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Abstract

Lobbying activities bias the political decision making process. There tend to be deviations from the socially optimal solutions. This paper shows that, in an international context, this bias is not necessarily harmful from an economic-welfare point of view. It may correct externalities that occur in an international policy game when individual governments behave strategically. The strategic variable in this model is the quantity of a factor of production which is provided by the government, e.g. an infrastructure good. If both countries under consideration are large and wish to affect the remuneration of the internationally mobile factor of production, it can be seen that one country provides too much of the public input whereas the other country does not provide enough. Lobbying activities that tend to increase the supply of this input in the latter country may, therefore, lead to welfare gains for both countries involved in the jurisdictional competition provided that the resource cost of lobbying is not to high.

1. Introduction

Lobbying activities generate two kinds of distortions in an economy. First, resources are directed away from productive activities to activities that serve purely redistributive objectives. Thus, the production possibility set of the economy tends to be diminished and this causes welfare losses. See Tullock (1967) and Krueger (1974). Second, if lobbies are successful, economic policies will be biased. The particular objectives of the lobby are are taken account of in the political decision making process much more then they should. Thus, there will be

deviations from the socially optimal policy, and welfare tends to be reduced even more.

The present paper is about the second aspect of the welfare effects of lobbying. It shows that situations are imaginable in which the impact of pressure groups with idiosyncratic interests on the political decision making process generates welfare gains.[1] At a first glance, this seems to be counter-intuitive. Nonetheless, successful lobbying can indeed be useful from a welfare-theoretic point of view if it (unintendedly) happens to correct externalities that would otherwise be generated by welfare-maximising politicians in an international policy game.

The externality considered in this model results from the large-country effect known from the theory of taxation in open economies. See Dixit (1985), for instance. In a world of free trade in which trade restrictions are not available, tax policy may be used as a substitute for the optimum tariff. Taxes have an impact on the allocation of factors and can, therefore, be used to affect the terms of trade or the remunerarion of factors of production that are internationally mobile. Domestic welfare increases are accompanied by welfare losses in the foreign country. If the other country retaliates, there will be a Nash equilibrium of optimal tax policies which possesses prisoners'-dilemma type properties. Cooperation can generate Pareto improvements. It will be shown that these Pareto improvements can also be achieved if there are lobbying activities that bias the political decisions.

The theoretical framework of the analysis is a simple two-factors one-good model involving two countries. One factor is internationally mobile wheras the other is not. This second factor is supplied by the state and used by private producers. It may be a public good or it may be allocated to individual firms by means of user charges or other instruments. Examples are infrastructure goods like electricity or road and railway networks or environmental resources that are subject to public regulation.[2] The availabiliy of the publicly supplied input does not only determine the production possibilities of an economy; it also affects the

remuneration of the mobile factor of production. Depending on whether the country under consideration is an exporter or an importer of the mobile factor, it will benefit or lose if its price is increased. A policy aiming at the optimal provision of the public input should take account of this effect. If both countries act individually rational, then there is a Nash equilibrium of optimal tax policies and the impact of lobbying activities on the location of the equilibrium can be investigated.

The paper is organised as follows. The next section introduces the model. Section 3 is concerned with optimal policies without lobbying, i.e. with the decisions of the benevolent dictator. In section 4, the impact of successful lobbying by labour unions, capitalists, and bureaucrats will be considered. For the sake of simplicity, the resource cost of lobbying will be neglected, i.e. we consider pure bribery..

2. The model

Consider a world consisting of two countries, the home country and the foreign country. These countries are similar in many respects and their production and welfare functions have the same qualitative properties. All variables and parameters concerning the foreign country are indicated by asterisks.

The home country produces a single good by means of capital, K, and a production factor provided by the state, G. Let the production function, $f(K,G)$ be twice differentiable and concave. Moreover, I assume constant returns to scale. This implies

(1) $$f_K > 0\,,\ f_G > 0\,,\ f_{KG} > 0\,,\ f_{KK} < 0\,,\ f_{GG} < 0\,,\ f_{KK}f_{GG}-f_{KG}^2 = 0$$

,

where subscripts denote the partial derivatives of the production function with respect to the variable in question. The production function of the foreign country has the same properties.

