

A Primer On Political Economy In Static General Equilibrium

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Abstract

This paper highlights, illustrates and pulls together in a single model notions of political economy that are common to the static - general equilibrium literature. Political authority acts as though it forms preferences over the welfare of private agents from which policy functions are obtained that give the rule for the level to set a pre-determined policy instrument. However, the preference weights of the authority can be influenced by the lobbying behavior of private agents. A Nash game can determine the level of the preference weights, which in turn leads to a solution to instrument levels and, instantaneously, a market equilibrium for the economy. A distorted economy can thus exist indefinitely. How "outside" policy actions might alter the political equilibrium conclude the paper.

Contents

1	Introduction	3
2	The environment	3
3	Characterization of the economy	4
4	Characterization of governance structure	4
4.1	Pressure functions: the local level	5
4.2	Influence functions: the national level	5
4.3	The social welfare function	6
4.3.1	Policy instruments	7
4.3.2	The policy function or rule of government	8
4.4	Political equilibrium	9
5	Market equilibrium	10
6	Some comparative statics	11
6.1	The political economy of governance	11
6.2	The political economy of households	13
6.2.1	The capitalist household.	13
6.2.2	The rural household	15
6.2.3	The labor surplus household	16
7	Concluding remarks	16

A PRIMER ON POLITICAL ECONOMY IN STATIC GENERAL EQUILIBRIUM

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1 Introduction

This paper attempts to highlight, illustrate and pulling together in a single model notions of political economy that are common to the static - general equilibrium literature. These contributions include, but not limited to, those of Becker (1993), Magee et al (1989), Srinivasan (1985, 1991), Krueger (1990), as well as some of our own work, for example, Roe (1991, 1995), Roe and Pardey (1991), Holt and Roe (1991) and some empirical application that can be found in Yeldan and Roe (1991), a World Bank publication by Greene and Roe (1989), and a paper by Mohtadi and Roe (2003). This paper does not include the contributions of Grossman and Helpman (1994, 1995, 2002). Their contributions are close to the context of these notes. A major difference is that they employ more restrictive assumptions to make their model fairly parsimonious, they draw upon the work of Bernheim and Whinston (1986) to rationalize the existence of a governance objective function, and they assume that the political resource is in the form of bribes which do not re-enter the economy. Persson (2002) provides an interesting discussion of whether political institutions shape economic policy.

The paper is organized by first defining the economy, the governance structure, the linkage between the two, equilibrium, some comparative static results and then a discussion of implications.

2 The environment

Consider a small and open *two sector* economy, each with a sector specific factor and one economy wide factor. There are *three household* categories, each of which are associated with *one* of the economy's three resource endowments:

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v_1, v_2 and v (the economy-wide resource). The government cares about the welfare of its citizens (households). It acts as though its preferences are based on how "happy" each citizen (households) is. The government can affect the happiness of its citizens by choosing the level of a *policy instrument*. This instrument is the *price* of good two (say food). The polity (i.e., the households) can affect the government's preferences. A household can affect how important its welfare is relative to the other two households in the "utility function" of the government. However, to affect government preferences, households must engage in collective action by allocating resources (labor, i.e., some of resource v) and engage in political activity.

3 Characterization of the economy

Equilibrium implies the following GDP functions: the two sector specific GDP functions for sector one and two respectively,

$$G_1 = G^1(p_1, w) v_1 \quad (1)$$

$$G_2 = G^2(p_2, w) v_2 \quad (2)$$

and the economy-wide function

$$G = G(p_1, p_2, v, v_1, v_2) = G_1 + G_2 + wv \quad (3)$$

The three categories of households are defined by the household's resource endowment. Their indirect utility functions are

$$u_1 = U^1(p_1, p_2) G_1 \equiv \text{Max} \{u^1(y_{11}^d, y_{12}^d) \mid G_1 \geq p_1 y_{11}^d + p_2 y_{12}^d\} \quad (4)$$

$$u_2 = U^2(p_1, p_2) G_2 \equiv \text{Max} \{u^2(y_{21}^d, y_{22}^d) \mid G_2 \geq p_1 y_{21}^d + p_2 y_{22}^d\} \quad (5)$$

$$u_3 = U^3(p_1, p_2) wv \equiv \text{Max} \{u^3(y_{31}^d, y_{32}^d) \mid wv \geq p_1 y_{31}^d + p_2 y_{32}^d\} \quad (6)$$

4 Characterization of governance structure

The structure of governance is developed in four steps.

