships with other countries have a leverage effect on the political effects.

One might wonder whether the effect is larger when the optimal loans of country  $i$  and  $h$  are similar in size, or if the distance between both countries in terms of optimal loan is large. In order to check this, we need to think of moving a parameter, holding the other ones constant. If the  $b$ s are held constant, a country is on the left of the axis that measures the optimal loan of each country if and only if  $0 > a_h > a_i$ . So the numerator is lower compared to the opposed situation ( $a_h < a_i$ ). When the country  $h$  wishes a lower loan, the effect is ambiguous because  $c_c > 0$ . Given the value of the derivative of the difference between the upper bound and the optimal value, it is clear that the larger  $a + a_c$ , the lower the difference. So adding a large  $|a_h|$  implies an increase of the difference between the bounds and the optimal value. Hence the proximity between two countries wishing similar optimal loans is not pertinent. As for the optimal value, it increases with  $a + a_c$ . So adding a large  $|a_h|$  reduces the value of the optimal loan. The overall effect on the upper bound is therefore ambiguous. If  $c + c_c > 0$ , then the effect is stronger on the difference than on the optimal value so the upper bound increases.

So everything else being equal, being closer to a country wishing a large loan increases the loan and this effect is increasing with  $c + c_c$ .

### 5.3 Lobbies represent a non-negligible share of the population

A last aspect we want to discuss in this paper is the role of the fact population is at least partly represented by lobbies. In such case, the welfare of a given lobby is equal to

$$W_{ik} = \Pi_{ik} + \gamma_{ik}W_i \tag{12}$$

where  $\gamma_{ik}$  is the share of the population of country  $i$  that is represented by the lobby  $k$ . An interesting effect is that this reintroduces the constant part of the welfare of country  $i$  in the overall effect on the bounds. Indeed, the weight of  $W_i$  in the equation of interest is now  $1 + \gamma_{ik}$ . So when we consider the difference with  $W_i(S_{ij} = 0)$ , the part of  $W_i$  that is independent of  $S_{ij}$

does not totally disappear. This is due to the population is interested in the welfare  $W_i$  and not by the difference  $W_i - W_i(S_{ij} = 0)$ .

Consequently, when the welfare of country  $i$  is positive despite the loan is null, which is probable yet not systematic since domestic firms may be so exposed in country  $j$ , this reinforces the positive effect of the political relationship between the government and lobbies on the probability a consensus will be reached.

**Proposition 5** *When a lobby represents a non-negligible share of the domestic population, this reinforces the positive effect on the probability a consensus will be reached*

## 5.4 Truthful everywhere contribution

In this case, as we have already discussed, the contribution has no constant part. Apart the diplomacy that may affect this, another aspect could influence this contribution. Competition among lobbies should reintroduce the constant in the contribution, as pointed out by Grossman and Helpman (1994). What could help competition among lobbies to emerge in this set-up?

An obvious answer is that the international organization financial resources are limited. In this case, the eventuality that another country could come in order to ask for a loan during the same year could induce some lobbies to oppose the loan to a first country. Moreover, the opposition could come from the inside or from the outside. Indeed, in the same sector, one could have some firms less threatened than others that would therefore prefer to keep their resources for some other countries, this would introduce an intra-sectoral conflict of interest as in Rebeyrol and Vauday (2008). Of course, an inter-sectoral conflict of interest could also emerge.

## 6 Ways of reaching a consensus

### 6.1 Two approaches of consensus

We are first interested in a notion that we label an *explicit consensus*, one of the two notions of consensus we use in the paper.

**Definition 1** *A full consensus implies that all parties agree to grant a loan.*<sup>11</sup>

The fact all countries agree for a loan comprised between  $\underline{S}_{ij}$  and  $\overline{S}_{ij}$  is not obvious. Therefore, we will also work with another definition of consensus, borrowed to sociology (Urfino, 2006), called *apparent consensus*

**Definition 2** *An apparent consensus is a decision validated after talks have been hold if no country expresses a disagreement*

If one accepts the idea, as in the case of the IMF for instance, that all available money is not spent each year, such a form of consensus is acceptable and corresponds to our simple framework concerning the bounds. So we state that if the consensus value is in the range of values that ensures a given country that it will not loose from the decision, then this country will not oppose to the decision despite this value is far from its optimal loan value. Consequently, under apparent consensus, the existence of one unique value common to both ranges of two countries is enough for them to reach a consensus. An increase in the range does not change anything to the probability that two countries will reach an apparent consensus.

The tradeoff between these two definitions may depend on the following concept. This is the widely spread idea in political science that an important determinant of consensus is related to the notion of relative gain. Indeed, the willingness of a country to validate a consensus depends on its feeling that its gain is not too modest compared to what the other countries obtain. If this is true, therefore we should refer to the explicit consensus definition. It would rather correspond to a resources constrained decision such that the WTO for instance in the sense that more gains for some countries imply some gain losses for the others, if not losses.