The capital employed in each country is given by its initial endowment, K_o (K_o*), plus or minus the part of the domestic capital stock which is employed abroad, *I*. *I* will be referred to as "direct investment". If *I* is negative, there is a foreign direct investment in the home country.

(2) $$K = K_o - I \ , \ K^* = K_o^* + I \ .$$

Perfect mobility of capital implies that the rate of interest is the same in both countries. For perfectly competitive industries, this implies that the marginal value product of capital is the same in both countries. Assuming that the price of the output good and the exchange rate are unity, this implies

(3) $$f^*_{K^*} = f_K$$

where the arguments of the functions have been omitted for convenience. Given this, the impact of a change in the supply of the immobile factor of production on the allocation of the mobile factor turns out to be

(4) $$I_G = \frac{f_{KG}}{f_{KK} + f^*_{K^*K^*}} < 0 \ ,$$

(4*) $$I_{G^*} = \frac{-f^*_{K^*G^*}}{f_{KK} + f^*_{K^*K^*}} > 0 \ .$$

An increase in the supply of a country's immobile factor raises the marginal productivity of capital in this country.[3] Therefore, it becomes more attractive for foreign investors, and foreign capital tends to move into the country.

Net income in the two countries, Y and Y^*, consists of their production plus the return on the capital invested abroad or minus the remuneration of the foreign capital minus the expenditure necessary to provide the other factor of production. Let us choose the units of measurement of the public factor of production such that one unit of output has to be renounced in order to provide one unit of the input. Then:

$$(5) \qquad Y = f(K_o - I, G) + f_K(K_o - I, G)\, I - G$$

and

$$(5^*) \qquad Y^* = f^*(K_o^* + I, G^*) - f^*_{K^*}(K_o^* + I, G^*)\, I - G^* .$$

Since there is no trade in final goods, Y and Y^* also represent the consumption possibilities of the two economies. Optimal policies should therefore maximise Y and Y^*.

If the countries under consideration are small, the remuneration of mobile capital is determined exogenously in the international capital market. In this case, the optimal provision of the public factor of production is governed by

$$(6) \qquad f_G = f^*_{G^*} = 1.$$

The marginal productivity of the public input should equal the marginal cost of its provision. This completes the exposition of the model.

3. Optimal Policies

If the country under consideration is large, the welfare-maximising policy maker has to take into account the impact of the availability of the public factor on the remuneration of the factor which is internationally mobile. The first-order conditions are

(7) $f_G + I(f_{KG} - f_{KK} I_G) - 1 = 0.$

(7*) $f^*_{G^*} - I(f^*_{K^*G^*} + f^*_{K^*K^*} I_{G^*}) - 1 = 0.$

Rearranging terms and using (4) and (4*) to substitute for f_{KG} and $f_{K^*G^*}$, one obtains

(8) $f_G = 1 - I f^*_{K^*K^*} I_G .$

(8*) $f^*_{G^*} = 1 - I f_{KK} I_{G^*} .$

In the new optimum, the marginal productivity of the public-good input exceeds 1 in the capital-poor country and is less than 1 in the capital rich country.

This can be explained as follows. The firms in each country are price takers. They take the remuneration of capital as given. The governments, however, can influence the price of capital by means of their provision of the public good. And they will do so in order to establish a monopolistic situation that the firms do not have. The capital-exporting country prefers a high rate of return on foreign direct investments. So it tends to choose a larger supply of the public-good input and this increases the capital productivity at home. Less capital will be invested abroad and the capital capital productivity in the foreign country will also rise. The rate of return on foreign investments is increased and this is welfare improving. On the contrary, the capital-importing country has an interest in keeping the rate of return low since it has to pay. This can be achieved by reducing the supply of the public good. Both countries tend to increase the scarcity of the factors they are relatively well-endowed with by adjusting their policies accordingly.