1. At the level of the household, collective action by households owning a share of the same each resource endowment engage in collective action to place pressure on government.

2. Then, at the national level, these pressure "come together" and the political processes determines the relative importance it places on the utility of each of the three households.
3. With this information, the government can "optimize" to formulate a policy *rule*, i.e., equation(s) that determine the level of a policy instrument(s).
4. As in a Stackelberg game, households know the government's policy function. The household's then lobby the government to change the level of the arguments (variables) of the rule in order to change the level of the policy instrument consistent with their own best interests (i.e. to increase their welfare).

4.1 Pressure functions: the local level

Along the lines of Becker (1983), presume that each household (to be understood as an interest group) can create political pressure, defined by the following political *pressure production functions*, concave in l_i (see appendix for further discussion)

$$\pi_i = \Pi^i(l_i), \quad i = 1, 2, 3 \quad \text{corresponding to resource categories } v_1, v_2, v \quad (7)$$

where l_i is the level of the economy wide resource (labor) allocated by the i -th household to create political pressure.

The parameters of $\Pi^i(\cdot)$ are influenced by culture/sociology, the costs of communication, the homogeneity of the group etc.

4.2 Influence functions: the national level

Of course, at the national level, the government must consider the pressure exerted by all households, and translate this pressure into how it, taken together, will *influence* its preferences over households. Let the *influence functions* be defined as

$$0 < I_i = I^i(\pi_1, \pi_2, \pi_3) < 1, \quad i = 1, 2, 3 \quad (8)$$

The form of these functions are determined by a country's laws, legal structures - congressional structures. Thus, like the pressure functions, the constitution, legal statues etc are the more fundamental rules of governance;

they are given and are themselves, not subject to change in this analysis, even if they lead to the destruction of a household category, i.e., a corner solution.

The functions $I^i(\cdot)$ are homogenous of degree zero in π_i . So, if everybody increases their lobbying by the same amount, I_i remains unchanged. It is assumed that, all else constant, a household cannot be made worse off by lobbying for its own interests, although diminishing returns are presumed i.e,

$$\frac{\partial I_i}{\partial \pi_i} \geq 0, \quad \frac{\partial^2 I_i}{\partial \pi_i^2} \leq 0$$

However, as others lobby, they decrease the marginal product of own lobbying, but with diminishing returns here too i.e.,

$$\frac{\partial^2 I_i}{\partial \pi_i \partial \pi_j} \leq 0, \quad \frac{\partial^2 I_i}{\partial \pi_i \partial \pi_j} \geq 0$$

An implication of this condition is that if the interest group is “at rest” with its own lobbying preferences, and another group increases its lobbying level, then the former is made worse off. The former may need to lobby just to countervail the lobbying efforts of others.

We assume that everybody’s influence cannot be increased, i.e.,

$$\sum_{i=1,2,3} I_i = 1$$

So, to illustrate, if all members lobbying the Dept. Head in an equally effective way for a raise in salary, and he has a fixed budget (or production possibility frontier as in the case of our economy) resources are just wasted, fewer articles are published, and nobody’s salary changes (and the Dept. Head should be fired).

The first study to empirically estimate the weights I_i is a paper by Johnson et al (1993) in their study of trade negotiations during the Uruguay Round between the E.U. and the U.S. The weights were reestimated using a new data set years later by Kennedy et al (1996) and found to be virtually unchanged.

4.3 The social welfare function

The next step is to presume that political competition induces the governance to behave as though they form preferences over the welfare of agents in the

economy², i.e.,

$$\begin{aligned}
 g &= \sum_i I_i(\cdot) u_i \Rightarrow \\
 g &= \sum_i I_i(\cdot) U^1(p_1, p_2) G_1
 \end{aligned} \tag{9}$$

4.3.1 Policy instruments

Policy instruments are the *choice variables* of government. The set of policy instruments is almost infinite, even in this simple economy. Producer, consumer, and/or worker taxes, subsidies, transfer payments, provision of public goods, are possible choice variables. So, we need to start somewhere. We begin by presuming that some former process determined the policy instrument, the price of good two, p_2 ³. The government chooses the level p_2 and then engages in foreign trade so that the domestic market clears at the announced price p_2 .

