Lobbying for tariffs: An analysis of the interaction between domestic policy and trade policy

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In this paper I consider how the structure of domestic tax policy can affect trade policy when the former is determined through voting by the public and the latter through lobbying by firms. I find that in these circumstances trade policy may be more liberal due to the pressures placed on the lobbying capabilities of firms by the use of domestic taxes. In particular a domestic income tax reduces the extra profits available to domestic firms through restrictions on trade, thus reducing the demand for trade protection. There are also effects in the opposite direction as tariffs affect the demand for the publically provided good and thus the policy platform of the political parties.

This paper covers new ground in that the interactions between policies on the political economy demand side have previously received little attention. The supply side of the political economy of trade policy has perhaps been more rigorously covered. For example the idea that introducing an electorally unpopular trade policy will only make sense for a government seeking to gain/keep power if they receive some benefit, for example in campaign contributions (as in this paper) is now common. The idea that similar tradeoffs exist on the demand side and the interaction this has with the supply side remains relatively unexplored however.

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1 Introduction

The economic analysis of the determination of trade policy through the political system is a topic that has now been studied to a great extent by economists. An interaction by politicians with the interests of voters and of special interest groups is a well analysed area. For example the idea that politicians will alter their policies to better match with those of lobby interests in exchange for campaign contributions is fairly common, for example Grossman and Helpman (1994) and Baron (1994). This study of the supply-side of the political relationship has perhaps not been matched by an equal treatment of interactions on the demand-side. Authors such as Baron and Grossman and Helpman (1996) take each party as having some set of exogneous fixed policies. However this analysis difers from these in that there is no exogneous fixed policy position. Instead in this paper I will analyse how when politicians have the possibility to offer different policies to different groups, the interaction between these policies will be important in determining the eventual policy outcomes.

This is of interest because elections are rarely fought on trade policy alone, in fact trade policy is often a relatively unimportant issue for example Topalova (2004) finds from an analysis of Indian trade liberalisation that there was little popular interest in trade policy amongst voters. Similarly Bloningen (2008) analyses US survey data and finds that 30% of those surveyed felt that they did not have enough information to form an opinion about trade policy. However there will be a range of economically important domestic issues that are part of a politicians platform, which many voters will care about and understand and which will, crucially, feedback to effect the demand for trade protection. To keep things relatively simple and the model tractable I focus in this paper on an election where politicians have a platform providing a some amount of a publically provided good funded an income tax, and a tariff that protects firms, as well as helping provide government funds. These policies are fairly easy to model but the results can be applied fairly generally to a range of other policies with similar effects as I shall discuss later. Furthermore these two polcies are of course very commonly observed in reality, providing a good motivation for focusing on them here.

The central mechanism defining the interaction between the demand for trade protection and the demand for the publically provided good (or the public sector generally) is that firms desire protection through trade policy so as to increase their profits by restricting foreign firms' access to the domestic market.

Firms' profits in turn depend on domestic policy, in particular domestic policies that tax citizens in order to fund the public sector will reduce the profit opportunities of firms in the private sector, thus reducing the incentive for tariff protection. This interaction leads to interesting incentives for politicians when presenting their policy platforms to the electorate. I find that the interactions between the domestic and international economic policies lead to a lower level of tariffs than would be the case if the changes in the domestic policy induced by the tariff were not accounted for. With an exogenous domestic policy platform and voters who are uninformed on trade policy then there is no loss to politicians from setting tariffs as high as a lobby desires. Once the interaction is accounted for that reduces the demand for tariffs we will observe an equilibrium where the power of the lobbys is limted by the domestic income tax response.

The importance of lobbying is reliant on the fact that at least some voters are uninformed in some way concerning the election. This provides the politicians with the motivation to raise money from lobbyists so as to convince these uninformed voters to support them at the ballot box as with Baron (1994). The politician/party that has the highest level of contributions and therefore campaign spending is more likely to win the election.

An important original element of this analysis is the assumption that voters are more uninformed on the issue of trade policy than they are on domestic issues. Exisitng work assumes that voters voters are either informed or uninformed on all policies, yet once the idea of differing levels of information is introduced it seems natural to think that people will be differently informed across the range of policies.