Similar results can be obtained in models with trade in final commodities. In such models it is not the remuneration of the mobile factor which is affected by public policies, but the terms of trade. See Dixit (1985, pp. 331-340). In a free-

trade situation, the provision of public inputs can be used as a substitute for the optimal tariff.

The externalities and the potential of Pareto improvements can be shown when the effect of a variation of the supply of the public input in one country on the welfare of the other country is analysed:

$$(9) \qquad w_{G^*} = - I f_{KK} I_{G^*}$$

$$(9^*) \qquad w^*_G = - I f^*_{K^*K^*} I_G$$

By increasing the supply of the public good, the foreign country imposes a positive externality on the home country. The rate of return on mobile capital is increased and the capital-rich country gains. By the same kind of arguing, one obtains a negative impact of an increase in the domestic supply of the public good on the foreign country's welfare.

Assume now that each country takes as given the supply of the public input in the other country and then maximises its own welfare. The resulting Nash equilibrium represents each country's best response to the other country's policy measures. It can be derived from the optimality conditions (7) and (7*). In order to simplify the following analysis, we impose the additional assumption that some of the third derivatives of the production functions are zero:

$$(10) \qquad f_{KKK} = f_{KKG} = f_{KGG} = f^*_{K^*K^*K^*} = f^*_{K^*K^*G^*} = f^*_{K^*G^*G^*} = 0.$$

The assumption is made to avoid puzzling third derivatives in the following computations. If the production functions are quadratic, then this condition is satisfied.

Applying the implicit function theorem to the optimality conditions, one obtains the slopes of the reaction curves in the (G,G^*) diagram, $R(G)$ and $R^*(G)$:

(11) $$R' = -w_{GG}/w_{GG^*}$$

(11*) $$R^{*\prime} = -w^*_{G^*G}/w^*_{G^*G^*}$$

with

(12) $$w_{GG} = f_{GG} - f_{KG}I_G + I_G^2 f^*_{K^*K^*} < 0.$$

(13) $$w_{GG^*} = -I_G f_{KK} I_{G^*} < 0.$$

(12*) $$w^*_{G^*G^*} = f^*_{G^*G^*} + f^*_{K^*G^*} I_{G^*} + I_{G^*}^2 f_{KK} < 0.$$

(13*) $$w^*_{G^*G} = -I_{G^*} f^*_{K^*K^*} I_G < 0.$$

This implies that the reaction curves of both countries are negatively sloped. An increase in the one country's effort to improve the remuneration of the mobile factor yields an increase in the other country's effort. Since one country improves its situation by increasing the supply of the public factor of production and the other country does this by reducing the availability of the public input, the reaction curves are negatively sloped. This is shown in Figure 1 below. Additionally, the iso-welfare curves are depicted in this figure. It follows from (9) and (9*) that the domestic iso-welfare curve, W, is convex whereas the other country's curve, W^*, is concave. Moreover, it can be shown that the effects of own regulation on marginal utility dominate the effects of foreign regulation,

(14) $$w_{GG} w^*_{G^*G^*} - w_{GG^*} w^*_{G^*G} > 0.$$

The foreign country's reaction curve is flatter than the home country's reaction curve and the Nash equilibrium is stable. If we exclude the case in which the whole capital stock is employed in one country and if the Inada conditions hold (in particular if the marginal productivity of the public good goes to infinity when its

supply goes to zero), then this condition is sufficient for the existence of a unique Nash equilibrium with positive supply of the public input.

The potential of Pareto improvements can be derived from the iso-welfare curves. It is seen that gains from cooperation can be realised if the home country increases the supply of the public factor of production whereas its supply has to be reduced in the foreign country.

4. Successful Lobbying and Biased Policies

Lobbying activities will be introduced into the model in a very rudimentary way. I assume that the cost of lobbying is negligable. Thus, the analysis is restricted to the bias generated by successful lobbying. This bias is modelled by specifying a political support function as the weighted average of social welfare and the utility of the interest group under consideration. This support function is maximised by the policy maker. Three types of interest groups will be considered: the unions interested in maintaining a high level of employment, the capitalists who are desirous of a high rate of return, and the civil servants working in the public administration who wish to distribute a large amount of publicly provided goods.