Of course, if the government does *not choose* $p_2 \neq p_2^w$ (the world price) then taxes or transfer payments are generated. Let the tax/transfer implications be given by

$$T = (p_2 - p_2^w)(y_2^d - y_2) < 0 \Rightarrow \text{cost}, > 0 \Rightarrow \text{transfer} \tag{10}$$

where total domestic demand is $y_2^d = \sum_{i=1}^3 y_{i2}^d$ and supply is y_2 . Of course you know that y_2 is the p_2 gradient of (2) while y_{i2}^d is given by *Roy's* identity of each of the above utility functions (4) to (6). These properties are used in Section 6 below.

Now, account must be taken of how to pay for the transfers (10), and the cost generating pressure by lobbying (8). The typical household budget constraint now becomes

$$G_i + \underbrace{\alpha_i T}_{\text{share of cost of T}} \geq \underbrace{w l_i}_{\text{cost of hiring lawyers}} + \underbrace{p_1 y_{i1}^d + p_2 y_{i2}^d}_{\text{cons. expend.}}; \quad \sum_i \alpha_i = 1$$

²This is where the contribution of Grossman and Helpman's paper becomes important. Otherwise, and some may still argue, this step is ad hoc.

³This is not a trivial assumption. The process for choosing the policy instruments (the choice set of government) is likely more fundamental than the process determining the level of the instrument. In the case of the U.S., the 1996 FAIR act change fundamentally the instruments used to support U.S. agriculture. The book by Orden, Paarlberg and Roe (1999) is devoted to this major change in U.S. agricultural policy.

where α_i is the fraction of household's in the i -th category (we could allow for α_i to also be a policy instrument in which case it would be possible for some households to benefit from an increase in price, and have other households pay the tax to support such a subsidy). Note, the lobbying expense wl_i . l_i now becomes a choice variable of households (how many lawyers to hire, how many people to pay-off to demonstrate in the streets).

In this case, the indirect utility functions (4) to (6) become

$$\begin{aligned} u_1 &= U^1(p_1, p_2) (G_1 + \alpha_1 T - wl_1) \\ u_2 &= U^2(p_1, p_2) (G_2 + \alpha_2 T - wl_2) \\ u_3 &= U^3(p_1, p_2) (w(v - l_3) + \alpha_3 T) \end{aligned}$$

and, upon substituting (7) into (8) for π_i , the governance function becomes

$$\begin{aligned} g &= \mathbf{I}^1(l_1, l_2, l_3) U^1(p_1, p_2) (G_1 + \alpha_1 T - wl_1) + \\ &\quad \mathbf{I}^2(l_1, l_2, l_3) U^2(p_1, p_2) (G_2 + \alpha_2 T - wl_2) + \\ &\quad \mathbf{I}^3(l_1, l_2, l_3) U^3(p_1, p_2) (w(v - l_3) + \alpha_3 T) \end{aligned} \quad (11)$$

where we have substituted for π_i .

Now, one final adjustment before we think about equilibrium. There is the possibility of *illusion* if influence does not sum to unity. If the weights sum to unity, then we can normalize the g function (11) by dividing by one of the $\mathbf{I}^i(\cdot)$, or state one as $(1 - \mathbf{I}^i(\cdot))$. This becomes important later in the comparative static analysis.

4.3.2 The policy function or rule of government

It can be shown that weights $\mathbf{I}^i(\cdot)$ satisfying conditions above exist such that the governance function (11) is continuous and quasi-concave in the neighborhood (p_2^o) , a point that is Pareto Optimal for this economy. In this case

$$\begin{aligned} \underset{\{p_2\}}{Max} : g &= \mathbf{I}^1(\cdot) U^1(p_1, p_2) (G_1 + \alpha_1 T - wl_1) + \mathbf{I}^1(\cdot) U^2(p_1, p_2) (G_2 + \alpha_2 T - wl_2) \\ &\quad + \mathbf{I}^3(\cdot) U^3(p_1, p_2) (w(v - l_3) + \alpha_3 T) \end{aligned}$$

yields the *policy function* (decision rule):

$$p_2 = P(l_1, l_2, l_3, p_1, p_2^w, v, v_1, v_2) \quad (12)$$

This function is, effectively, the government's policy decision *rule*. It is a function of all the "stuff" the government takes as exogenous, *including*, the choice variables of households (l_1, l_2, l_3) , country resource endowments, and world prices. Parameters of (12) reflect the legal structure captured in the pressure and influence functions.