As described above there exists some evidence that many voters are uninformed/do not care much about trade policy, or as Conybeare (1991) points out there is often little resistance to protection for local industry because most of the costs are born in other areas. This would appear to fit well with the observation by such authors as Grossman and Helpman (1996) that special interest groups appear to wield significant policy influence over many areas but Tullock (1972) makes the point that this is unlikely to be in areas of major policy issues and much more likely in areas where there are small private benefits. Baron (1994) adopts arguments of this sort to distinguish between two types of policy; collective policies where beneifts are concentrated to a small group and collective policies that have wider effects. I adopt reasoning of this sort here when splitting the domestic and international policies.

There is further justification for this idea from within the literature and there

is a variety of evidence to support it. One of these justifications is the idea that trade policy is a relatively opaque instrument, whose consequences are hard for the public to understand therefore allowing the politicians to redistribute to their favoured group and/or raise more revenue without attracting excessive unpopularity amongst those who are negatively affected (Bannister and Thugge, 2001). This idea relates particularly to a strand of literature that looks at why redistribution is so often conducted through inefficient tax and regulation instruments when more efficient instruments are often available, see for example Crew and Rowley (1988). In the case of trade policy it has been theorised (Krueger, 1974) that for example non-tariff barriers are less efficient that tariffs due to the rent-seeking that they attract, or even more extremely that trade policy itself is an inefficient way of redistributing to the firms/groups that benefit when there are domestic policy instruments available that are more efficient. Finkelstein (2007) provides evidence for one reason why such opaque instruments are preferred by illustrating how the adoption of electronic toll systems on US travel networks (a more opaque system of collecting money) led to an increase in the revenue raised by these tolls.

A related idea (Crew and Rowley, 1988) is that politicians/lobbyists will attempt to paint their redistributive policies as benefiting everybody, even to those suffering negatively from the redistribution. Clearly they are only able to do this if there is a certain lack of awareness about the affects of the policy (or if those affected are irrational to some degree, an issue I will not address here). This is clearly apparent with trade policy where many would consider protectionism to be a benefit despite having little or no positive stake in the protected industries and clearly standing to suffer as consumers. It is this justification that best fits with the model described in this paper. One final justification for the assymetry of voter's responses to trade policy compared to domestic policy is the idea that information is costly and that because it has less of an impact on the average voter, they are less likely to acquire the relevant information. Compare this to something like an income tax which has a significant impact on most households in some way then there is clearly an incentive to understand how this policy will affect you.

One motivation for addressing the issue of interactions between different elements of politicians platforms is my desire to explain open trade regimes. The research agenda in the political economy of trade policy has been dominated by attempts to explain why trade protection exists yet the dominant trend in trade policy in most countries has been towards trade liberalisation. Explanations

for trade liberalisation have been unforthcoming from the political economic literature and I beleive that this approach may be one way of answering this question. By analysing the limits placed on lobbying by the need of politicians to offer other policies to the electorate I may help explain why trade protection has been reduced so greatly in recent times.

2 The Model

Let us begin by outlining the main features of political-economomic structure. Lobbying is conducted by companys operating in international duopolys.In this I follow the likes of Brock and Magee (1978) who argue that lobbying is more likely to come from specific industrial sectors rather than broad groups of factor owners, i.e. factors are more sector specific than they are mobile as in a Heckscher-Ohlin model.

Following Grossman and Helpman (1994) I take lobby formation as exogenous, some sectors are organised and can lobby and others cannot, my aim is not to explain lobby formation but to look at the results of their existence in this particular context. These lobbys are able to offer campaign contributions to politicians in exchange for a tariff that will protect the firm from its foreign competitor, hence raising profits. I assume that voters are totally uninformed with regards to the tariff for the reasons given in the first section. This means that the tariff level does not affect their decision on who to vote for (at least directly). As well as a tariff, politicians can supply an income tax that is used to fund a publically provided good, this is the issue that affects voter's decisions. A percentage α of the voters are not only uninformed on the issue of the tariff but also on the issue of the income tax. It is these voters who can be swayed by campaign spending. The lobby gives money to politicians only to get a better tariff, never to affect the income tax issue. This follows the discussion regarding the apparent difficulty of special interests to affect major public policies, and their desire to initiate redistribution through relatively opaque policies (such as tariffs) that attract relatively little attention from the public. There is then a clear political split between a tariff that is influenced directly by lobbying, but not by voting, and an income tax where the reverse is true. For now I consider pure Downsian politicians, who are interested only in winning the election, not in implementing any particular policy, nor in improving the well-being of society. I assume that credible commitment exists so that all promises made by

politicans in the election campaign will be honoured, and that the firms and voters are aware of this.