(1) The unions. Assume that a fixed quantity of labour is necessary to produce a certain level of output, i.e. the substitution possibilities of labour for other factors of production are negligible. This implies that unemployment can be reduced only by increasing the level of production. The domestic political support function then turns out to be

$$(15) \qquad w^U = Y + x(f(K^o\text{-}I,G))$$

where $x(.)$ is increasing and strictly concave. The optimal public policy in this case is determined by

(16) $f_G = 1 - If^*_{K^*K^*} I_G - x'(f_G - f_K I_G).$

The last term is negative. The supply of the public good exceeds its socially optimal level since this raises output and employment. Of course, the same argument is valid for the foreign country and it will also increase the supply of the public good for any given level of domestic supply.

(2) The capitalists. The capitalists are interested in increasing the rate of return, i.e. the marginal productivity of their factor of production. The domestic political support function in this case is

(17) $w^C = Y + z(f_K(K^o - I, G))$

where $z(.)$ is increasing and strictly concave. The public input supply is given by

(18) $f_G = 1 - If^*_{K^*K^*} I_G - z'f^*_{K^*K^*} I_G.$

The last term on the right-hand side of (18) is negative. Successful lobbying by capitalists will increase the provision of the public input. Of course, the same result is achieved for the foreign country.

(3) The bureaucrats. The legitimacy of a bureaucracy is a function of its budget or of the magnitude of the services it delivers. Thus the supply of the public input can be taken as a proxy of the unobservable variable "legitimacy". The political support function then is

(19) $w^B = Y + v(G)$

where $v(.)$ is increasing and strictly concave. The tax policy is determined by

(20) $f_G = 1 - If^*_{K^*K^*} I_G - v'.$

Too much of the public input will be supplied. The same result is obtained for the foreign country.

All kinds of lobbying considered here produce the same type of bias in public policies if they are successful. Too much of the public input will be supplied. The home country's reaction curve is shifted to the right, the foreign country's reaction curve is moved upwards. Thus, the new Nash equilibrium is located in one of the areas *a*, *b*, and *c* in Figure 1. In area *a*, both countries are worse off than in a situation without lobbying. In area *b*, the home country gains. In area *c*, both countries benefit from lobbying. It is particularly the last result which is surprising and it deserves some further explanation.