Households are assumed to know (12). They can thus *effect* the rule by lobbying, i.e., choosing their respective level of l_i , but they cannot change the *structure* of the rule, i.e., the form of the equation $P(\cdot)$. Functions of this type have been empirically estimated for the case of the Dominican Republic (Geene and Roe, 1989), for Indonesia (Rasahan, 1980) and for South Korea and China (Qui, 1989).

We have now completed step 3. The final step is for households, knowing (12), to optimize and choose their lobby level l_i , i.e., to best influence the government in their own, albeit narrow, self interest. As you can see from (12), there is a *strategic interdependence* here. If $P(\cdot)$ is homogenous of degree zero in the l_i , then maybe they should just collude, and fire the lawyers.

4.4 Political equilibrium

Now, what is the choice problem of households? Knowing the rules and taking the action of the other category of households as given, as in a Nash game, their problem is:

$$\underset{l_1|l_2, l_3}{Max} \left\{ U^1 \left(p_1, \underbrace{P(l_1, \cdot)}_{Pol. Fnt} \right) (G^1(p_1, w) v_1 + \alpha_1 T - w l_1) \right\} \quad (13)$$

$$\underset{l_2|l_1, l_3}{Max} \left\{ U^2(p_1, P(l_2, \cdot)) \left(G^2 \left(\underbrace{P(l_2, \cdot)}_{Pol. Fnt}, w \right) v_2 + \alpha_2 T - w l_2 \right) \right\} \quad (14)$$

and

$$\underset{l_3|l_1, l_2}{Max} \{ U^3(p_1, P(l_3, \cdot)) (w(v - l_3) + \alpha_3 T) \} \quad (15)$$

Presuming quasi-concavity (which can be shown to hold) we obtain *lobbying rules* for each household

$$\begin{aligned} l_1 &= L^1(l_1, l_2, l_3, p_1, p_2^w, v, v_1, v_2) \\ l_2 &= L^2(l_2; l_1, l_3, p_1, p_2^w, v, v_1, v_2) \\ l_3 &= L^3(l_3; l_1, l_2, p_1, p_2^w, v, v_1, v_2) \end{aligned}$$

where each rule is *conditional* or takes as given, the lobbying behavior of the other households. This is a system of three equations in three unknowns (l_1, l_2, l_3) .

If there is a solution (l_1^*, l_2^*, l_3^*) to this system (there could be many, or none), then (12) is determined, i.e.,

$$p_2^* = P(l_1^*, l_2^*, l_3^*, p_1, p_2^w, v, v_1, v_2)$$

This result defines *equilibrium in the political market*. No equilibrium also has meaning in the sense that agents are "continually" changing the levels (l_1, l_2, l_3) , which can result in continuing changes in p_2^* . After many repeated tries, agent's may decide to cooperate thus changing the conditional maximization problem posited in (13) – (15) above.

5 Market equilibrium

Given equilibrium in the political market, hence the number p_2^* , equilibrium in good and factor markets are characterized by

$$G = G(p_1, p_2^*, \left(v - \sum_i l_i^* - l_k^* \right), v_1, v_2)$$

and sector one and two functions

$$G_1 = G^1(p_1, w^*) v_1$$

$$G_2 = G^2(p_2^*, w^*) v_2$$

where

$$w = W \left(p_1, p_2^*, \left(v - \sum_i l_i^* - l_k^* \right), v_1, v_2 \right) = \frac{\partial G(\cdot)}{\partial (v - \sum_i l_i^* - l_k^*)} \quad (16)$$

Note that lobbying causes the economy's production possibilities to decline as a function of the amount of resources

$$v - \sum_i l_i^* - l_k^*$$

and to be *distorted* by the extent to which p_2^* departs from the world market price p_2^w .