If one considers that the relative gain story is not relevant, then the apparent consensus is more appropriated. We believe for instance that a non resource constrained decision as many decisions of the IMF enters this category.

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<sup>11</sup>This definition seems rather obvious but one could also think to a consensus that is reached if a given percentage of the participants agree to grant loan. This situation is possible because many IFIs, among which the IMF, have a voting rule behind its consensus practice. So the threat of turning to the vote may help reaching a consensus.



So one should keep in mind that under both types of consensus, an increase of the range of one country such that the lower bound is the same or smaller and the upper bound is equal or larger than the previous ones, has either a positive effect or a nil effect according to the type of consensus. If this is not the case, then the move has to be in the “right way”, i.e towards countries with which there are no common values before the move. We have this effect always implicit in the remaining of the paper.

### 6.1.1 Condition of a consensus

We consider for now under what conditions a consensus is reachable, we are not directly interested in how it is reached. There are  $n$  active countries. We assume that a consensus over a loan to country  $j$  is reachable between any two countries  $i$  and  $h$ , characterized by  $S_{ij}^*$  and  $S_{hj}^*$  respectively, with  $S_{ij}^* < S_{hj}^*$ , if and only if  $S_{hj}^* - S_{ij}^* < \theta_{hj}^l + \theta_{ij}^r$ . That is, two countries will reach a consensus if and only if they may agree on a loan amount such that they both gain (or even not loose) in lending that amount to country  $j$ . Under explicit consensus, we assume that the probability of reaching a consensus between any two countries depends on the size of the range defined just above. This is in line with research in psychology (see the works of Dan Gilbert) that suggests a person is more likely to make a choice if she has the choice. The fact that relativeness helps making consensus could be the way to interpret this.

So if each country has a set of possible choices  $\sigma_i$ , then a consensus is reachable if the intersection of all these sets is non empty.

It is also of course probable that there are some strategic behaviors behind this since a country should hide its bounds (or even lie) in order to increase the probability that the consensus will be closer to its optimal loan. This however should not alter the fact that lobbies will try to influence the decision.

Now that we know the effect on one country, one can infer the effect on the probabilities of reaching an apparent consensus, then of reaching an explicit consensus and finally of reaching a simple majority vote for a loan.

We will use two ways to represent the countries that make a loan decision. A first one (refer

to as representation 1) is an axis on which all countries are ranked according to their  $S^*$ s and their ranges are drawn on the same axis. The second one (refer to as representation 2) is a two axes representation where the x-axis measures the  $S^*$ s and the y-axis measures the  $\theta$ s. It is important to note for instance that according to the representation 2, the more U-shaped it looks like, the more likely is the consensus as we need the two extreme countries to share at least one value. However, a strongly increasing line or a strongly decreasing line should also be ok. That is, starting for the lowest  $S^*$  to the highest (or conversely), the next country just after has to have a  $\theta$  such that it is equal to the difference between the  $S^*$ s of the countries under consideration. The country after has to have a  $\theta$  such that it is equal to the difference between its  $S^*$  and the lowest one, etc ... So moving from country  $n$  to country  $n + 1$ , the  $\theta$  is increased by the difference between  $S_n^*$  and  $S_{n+1}^*$ . Hence this is a  $45^\circ$  line.

### 6.1.2 Apparent consensus

As already said, in the case of an apparent consensus, the existence of one common value in the ranges of two countries is enough to reach a consensus between both countries. If all the pair by pair common ranges share a common range, then the consensus is reached, otherwise it is not. In order to figure out easily the consequence of this, consider the above example of the unique common value between two countries. A consensus is reachable if and only if this value is present in the common ranges of all pairs of countries.

Two possibilities arise.

(i) Either the range increases from  $[\underline{S}, \bar{S}]$  to  $[\underline{S}', \bar{S}']$  such that  $\underline{S}' < \underline{S}$  and  $\bar{S}' > \bar{S}$ . In such a case, whatever the position of the country, this effort is either positive or has no effect. It is positive if it allows the country to reach some common values with at least one additional country (given that one could turn to a vote if no consensus is reached). It has no effect if this simply increases ranges that are already non-empty before the effect or effort takes place.

(ii) If this not the case, this leaves unchanged the probability if it does nothing or if it suppresses the last common value between two countries. An effort in the right direction may help reaching a consensus. A country such that  $S_{ij}^* < \bar{S}^* = \sum_i^n S_{ij}^*/n$  will have a nil or positive

effect if  $\bar{S}' > \bar{S}$ . Conversely, a country such that  $S_{ij}^* > \bar{S}^*$  will have a positive or nil effect if  $\underline{S}' < \underline{S}$ .

### 6.1.3 Explicit consensus

In the case of the explicit consensus, the existence of one common value is just enough to have a non nil probability of reaching a consensus. However, the rule of this consensus is that all countries have agreed. So the most important criteria is the range between the two most extreme countries, i.e the lowest  $S^* - \theta$  and the highest  $S^* + \theta$ . Because of course, despite two countries share a very large range, they have to choose a value in the range of the two extreme countries if they want all countries to agree to the proposition.