The optimal level of the income tax from the voter's perspective and for the tariff from the firm's perspective depends on the interaction between the two policy instruments at the economic and political level. The most important interaction at the economic level is that a higher income tax means less money for people to spend on goods provided by the private sector and therefore a lower demand for the lobbyists's products. This obviously affects the desired tariff level for the firm as I will show. On the political side the most important analysis is on the incentives this economic interaction offers for politicians in the package of tariffs and income tax that they offer to the voters. I will now provide details of the role in the economic and political markets of all three groups; consumers/voters; firms and politicians.

2.1 Consumers/Voters

I will first look at the consumers/voters. This group is so labelled because they supply votes to the political parties and demand both private and publically provided goods. The private goods are acquired from the firms, both domestic and foreign that are operating in the various sectors of the economy. This (inverse) demand is denoted $P^i(Q)$. They also demand a publically provided good which is delivered to them by the government. The quantity of this good that the government provides is determined at the election. All voters are presumed to be uninformed on the tariff issue but a proportion $1-\alpha$ are informed with regards to the income tax. I assume some exogenous distribution of individual income $F(Y^i) \in [0,1]$ where $i = 1, 2, ..., N$ are the total number of individuals in the population. The income tax is linear and levied at a rate t. Note here that the domestic policy which funds the publically provided good need not be an income tax but any other tool that has a significant effect in reducing incomes of private citizens in order to finance a publically provided good, in order to have the interaction with the tariff effect which is the important part of this model. All agents are assumed to have a demand function for the publically provided good $G^i(\cdot)$.

Demand for the publically provided good is a function of the prices of private goods, and of both personal and average income. I take it that the publically provided good is a substitute for the privately provided goods and therefore the relationship between demand for the publically provided good and prices of

private goods is negative. I assume that the price of the publically provided good faced by the government is normalised to unity. All citizen's receive the same provision of the good which will be $g = (tY + \sum \tau^j P^j Q^{j*})/N$ units where $Y = \sum Y^i$ is the total income of the economy ($\overline{Y} = Y/N$ is average income), τ^j is the tariff rate levied on the price (P^j) of the lobbying firms' goods, of which the amount imported is denoted Q^{j*} where $j = 1, 2, ..., L$ indexes the L industrial sectors where the domestic firms are able to lobby for tariffs and the star refers to foreign production. In contrast each citizen will contribute an amount of income equal to tY^i units. Therefore those with higher than average income will contribute more than they receive, effectively paying a higher price for each unit of the public good they receive. Thus the larger is an individual's income in relation to the average, the lower will be their demand for the publically provided good and therefore $G^i_{\overline{Y}}(\cdot) > 0$ and $G^i_{Y^i}(\cdot) < 0$ where the subscripts refer to first order derivatives. The derivative refering to personal income reflects the fact that richer individuals have lower demand for the public good as they pay relatively more. It is also the case that the publically and privately provided goods are substitutes and therefore that $G^i_{P^j}(\cdot) > 0$.

2.1.1 The effect of tariffs

How will the demand for the publically provided good, and the income tax rate desired as a consequence be affected by the presence of the tariff? The direct effect of a higher tariff will be that it will raise the price of consumption goods produced by protected industries. This will lead to an increase in demand for the publically provided good, which is a substitue for any private consumption good, and therefore an increase in the income tax rate. I call this the price effect.