6 Some comparative statics

First we consider the behavior of governance, then the political economy of households.

6.1 The political economy of governance

Consider the governance function.

$$\begin{aligned} g = & \mathbf{I}^1(l_1, l_2, l_3) U^1(p_1, p_2) \underbrace{(G_1 + \alpha_1 T - w l_1)}_{\equiv Y_1} + \\ & \mathbf{I}^2(l_1, l_2, l_3) U^2(p_1, p_2) \underbrace{(G_2 + \alpha_2 T - w l_2)}_{\equiv Y_2} + \\ & \mathbf{I}^3(l_1, l_2, l_3) U^3(p_1, p_2) \underbrace{(w(v - l_3) + \alpha_3 T)}_{\equiv Y_3} \end{aligned}$$

Presuming an interior solution, the FOC with respect to the policy instrument p_2 is:

$$\begin{aligned} & \mathbf{I}^1 \{ U_{p_2}^1(\cdot) Y_1 + U^1(\cdot) [G_w^1(\cdot) v_1 W_{p_2}(\cdot) + \alpha_1 T_{p_2} - W_{p_2}(\cdot) l_1] \} + \\ & \mathbf{I}^2 \{ U_{p_2}^2(\cdot) Y_2 + U^2(\cdot) [G_w^2(\cdot) v_2 + G_w^2(\cdot) v_2 W_{p_2}(\cdot) + \alpha_2 T_{p_2} - W_{p_2}(\cdot) l_2] \} + \\ & \mathbf{I}^3 \{ U_{p_2}^3(\cdot) Y_3 + U^3(\cdot) [W_{p_2}(\cdot) v + \alpha_3 T_{p_3} - W_{p_2}(\cdot) l_3] \} = 0 \end{aligned}$$

where Y_i is disposable income, and $W(\cdot)$ is define by (16).

Can we make sense of this mess? First, we should ask the question whether

1. Governance is so aware of all of the effects of its policy that it in fact knows this information, i.e., is the behavior of governance characterize by this calculus?
2. Does competition among political entrepreneurs cause behavior *as though* these derivatives are evaluated? What type of an institutional setting would force them to behave this way?
3. Is this what Douglas North (1981) had in mind when he indicated that political markets must be like economic markets?
4. What if the political process does not “take account of all of these derivatives”? Mistakes?
5. If mistakes are make, are they easily reversed, or do interest groups form thereafter making reversal difficult (see Srinivasan 1985) on this point for the case of India. Orden, Paarlberg and Roe (1999) suggest that farm legislation in the mid 1930’s set in place a political governance structure that distorts agriculture to this day.

Ok, suppose governance takes into account all of the derivatives above. For the case of p_2 , using envelope properties of these functions, the above reduces to

$$\begin{aligned} & \mathbf{I}^1 U^1(\cdot) \{-y_{12}^d + [-L_1 W_{p_2}(\cdot) + \alpha_1 T_{p_2} - W_{p_2}(\cdot) l_1]\} + \\ & \mathbf{I}^2 U^2(\cdot) \{-y_{22}^d + [y_2 - L_2 W_{p_2}(\cdot) + \alpha_2 T_{p_2} - W_{p_2}(\cdot) l_2]\} + \\ & \mathbf{I}^3 U^3(\cdot) \{-y_{32}^d + [W_{p_2}(\cdot) v + \alpha_3 T_{p_2} - W_{p_2}(\cdot) l_3]\} = 0 \end{aligned}$$

Note that we can divide through by one of the weights \mathbf{I}^i .

Suppose the Negishi condition holds, i.e., that the weights are the inverse of the marginal utility of income, $I^i = 1/U^i(\cdot)$. Then we have

$$\begin{aligned} -y_{12}^d - y_{22}^d - y_{32}^d + y_2 - W_{p_2}(\cdot) (L_1 + L_2 + l_1 + l_2 + l_3 - v) + T_{p_2} &= 0 \Rightarrow \\ -y_{12}^d - y_{22}^d - y_{32}^d + y_2 + T_{p_2} &= 0 \quad (17) \end{aligned}$$

where

$$T_{p_2} = \underbrace{(y_{12}^d + y_{22}^d + y_{32}^d - y_2)}_{y_2^d} + (p_2 - p_2^w) \left(\frac{dy_2^d}{dp_2} - \frac{dy_2}{dp_2} \right)$$