Contrary to the case of apparent consensus, increasing all ranges is assumed to have a positive effect on the probability as soon as all pairs of countries share some common values. This being more true concerning the two extreme countries.

For an explicit consensus, as soon as the range of a country is not diminishing in size, there is an increase in the probability a consensus will be reached if all pairs of countries exist. That is, even if no new pair of countries sharing a common value is created, this still increases the probability.

## 6.2 Modified median voter: an example

The median voter offers some interesting insight. This is a modified version because here we have two dimensions. Considering representation 1, suppose we have 5 countries ranked from 1 to 5. Assume we have that  $S_1^* < S_2^* < S_3^* < S_4^* < S_5^*$ . A standard median voter situation would say that a solution around (or equal to, according to the refinement)  $S_3^*$  would be chosen.

Here, the  $\theta$ s are very important. They may make possible a solution between  $S_1^*$  and  $S_2^*$  to be chosen. If one considers a country votes for a proposition if it is not reducing its welfare, the presence of this rule transforms the issue of the vote. It suffices in this example that the  $\theta$ s of country 1, country 2 and country 4 to be very small whereas the one of country 5 is very large

for instance. This is true even if the country 5 has a voting power by far larger than those of the four other countries. Country 5 could prefer a value in the small range of country 4 but if the range of country 3 is small enough, country 3 would not vote for it. So if countries 1 and 2 have a common range and that the other country to share a range with the others is country 5, the solution that emerges is between  $S_1^*$  and  $S_2^*$ .

The effects are obviously comparable to those highlighted before. Except that only three countries sharing some common ranges are necessary under a simple majority rule.

## 7 Extension and conclusion

The first extension that may come to mind is to apply the following framework to the possibility for the G20 to find an agreement over the financial crisis of the last years. Another interesting extension would be to consider explicitly heterogenous firms in each sector in order to assess the effect of lobbying whether most of organized firms are more or less exposed to the crisis. Applying this type of framework to other multilateral decisions as the WTO negotiations or the environmental negotiations would also represent a particularly interesting approach. A last extension that would be of interest is the inclusion of foreign private influence.

This paper is the first, to our best knowledge, to propose such a framework to assess the effects of domestic political relationship and diplomatic proximity on the probability of reaching a consensus over a lending decision in the context of a crisis. We believe the results are indicative that we need to pursue in this research avenue as it is simple and suggests many possible applications as well in the theoretical direction than in the empirical one.

One of the most striking result is that lobbying may help negotiations to be concluded under some particular conditions. It is however not surprising since it is enough that the country under private interest influence is on the opposed side of the spectrum of all optimal loans, compared to the lobbies, in order to have a consensus more easily reached. However, a second effect is identified which passes through the overall financial health of a lobby (or the sector it represents) may increase the range over which a country will agree to grant a loan. When

present, this is a positive effect everything being held equal.

Despite one should not ignore that lobbying may often lead to unfavorable outcomes from a social welfare point of view, this paper indicates that in some cases, the lobbying may yield a good outcome. For instance the fact a country facing a crisis obtains a loan is generally a good outcome. This has however to be mitigated in two ways. First, there are different voting powers in some international organizations, hence this paper implies that the lobbies of powerful countries would be over represented compared to the other lobbies, so this would introduce another bias. Second, it could well be that we could have a negative effect of the lobbies on the probability an agreement will be reached. Indeed, if lobbies have a preferred loan less close to the one of the international community than the preferred loan of the government they influence, their action could suppress the willingness of the government to reach an agreement.

## A Proof of the requirement for S

Every welfare may be written as

$$W_i = (\underline{S}_i - S_{ij})(\bar{S}_i + S_{ij}) \quad (13)$$

except for country  $j$  (that faces the crisis). Recall that  $\theta_{ij}$  is the difference to the bounds for country  $i$  when judging of the size of the loan to grant to country  $j$ .

So the objective function of the government is the following

$$G_i = \sum_{h \neq j} \alpha_{ih} (\underline{S}_{hj} - S_{ij})(\bar{S}_{hj} + S_{ij}) + \alpha_{ij} W_j \quad (14)$$

under the convention that  $\alpha_{ii} = 1$ . So we have that, around the optimum

$$G_i^* = \sum_{h \neq j} \alpha_{ih} (S_{ij}^* - \theta_{hj} - S_{ij}^*)(S_{ij}^* + \theta_{hj} + S_{ij}^*) + \alpha_{ij} W_j \quad (15)$$

or

$$G_i^* = \sum_{h \neq j} \alpha_{ih} (-\theta_{ih})(2S_{ij}^* + \theta_{hj}) + \alpha_{ij} W_j(S_{ij}^*) \quad (16)$$

We know that  $\theta_{ij} < 0 \forall i \neq j$ . If the mean of  $|\theta_{hj}|$  for all  $h \neq j$  is superior to  $2S_{ij}^* + \alpha_{ij} W_j(S_{ij}^*)$ , then the equilibrium welfare is negative.

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