The tariff may also raise revenue that funds the provision of the publically provided good. There will exist a revenue maximising tariff but the firms optimal tariff will be one where there is no foreign competition, thus leaving the domestic firm in a monopoly position. Between the revenue maximising tariff and the firm's optimal tariff any increase in the tariff will reduce government revenue. I will follow Mayer (2002) in assuming a "small" tariff is the maximum being implemented, something that seems intutitvely reasonable given actual tariff values observed in reality. Therefore I assume that any increase in the tariff does increase government revenue thus allowing extra provision of the publically provided good. This increase in the public sector without an income tax rise is seen by agents as being "free" as due to their lack of information on the tariff

they do not connect the increase in the public sector to the adoption of tariffs. As a consequence total demand for the public good will rise. Whether or not this will lead to an increase in the income tax rate depends on whether total demand for the public sector increases by more or less than the increase in the number of extra units provided by tariff revenue. If $G^i(\cdot)$ is taken to be concave in its arguments then the increase in total demand will be smaller than the increase in units provided by the tariff revenue and hence the income tax rate will tend to fall due to this revenue effect.

These revenue and price effects have opposite effects on the income tax rate but the overall effect of a tariff increase will certainly be to increase demand for the public good. Also the combined effect of a tariff increase will be to increase the income tax rate required to finance the public good as any revenue raised by a given tariff will be relatively small and the resulting decrease in the income tax rate will be outweighed by the price effect. In other words the total units of the publically provided good that need financing by an income tax will increase.

2.1.2 The supply of votes

As previously mentioned there are two classes of voters, the uninformed and the informed (though both are uninformed when it comes to the exact effects of a tariff). In both cases I differ from Grossman and Helpman (1996) in that I assume that voters do not have any pre-existing exogenous preference for either party. In the case of uninformed voters they have the option of not voting, and will only vote if campaign spending by one of the political parties is sufficiently greater than that of the other. There is therefore an influence function $H(C^A - C^B)$ that gives the percentage of the αN uninformed voters who will vote for party A, with $1 - H(C^A - C^B)$ being the remainder who do not vote (clearly if campaign spending by party B (C^B) is greater than that of party A the argument of the function works in reverse and gives the percentage voting for party B. This function is increasing in the difference in the parties campaign spending as some voters need a greater amount of convincing.

For those voters who are informed (and who will certainly vote, there is no cost to voting) their decision will be based on the parties offers of public good provision, denoted g. It is here that the issue of the assymetry of information about the tariff and the income tax comes to the fore. In stan dard analysis of this sort such as Baron (1994) and Grossman and Helpman (1996) the informed voter bases his decision on their utility levels from the two parties' policy plat-

forms. Here however the voter's decision is based only on the provision of the public good, i.e. the reduction in utility due to the price rises of private goods caused by any tariffs are not used as a basis for making the decision. Instead a voter will vote for that party whose promised public good provision satisfies $\min |G^i(\cdot) - g^k|$ where $g^k \ k = A, B$ represents the two parties offers of public good provision. Note that this does not ignore the interactions between the elements of the parties platforms. The two parties could have very different levels of tariffs, hence different revenues from the tariffs and prices of consumer goods therefore the voter has a different desired level of the public good under each party, and recognises this fact, but does not link it to the tariff, whose effects they do not understand. Therefore the two parties could offer very different levels of the public good, but both be consistent with the voters optimum policy, given the tariff. In which case that voter would be indiferrent between the two parties.

2.2 Firms and the Demand for Tariffs

In this section I will outline workings of the firms and illustrate how their demand for tariffs is affected by the level of domestic policy. I assume that all lobbying is conducted by domestic firms and for simplicity that markets are characterised as international duopolies with one domestic and one foreign firm competing in output. Further to this I assume that the home firms are Stackelberg leaders. These assumptions about the market structure simplifies matters whilst fitting with the idea that to be able to lobby firms must earn positve profits pre-lobbying (hence have some degree of market power) and have something to gain from a restrictive trade policy (they face international competition). Further simplification comes from the assumptions that foreign nations do not institute retaliatory trade policy and that markets are segmented (decisions about production in domestic and foreign markets are treated as independent), both allowing a greater focus on what I am interested in here, which is the interaction between domestic policy and its effect on what trade policy is enacted.