Substitute this result into (17) to obtain:

$$\begin{aligned}
 -y_{12}^d - y_{22}^d - y_{32}^d + y_2 + \underbrace{(y_{12}^d + y_{22}^d + y_{32}^d)}_{y_2^d} - y_2 + (p_2 - p_2^w) \left(\frac{dy_2^d}{dp_2} - \frac{dy_2}{dp_2} \right) &= 0 \Rightarrow \\
 (p_2 - p_2^w) \left(\frac{dy_2^d}{dp_2} - \frac{dy_2}{dp_2} \right) &= 0 \Rightarrow \\
 p_2 = p_2^w & \quad (18)
 \end{aligned}$$

assuming $\left(\frac{dc_2}{dp_2} - \frac{dy_2}{dp_2} \right) \neq 0$.

This is a desirable attribute of the model; by construction, a *free market outcome is not precluded*. Thus, we have just proven:

Proposition 1 *If the political process behaves as though it forms preferences over the utility of its citizens such that the preference weights are the reciprocal of the marginal utility of income,*

$$I^i = 1/U^i(\cdot) \quad (19)$$

then the government chooses the same price as would a central planner, as would the free market!

One can also say that this is the way the free market operates so that we can appeal to the first and second theorems of welfare economics.

6.2 The political economy of households

We consider selected key political economy characteristics of each household.

6.2.1 The capitalist household.

We will make one assumption at this point to simplify clutter. The assumption is that the household does not take into account that if it hires more “lawyers” l_i that this will cause an increase in wages because fewer “lawyers” will be available to produce private goods (hey, maybe lawyers can produce goods)⁴

⁴This means that we are not taking the derivative of w with respect to l_1 . This does not change the basic results. We are assuming that the household realizes that a change in p_2 will affect wages however. These are really empirical questions, i.e., questions of fact.

The household behaves as though

$$Max_{l_1, l_2, l_3} \left\{ U^1(p_1, P(l_1, \cdot)) \underbrace{(G^1(p_1, w) v_1 + \alpha_1 T - w l_1)}_{\equiv Y_1} \right\} \Rightarrow$$

The first order condition

$$U_{p_2}^1(\cdot) \underbrace{P_{l_1}(\cdot)}_{\text{deriv. of pol. fnt.}} Y_1 + U^1(\cdot) \left\{ \underbrace{G_w^1(\cdot) v_1}_{\text{the chain rule}} \underbrace{W_{p_2}(\cdot) P_{l_1}(\cdot)} + \alpha_1 T_{l_1} - w \right\} = 0$$

\Rightarrow

$$-y_{12}^d P_{l_1}(\cdot) - L_2 W_{p_2}(\cdot) P_{l_1}(\cdot) + \alpha_1 T_{l_1} - w = 0$$

Is the pressure group representing these capitalists broad based enough to take into account that their actions to influence p_2 will also indirectly affect the wage rate? If not, then this interest group will not behave as though it takes into account the derivative $W_{p_2}(\cdot)$. Of course, if it does not (and there is much evidence to this effect, see the recent case studies in Krueger 1996a, 1996b), then they sub-optimize, i.e., **make mistakes!**

To simplify exposition, let $\alpha_1 = 0$ (this household pays no taxes). The we have, more simply,

$$-y_{12}^d P_{l_1}(\cdot) - L_1 W_{p_2}(\cdot) P_{l_1}(\cdot) = w \quad (20)$$

What is this condition? The left hand side is the marginal return to an additional unit of lobbying holding constant the lobbying of all other agents. We have just proven the following.

Proposition 2 *The household behaves as though it sets the marginal benefits from lobbying equal to marginal cost.*

The benefits will depend on the effectiveness of pressure and influence functions, and the willingness of others to countervail the lobbying efforts of this household. Clearly, for $l_1 > 0$,

$$\underbrace{-y_{12}^d \underbrace{P_{l_1}(\cdot)}_{(-)}}_{(+)} - L_1 \underbrace{W_{p_2}(\cdot)}_{(+)} \underbrace{P_{l_1}(\cdot)}_{(-)} = w$$

So the political agenda for this interest group is to keep the price of food low. If the effect of the capitalists lobbying on lowering prices is strong, i.e., $P_{l_1}(\cdot) < 0$, then the capitalist is likely to be successful in “taxing” the rural sector of the economy. The importance of the term $-y_{12}^d P_{l_1}(\cdot)$ will depend on the proportion of disposable income spent on food.