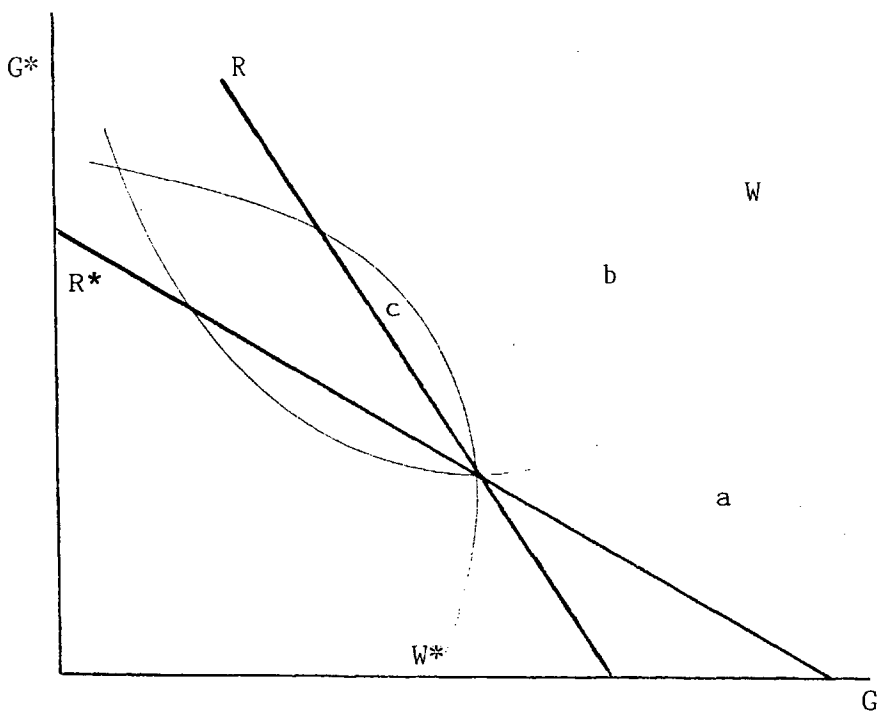

Figure 1

The new Nash equilibrium is located in area *c* if there is some lobbying in the foreign country and no or almost no lobbying in the home country. Successful lobbying in the foreign country increases the the supply of the public input. The rate of return on mobile capital rises and this is good for the home country. Since the foreign pressure on the rate of return has been reduced, the home country reduces its own effort to influence the rate of return. It reduces the domestic supply of the public good. This corresponds to an upward movement along the domestic reaction curve. In the new equilibrium, both countries have reduced their pressure on the rate of return. Since the effort to affect the rate of return on capital in one's own favour results in an income loss in the other country which is larger than one's own income gain, both countries benefit in such a situation. Similar arguments can be applied to interpret the result of area *b* where only the home country experiences welfare gains.

Two caveats should be mentioned. First of all, the model does not make much sense if all interest groups are active at the same time. If capitalists, unions and the public administration, i.e. the majority of the people, are interested in a provision of the public goods that exceeds the income-maximising level, the income-maximising level is unlikely to be the optimum. Thus, the preceeding analysis has to be based on the assumption that the number of lobbyists is not too large. This can be achieved by assuming either that only one lobby is active or that there is a silent majority of people in the background who are not modelled explicitly. At least, one may argue that the income-maximising solution offers the best opportunity to compensate the losers of certain policies and, therefore, to achieve a Pareto optimum. Another aspect of the problem which is missing in the present investigation is the waste of resources that is accompanied by any directly unproductive activities like lobbying. In principle, the results derived here can only be applied if lobbying activities take the form of pure bribery. Had the waste-of-

resources aspect been taken into account here, the potential of Pareto improvements through successful lobbying would have been reduced substantially.

5. Conclusion

Successful lobbying, albeit harmful from an individual country's point of view, can produce desirable results in an international policy game. If countries use the provision of public inputs strategically to affect the remuneration of mobile factors of production, they end up in a prisoners' dilemma. Successful lobbying leads to changes in national policies and if the resulting policy bias is such that it reduces the international externality problem, there can be Pareto improvements. Similar arguments can be applied to the standard Heckscher-Ohlin type trade model. In that model, the critical variable is not the remuneration of the mobile factor but the world market price ratio, the terms of trade. Despite some additional ambiguities, the results of such a model would, by and large, be the same. A major shortcoming of the approach chosen in this paper is its rather rudimentary and simplistic representation of the process of political decision making. If the behaviour of lobbyists and policy makers could be modelled more explicitly, one could presumably obtain additional insights. In particular, the waste-of-resources aspect of lobbying activities could be taken into account. Although this would reduce the potential for welfare improvements substantially, the result of this paper should be maintained at least for a limited set of parameter combinations: lobbying can be a good thing.

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Footnotes

1 In a model dealing with the waste-of-resources aspect of the problem, a similar result has been established by Bhagwati/Srinivasan (1980). They managed to show that in a distorted economic environment resources may have negative shadow prices and that it is, therefore, desirable to withdraw them from productive utilisations.

2 The major difference between this and many other approaches to public policy in open economies is that here the state determines the supply of the immobile factor of production whereas in many of the other models it uses policy measures that affect the allocation of the mobile factor directly, e.g. taxes on capital. See Sinn (1987, Ch. 7) for an overview. A model similar to the one employed here has been investigated by Oates/Schwab (1988), albeit only for the small-country case. Taxation in large countries and Nash equilibria have been adressed by Mintz/ Tulkens (1986), but they have not been interested in the kind of comparative static results that will be derived in this paper.

3 This is due to $f_{KG} > 0$ and $f^*_{K^*G^*} > 0$. This condition is satisfied by all production functions with constant returns to scale and negative second derivatives.