Because I am only focusing on domestic trade policy and because markets are assumed to be segmented I will only consider the profits earned by firms in the home market. Following the notation and method of Bowen at al (1998) domestic (inverse) demand is a concave function $P(\overline{Q})$ where total quantity is given by $\overline{Q} = Q + Q^*$ where star superscripts denote a foreign variable. Home firm profits

are given by; $\pi = [P(Q + Q^*(Q)) - c]\, Q$ where c denotes the constant marginal cost of the home firm, and foreign profits by; $\pi^* = \left[\frac{P(Q+Q^*)}{1+\tau} - c^*\right] Q^*$ where τ is the tariff rate that applies to this industry. Differentiating with respect to the relevant quantity variables yields first order conditions for the two firms:

$$\frac{\delta \pi}{\delta Q} = P(\overline{Q}) - c + Q\frac{\delta P(\overline{Q})}{\delta \overline{Q}}(1 + \frac{\delta Q^*}{\delta Q}) = 0 \tag{1}$$

$$\frac{\partial \pi^*}{\partial Q^*} = P(\overline{Q}) - (1+\tau)c^* + Q^*\frac{\partial P(\overline{Q})}{\partial \overline{Q}} = 0 \tag{2}$$

The home firm benefits from the tariff if it reduces the quantity of output produced by the foreign firm. This can be shown to be the case by differentiating (1) with respect to τ and rearranging to give:

$$\frac{\partial Q^*}{\partial \tau} = c^* \left[2\frac{\partial P(\overline{Q})}{\partial \overline{Q}} + Q^*\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}\right]^{-1} \tag{3}$$

This is negative due to the second order conditions for a maximum derived from equation (2), where $\frac{\partial^2 \pi^*}{\partial Q^{*2}} = 2\frac{\partial P(\overline{Q})}{\partial \overline{Q}} + Q^*\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2} < 0$. Thus increases in the tariff do decrease imports. To find an expression for the effect of tariffs on domestic profits we must show how the quantities produced by the domestic and foreign firms respond to eachother. First take (4) and differentiate with respect to home production, rearranging gives:

$$\frac{\partial Q^*}{\partial Q} = -\left[\frac{\delta P(\overline{Q})}{\delta \overline{Q}} + Q^*\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}\right]\left[2\frac{\partial P(\overline{Q})}{\partial \overline{Q}} + Q^*\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}\right]^{-1} \tag{4}$$

This term is both negative (due to the concavity of inverse demand) and a fraction smaller than one (in absolute value). We can also derive an expression for the responsiveness of domestic output to changes in foreign output caused by external factors such as tariffs rather than by changes in the domestic firms own production. Differentiating (3) with respect to foreign production and rearranging yields:

$$\frac{\partial Q}{\partial Q^*} = -\frac{\left[\frac{\delta P(\overline{Q})}{\delta \overline{Q}} + Q\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}\frac{\partial \overline{Q}}{\partial Q}\right]}{\left[\frac{\delta P(\overline{Q})}{\delta \overline{Q}}(1 + \frac{\partial \overline{Q}}{\partial Q}) + Q\left[\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}\frac{\partial \overline{Q}}{\partial Q} + \frac{\delta P(\overline{Q})}{\delta \overline{Q}}\frac{\partial^2 Q^*}{\partial Q^2}\right]\right]} \tag{5}$$

Where $\frac{\partial \overline{Q}}{\partial Q} = 1 + \frac{\partial Q^*}{\partial Q}$ captures the Stackelberg leader effect of changing

domestic output on the output of the foreign firm. Equation (5) is negative by the concavity of demand and is also a fraction as $\frac{\partial^2 Q^*}{\partial Q^2}$ is positive due to the convexity of the follower firms reaction function. Both reaction functions being negative and having sloped less then unity means the sytem is stable.