6.2.2 The rural household

The rural household’s problem is:

$$\underset{l_2|l_1, l_3}{Max} \left\{ U^2(p_1, P(l_2, \cdot)) (G^2(P(l_2, \cdot), w) v_2 + \alpha_2 T - w l_2) \right\} \Rightarrow$$

Again, to lower notational clutter to some extent, employing lawyers or protesters l_2 is perceived as having no direct affect on w , and the household pays not taxes, $\alpha_2 = 0$,

$$U_{p_2}^2 P_{l_2}(\cdot) Y_2 + U^2(\cdot) \left\{ G_{p_2}^2(\cdot) v_2 P_{l_2}(\cdot) + G_w^2(\cdot) v_2 (W_{p_2}(\cdot) P_{l_2}(\cdot)) - w \right\} = 0$$

\Rightarrow

$$-y_{12}^d P_{l_2}(\cdot) + y_2 P_{l_2}(\cdot) - L_2 W_{p_2}(\cdot) P_{l_2}(\cdot) - w = 0 \Rightarrow$$

$$\overbrace{\left(y_2 - y_{22}^d \right)}^{Mkt\ Surplus} \underbrace{P_{l_2}(\cdot)}_{(+)} - L_2 \underbrace{W_{p_2}(\cdot)}_{(+)} \underbrace{P_{l_2}(\cdot)}_{(+)} = w$$

Thus, once again, the household sets marginal returns to the marginal cost of lobbying. The willingness to lobby depends on all of the functions above. The household realizes that as it hires lawyers or protestors, the cost of hired labor rises ($-L_2 W_{p_2}(\cdot) P_{l_2}(\cdot)$). Note that the closer is the household to subsistence, $y_2 - y_{12}^d \rightarrow 0$, the less the willingness to lobby for higher farm prices (hence farmers in poor countries have less willingness to pay to lobby for their well-being).

In contrast, commercial farmers in wealthy countries produce a large market surplus per household, i.e., $y_2 - y_{22}^d$ is large, while ($-L_2 W_{p_2}(\cdot) P_{l_2}(\cdot)$) is small because agriculture employs less than one percent of the labor force (though it may employ a relatively large number of lawyers).

Is this an explanation of why agriculture is taxed in poor countries and subsidized in the wealthy countries? Masayoshi and Hayami (1986), and

Bates (1983) suggest that this lack of willingness to pay, in a collective action sense, is a major cause of the disparity between developed and developing country agricultural policies.

6.2.3 The labor surplus household

Making the same assumptions as above, the labor surplus household's problem is

$$\begin{aligned} \underset{l_3|l_1, l_2}{Max} \{U^3(p_1, P(l_3, \cdot))(w(v - l_3) + \alpha_3 T)\} &\Rightarrow \\ U^3_{p_2}(\cdot) P_{l_3}(\cdot) Y_3 + U^3(\cdot) \{W_{p_2}(\cdot)(v - l_3) - w\} &= 0 \Rightarrow \\ -y_{32}^d \underbrace{P_{l_3}(\cdot)}_{(-)} + \left(\underbrace{W_{p_2}(\cdot)}_{(+)} \underbrace{P_{l_3}(\cdot)}_{(-)} \right) (v - l_3) &= w \end{aligned}$$

So, the labor surplus household group lobbies for *cheap* food. A trade-off is however that higher food prices will benefit wages (the term in brackets). If the household is wealthy, so that food is small in expenditures, it cares less about the effect on food prices and more about wages. Thus, wealthy consumers in the U.S. are unlikely to lobby for lower prices of sugar

Proposition 3 : *In poor economies, labor surplus and capitalists household groups have a common interest, cheap food.*

This proposition suggests that these common interests can be the foundation for a *natural coalition which places further pressures on rural households?*

7 Concluding remarks

We have studied a model showing a joint economic and a political equilibrium. So, what does this do for us? Some selected points:

1. Markets likely adjust much faster to economic shocks than can the political process adjust policy instruments
2. Markets can solve systems of equations "better" than a political process

3. We can trace from the local to the national level institutional effects on political economy, because we have the pressure and influence functions
4. We can see how the structure of the economy, the resource endowments, world markets influence the political process
5. We see that individual agents, acting in their own best interests can become a clumsy foot instead of the invisible hand of Adam Smith
6. When markets fail, we must rely on a collective action - governance process, this is the good side of governance, but it comes at a cost, i.e. the use of resources
7. Our model is **positive**. That is, who are “we” to suggest policies that lead to Pareto Superior outcomes. How can we influence policy (ask somebody from Mexico)⁵.
8. Can we assure full information so that we all know the effectiveness of the others⁶ l_i , (this is the point of Douglas North that political markets need to be like economic markets)
9. What are some policy implications, given the positive (as opposed to normative) nature of this model?
 - (a) Remove those policy instruments that are most prone to rent seeking, i.e., p_2 (and like Mexico, join the WTO so as to increase the amount of political resources required to influence a distortionary policy instrument)
 - (b) Reorient government to focus on public goods
 - (c) Strengthen those households that are disadvantaged in the political equilibrium, i.e, induce changes to make the pressure and influence functions more “efficient”. NOTE: this is what the US did to farm groups in the early 1920s (see our book). But now, this has come to haunt us because US farmers have “built in” influence groups in the name of the Senate and House Ag. Committees.

⁵There are a number of fine references on this point. They include Srinivasan (1985, 1991) and Krueger, 1990.

⁶To illustrate, how does a faculty member know if another member is lobbying the department Head for a raise? Is this variable truly common knowledge?

- (d) Encourage knowledge of the other l_i ; subsidize the disadvantage to lobby more in their own best interests
- (e) Institutional change; in our model, once you are endowed with a resource, you are stuck with it forever. That is, there are no capital markets, no non-arbitrage condition common to the dynamic model. Notice that if the endowments v_1, v_2, v were more evenly distributed, the incentive to *rent seek* declines. But then, in poor economies, with ineffective property rights, do non-arbitrage conditions actually work, or work only for the wealthy and influential (i.e. effective $I^i(\cdot)$)? Is this an idea for future work?

The model excludes voting; why don't the disadvantaged just vote out the governance system, thus changing the structure of the weights $I^i(\cdot)$? Answer, many effects cause agents NOT to vote in their own best interest; this is what "slogans," political hypocrisy, false promises and miss-information are all about. Just as interest groups lobby in their own best interest, they pay to provide information why their interest is important, as in, *save the family farm*. They have an incentive to pay to provide miss-information, to hide information. Information is not costly in the model, and there is no uncertainty. When these assumptions are relaxed, agents do not necessarily vote in their best interests (we often see this as social conflicts). Thus, even in a democracy, a "bad" equilibrium can, in principle, exist forever.

We have not modeled the presence of club goods, like language, religion (e.g., positive externalities in the individual utility function), but this framework hints at how these effects on political economy might be considered. Still, from a methodology perspective, notice that much "space" is allocated to the derivations of the policy functions based on objects that are difficult to observe, such as a political pressure functions, and influence functions. As we see for the case of the household, the major motivation for political activity are the policy instruments, and the household's resource endowments. Thus, for many studies, it may be more desirable to NOT model governance per se, but instead to identify the policy instruments, how those instruments impact the welfare of households, the resources households have available to influence policy, and the nature of intra and inter temporal market failures that give rise to incomes not being diversified over resource endowments..

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Appendix

Pressure Functions

Becker considered

$$\pi_i = \Pi^i(l_i, n_i l_i)$$

This part of the equation looks like the typical production function, i.e.

$$\frac{\partial \pi_i}{\partial l_i} \geq 0, \frac{\partial^2 \pi_i}{\partial l_i^2} \leq 0$$

But following the late Mancur Olson (1982), organizational externalities rise as the group gets larger ($n_i l_i$)

$$\frac{\partial \pi_i}{\partial (n_i)} \leq 0, \frac{\partial^2 \pi_i}{\partial (n_i)^2} \geq 0$$

This helps to account for the problem of free riding.