We can now look at the effect of tariffs on domestic profits. First note that there exists a maximum tariff $\tau^{\max}$ whereby all foreign competition is elimnated. This is the firms optimum tariff, a higher tariff will offer no extra benefit to the firm. Differentiating the expression for domestic profits with respect to the tariff rate τ yields:

$$\frac{\partial \pi}{\partial \tau} = Q\frac{\delta P(\overline{Q})}{\delta \overline{Q}}\frac{\partial \overline{Q}}{\partial \tau} + [P(\overline{Q}) - c]\frac{\partial Q}{\partial \tau} \tag{6}$$

Where $\frac{\partial Q}{\partial \tau} = \frac{\partial Q}{\partial Q^*}\frac{\partial Q^*}{\partial \tau}$ and $\frac{\partial \overline{Q}}{\partial \tau} = \frac{\partial Q^*}{\partial \tau} + \frac{\partial Q}{\partial \tau} = \frac{\partial Q^*}{\partial \tau}(1 + \frac{\partial Q}{\partial Q^*})$ which because $\frac{\partial Q}{\partial Q^*}$ is negative and a fraction smaller than unity means that total production for the market does fall but by less than the fall in foreign production, as domestic firms expand their production. This means that (6) is postive, a tariff increases home profits. It is this increase in profits that motivates organised industries to lobby the government for such tariff protection.

In order to get these tariffs the organised sectors can make contributions to either party. These contributions are paid out of the firms's existing profits such that $Z^j + C^{jK} \leq \pi^j$. Where Z_j is the fixed cost of lobby formation that any organised sector must incur. This varies between sectors and I do not address here the reasons why this might be high or low, or indeed why some sectors may be unorganised and others not.

2.2.1 The effect of domestic Taxes

We now wish to analyse the interaction between the income tax and the demand for the tariff, this requires us to understand the effect of income taxes on the extra profit resulting from implementation of the tariff. The effect of income taxes is to reduce demand for the firms' product. Therefore $P(\overline{Q})$ becomes smaller. For any given quantity produced by the industry, consumers will now pay a lower price. This affects the optimum tariff of the firm. I adapt Pollak (1971) in taking the inverse demand function as being linear in income. In particular I assume for simplicty that demand has the form $P(\overline{Q}) = F(P)I$. This means not only that a lower income causes demand to be lower but that the important variable $\frac{\partial P(\overline{Q})}{\partial \overline{Q}}$ will be smaller (in absolute size) in a simple linear manner due to income, and as Q will be lower this will be reinforced due to

the concavity of demand. Furthermore If we assume that the third derivative of demand is zero (or at least not too positive) then the $\frac{\partial^2 P(\overline{Q})}{\partial \overline{Q}^2}$ function will also be smaller in absolute size due to a fall in income.

In this situation analysis of the relevant variables in equation (7) shows us that Q, $\frac{\delta P(\overline{Q})}{\delta \overline{Q}}$ and $P(\overline{Q})$ are all easily seen to be smaller in absolute size. However looking at the full expnasion of equation (7):

$$\frac{\partial \pi}{\partial \tau} = Q\frac{\delta P(\overline{Q})}{\delta \overline{Q}}\frac{\partial Q^*}{\partial \tau}(1 + \frac{\partial Q}{\partial Q^*}) + [P(\overline{Q}) - c]\frac{\partial Q}{\partial Q^*}\frac{\partial Q^*}{\partial \tau} \tag{7}$$

We see that when the variable $\frac{\partial Q}{\partial Q^*}$ changes it has an opposite effect on the two parts of the expression, as it is negative it has a positive relationship with the first part but a negative relation with the second part. This complicates the analysis of the effect of a change in income on the profitablity of the tariff. Furthermore, if one consider equation (4) we see that a fall in income actually makes the output of the foreign firm more responsive to the tariff, something that tends to make equation (7) larger as a more rapid fall in total output boosts the price received by the domestic firm. Overall however the changes in the price and quantity variables due to a fall in income will far outweign the changes in the responsiveness of foreign output meaning that a given tariff will be less profitable for the firm. Therefore we can say that demand for trade protection through tariffs is lower when agent's disposable income is lower (due to higher income taxes) and hence demand for the goods produced by the lobbying firms is lower.

2.3 Political Incentives

Having looked at the two instruments and how they affect each other I now consider the political equilibrium arising in this economic situation and with a variety of different variations of the model. I assume for now that politicians are purely Downsian in that they are interested only in power, they have no preference for any particular policy, nor do they care about society or any particular group with in society's welfare. Finally they only want money so as to spend it on campaign contributions i.e. they are not corrupt and do not take bribes.

2.3.1 The Demand for Votes

I assume that there are two political parties who are not just interested in gaining a majority but in maximising this majority, in order that any legislation the party wishes to pass has the least resistance. As detailed above I follow Grossman and Helpman (1996) in specifying the existance of a function $H(\cdot)$ that represents the effectiveness of campaign spending in winning votes from the uninformed voters. This effectiveness of campaign spending is a function of the difference in spending between the two parties such that $H(C^A - C^B)$ is positively rleated to the chances of party A winning the election. Also adapting from Grossman and Helpman (1996) if I assume a distribution of the population $F(Y^i)$ and furthermore that the uninformed voters are a representative sample from this population then the percentage of the vote going to party A (M^A) can be specified as:

$$M^A = \frac{\frac{1-\alpha}{n^I}\int_{i\in I} F[\min|G^i(\cdot) - g^A|]di + \alpha H(C^A - C^B)}{1 - \alpha(1 - H(C^A - C^B))} \tag{8}$$

Where n^I is the number of informed voters. The denominator of the fraction is the percentage of the total population who are actually voting, therefore the percentage of the population voting for party A divided by the percentage who are voting gives the majority enjoyed by that party in the states legislature. My reason for adapting Grossman and Helpman in allowing for uninformed voters not to vote is that in that paper the voters (both informed and uninformed) have some exogenous preference for either party due to their fixed policies and anyother factors such as politician personality etc. Because I do not have this, therefore all politicians are equal, if all the uninformed voted they would all vote for whichever party offered higher contributions. Thus a party would need to raise only a tiny amount of money more than the other in order to acquire all the votes of a large part of the electorate. This seems unreasonable therefore I have allowed for the uninformed not to vote. This accords well with a reality where turnouts are often low and it is presumably those who are uninformed and/or apathetic about elections that are the least likely to vote.

2.3.2 The Supply of Policy

Firstly I consider a situation where there is only one organised sector. The order of events is that in the first stage lobbying takes place, and the two parties set out their respective policy platforms. In the second stage the election takes

place and the legislature is formed on the basis of the results of the election.

With purely Downsian politicians there is nothing to differentiate the two political parties from each other. Both will want the lobbyists' money in order to help sway the uninformed voters, and both will be willing to change their policy platform to some degree in order to accomodate the lobbying firm's preferences. The lobbyist offers money to a party to help them win the election so that they can enact the tariff once in power. This represents an influence motive of lobbyists (Grossman and Helpman, 1996) whereby lobbyists give money in order to affect policy that is introduced. Whichever party receives the most in contributions will therefore not lose the election. Lobbysists will not do anything that would reduce their preferred candidate's chances of winning the election below the pre-lobbying value of $\frac{1}{2}$.There is however a possibility that no lobbying is possible due to the interactions between the two elements of the policy platform. When lobbies decide upon their contributions they must take into account the effect this tariff will have on the desired income tax of the voters and what this in turn will mean for the desired tariff. In equilibrium the tariff promised to the lobby must be consistent with the one they want, given the income tax being offered at the same time. The firm's demand for the tariff is equal to the marginal profit made, call this π_τ. Marginal contributions will not be higher than this amount, a rational profit maximising firm will not contribute more than a pound in order to get a pound of extra profits from the tariff.

Similarly the voter's demand for the public good is connected to the tariff such that $G^i(\cdot)_\tau > 0$ and that the income tax rate needed to finance this public expenditure will also rise $t_\tau > 0$. This increase in the income tax rate has the effect of reducing π_τ. Politicians will maximise their electoral majorities by offering the informed median voter's optimal public good provision. Any tariff will increase the demand for the public good and the required income tax rate, thus reducing the demand for the tariff. Therefore the presence of the income tax response to the tariff, and the firms response in turn means that the power of the lobby to increase its profits may be severely reduced.

The presence of a fixed cost to lobby formation may deter lobbys altogether. The total cost to the lobby to make a given contribution is $\sum C^{jK} + Z^j$. This must be compared to the extra profit derived from giving C^{jK} to a given party. As this extra profit is falling as the contribution rises (if the party is raising it's income tax in response), and as the contribution is limited to being less than pre-policy profits it may be the case that lobby formation is not worthwhile.

This case is more likely, the higher are the exogneous costs of lobby formation and the greater is the response of income taxes to a tariff, i.e. if the public and private goods are close substitutes.

Proposition 1 *Some firms who have the possibility of organisation will choose not to lobby, and this is more likely the greater is the (positive) income tax response of the politicans to the tariff demands.*

Proof. *A firm will only choose to lobby if the extra profit from the tariff being instigated outweighs the cost:* $\Delta\pi(\tau) \geq \sum C^{jK} + Z^j$. *If the politicians include higher income taxes along with the tariffs desired by the firms:* $t_\tau > 0$ *then because* $\Delta\pi(\tau)$ *will be smaller, the chances of extra profits being obtained is smaller.* ■

A very different situation that may emerge is one where taxes are in fact cut as a response to lobbying. The party can offer some level of tariff for the lobbyist's industry with no electoral loss and receive cash in return. They can also offer the $1-\alpha$ informed portion of the population median voter's preferred income tax. They can use the lobby money to sway the uninformed voters thus giving them a winning majority in the election. The most interesting question in a single lobby situation is what the winning party will do to gain the largest possible majority. One strategy that may be adopted is that beginning from the starting point where both parties offer the informed median voter's preferred income tax policy and providing that at this income tax rate the lobby cannot afford the maximum tariff that completely eliminates foreign competition ($\tau < \tau^{\max}$) then there is an incentive for the politicians to cut income taxes, thus losing support from informed voters, if the contributions they gain can help sway more uninformed voters. We would thus see a situation where income taxes could be lower than those preferred, and tariffs were higher. This situation is more likely the greater is the proportion α of uninformed voters in the population. If it is the case that the firm is already getting there maximum tariff at the median voter's optimum income tax than there is no incentive to change the tax. Either way we will see a political equilibrium with a high tariff rate.

Which of these two options appears more likely? The latter policy of income tax reduction is only possible if there are lots of uninformed voters who are very susceptible to campaign spending. Given that the desired income tax rate of voters is increasing, cutting the income tax will lose many uninformed voters whereas the degree that extra contributions from a reduction in income tax

lead to extra uninformed voters is likely to be small. If we were to extend the model to multiple lobbies where both parties are receiving contributions then the benfit of an income tax reduction is likely to be negated altogether as it would lose informed voters but allow lobbies supporting either party to increase their contributions, thus being very unlikely to win over any extra support from the uninformed.

Another possible extension is to model the lobbyists as agents with a stake in the firms profits rather than just taking the lobby to be from the firm, as an amorphous entity with no votes and no direct stake in the income tax. As those who control the firm and reap the rewards of the profit will be wealthier than the general population they are likely to be particualrly hard hit by the income tax rises induced by their lobbying for tariffs. In particular if we denote a lobbyist's payoff as $V(\pi, t)$ where this is an increasing function of the firms profits but a negative function of the income tax rate then given that $t_\tau > 0$ and $\pi_\tau > 0$ then it may be the case that $V_\tau < 0$ and lobbying is completely halted due to the income tax interaction that I have discussed.

3 Conclusion

I have shown in this paper how considering more than one endogenous policy and the interaction between them, in particular between an income tax and a tariff, can show how the power of lobbys to influence what Baron (1994) terms "pliable" policies can be severely curtailed. This differs significantly to analysis such as that of Baron and of Grossman and Helpman (1996) where policies other than the pliable policies under consideration are taken as exogenous, unaffected by the choice of pliable policy.

This analysis is dependent on the existence of uninformed voters who can be attracted to vote for one or other party based on the campaign spending conducted. Thos gives a motivation for parties to cater to lobbies in order to raise campaign funds. Again I differ from past work by introducing an assymetry in the information levels of voters over the two types of policy. This assymetry is justified variously by the opaqueness of relatively complex policies such as tariffs, the costs of acquiring information about policies that have little effect upon most people and the possibility of politicians painting such policies in a positive light even when there effects are negative for the majority. This lack of information about the effects of trade policy give lobbies considerable lee-way in

getting the tariffs they want but this is in turn limited by the induced increase in income taxes that a higher tariff causes.

This domestic policy interaction significantly reduces the possibility for trade protectionism due to lobbies. This analysis may be extended to a variety of domestic and foreign policies that interact with eachother in this way.

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