International Trade I: Theory

Political Economy of Trade Policy

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Outline of the Lecture

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Why a Political Theory of Trade Policy?

- Observed policies do not seem to be optimal
  - Import tariffs in small country
  - Export subsidies used in many countries
  - Second best? Perhaps, but not obviously so
    - Why prevalent protection of agriculture?
    - Protection of apparel and textiles? Antidumping provisions?
- What explains **structure of protection**: Political factors besides inverse elasticities seem to play a role
- Why so difficult to conclude trade agreements? Why don't these agreements call for universal free trade?

Outline of the Lecture

Economic Environment

- We consider a simplified version of Grossman and Helpman ('94)
  - Endowment rather than specific-factor model
- To abstract from TOT considerations, GH consider a SOE
  - If governments were welfare-maximizing, trade taxes would be zero
- There are $n+1$ goods, $i = 0, 1, \ldots, n$, produced under perf. comp.
  - Good 0 is the numéraire with domestic and world price equal to 1
  - p_i^w and p_i denote the world and domestic price of good i, respectively
- Individuals are endowed with 1 unit of good 0 $+$ 1 unit of another good $i \neq 0$
  - We refer to an individual endowed with good i as an i-individual
  - α_i denote the share of i-individuals in the population
  - Total number of individuals is normalized to 1

Economic Environment (cont.)

- All individuals have the same quasi-linear preferences

$$U = x_0 + \sum_{i=1}^{n} u_i(x_i)$$

- Indirect utility function of i-individual is therefore given by

$$V_i(\mathbf{p}) = 1 + p_i + t(\mathbf{p}) + s(\mathbf{p})$$

where

$$t(\mathbf{p}) \equiv \text{government's transfer [to be specified]}$$

$$s(\mathbf{p}) \equiv \sum_{i=1}^{n} u_i(d_i(p_i)) - \sum_{i=1}^{n} p_i d_i(p_i)$$

- Note: Quasi-linear preferences $\Rightarrow$ de facto a partial equilibrium model

Political Environment: Policy Instruments

- For all goods $i = 1, \ldots, n$, the government can impose an ad-valorem import tariff/export subsidy t_i

$$p_i = (1 + t_i) p_i^w$$

- We treat $\mathbf{p} \equiv (p_i)_{i=1,\ldots,n}$ as the policy variables of our government
- The associated government revenues are given by

$$t(\mathbf{p}) = \sum_{i=1}^{n} (p_i - p_i^w) m_i(p_i) = \sum_{i=1}^{n} (p_i - p_i^w) [d_i(p_i) - \alpha_i]$$

- Revenues are uniformly distributed to the population so that $t(\mathbf{p})$ is also equal to the government's transfer, as assumed before

Political Environment: Lobbies

- An exogenous set L of sectors/individuals is politically organized
  - We refer to a group of agents that is politically organized as a **lobby**
- Each lobby i chooses a schedule of contribution $C_i(\cdot)$: $(\mathbb{R}^+)^n \to \mathbb{R}^+$ in order to maximize the total welfare of its members net of the contribution

$$\max_{C_i(\cdot)} \alpha_i V_i(\mathbf{p}^0) - C_i(\mathbf{p}^0)$$

subject to $\mathbf{p}^0 = \arg\max_{\mathbf{p}} G(\mathbf{p})$, where $G(\cdot)$ is the objective function of the government [to be specified]

Political Environment: Government

- Conditional on the contribution schedules announced by the lobbies, government chooses the vector of domestic prices in order to maximize a weighted sum of contributions and social welfare

$$\max_{\mathbf{p}} G(\mathbf{p}) \equiv \sum_{i \in L} C_i(\mathbf{p}) + aW(\mathbf{p})$$

where

$$W(\mathbf{p}) = \sum_{i=1}^{n} \alpha_i V_i(\mathbf{p}) \quad \text{and} \quad a \geq 0$$

- Comments:
  - GH (1994) model has the structure of common agency problem
  - Multiple principals $\equiv$ lobbies; one agent $\equiv$ government
  - We can use Bernheim and Whinston's (1986) results on menu auctions

Equilibrium Contributions

- We denote by $\left\{(C_i^0)_{i \in L}, \mathbf{p}^0\right\}$ the SPNE of the previous game
  - We restrict ourselves to interior equilibria with differentiable equilibrium contribution schedules
  - Whenever we say "in any SPNE," we really mean "in any interior SPNE where C^0 is differentiable"

- **Lemma 1**: In any SPNE, contribution schedules are locally truthful

$$\nabla C_i^0(\mathbf{p}^0) = \alpha_i \nabla V_i(\mathbf{p}^0)$$

- **Proof**:
  1. $\mathbf{p}^0$ optimal for government $\Rightarrow \sum_{i \in L} \nabla C_i^0(\mathbf{p}^0) + a \nabla W(\mathbf{p}^0) = 0$
  2. $C_i^0(\cdot)$ optimal for lobby $i \Rightarrow$
     $\alpha_i \nabla V_i(\mathbf{p}^0) - C_i(\mathbf{p}^0) + \sum_{i' \in L} \nabla C_{i'}^0(\mathbf{p}^0) + a \nabla W(\mathbf{p}^0) = 0$
  3. 1+2 $\Rightarrow \nabla C_i^0(\mathbf{p}^0) = \alpha_i \nabla V_i(\mathbf{p}^0)$

Equilibrium Trade Policies

- **Lemma 2**: In any SPNE, domestic prices satisfy

$$\sum_{i=1}^{n} \alpha_i (l_i + a) \nabla V_i(\mathbf{p}^0) = 0$$

  where $l_i = 1$ if i is politically organized and $l_i = 0$ otherwise

- **Proof**:
  1. $\mathbf{p}^0$ optimal for the government $\Rightarrow \sum_{i \in L} \nabla C_i^0(\mathbf{p}^0) + a \nabla W(\mathbf{p}^0) = 0$
  2. 1+ Lemma 1 $\Rightarrow \sum_{i \in L} \alpha_i \nabla V_i(\mathbf{p}^0) + a \nabla W(\mathbf{p}^0) = 0$
  3. Lemma 2 follows from this observation and the definition of $W(\mathbf{p}^0)$

- **Comment**: In GH (1994), everything is as if governments were maximizing a social welfare function that weighs different members of society differently

Equilibrium Trade Policies (cont.)

- **Proposition**: In any SPNE, trade policies satisfy

$$\frac{t_i^0}{1+t_i^0} = \frac{l_i - \alpha_L}{a + \alpha_L}\left(\frac{z_i^0}{e_i^0}\right) \quad \text{for} \quad i = 1, \ldots, n, \tag{1}$$

  where $\alpha_L \equiv \sum_{i' \in L} \alpha_{i'}$, $z_i^0 \equiv \alpha_i / m_i$, and $e_i^0 \equiv d \ln m(p_i^0)/d \ln p_i^0$

- **Proof**:
  1. Roy's indentity $+$ definition of $V_i(\mathbf{p}^0) \Rightarrow$

$$\frac{\partial V_{i'}(\mathbf{p}^0)}{\partial p_i} = (\delta_{i'i} - \alpha_i) + (p_i^0 - p_i^w) m'(p_i^0)$$

     where $\delta_{i'i} = 1$ if $i' = i$ and $\delta_{i'i} = 0$ otherwise
  2. 1+Lemma 2 $\Rightarrow$ for all $i' = 1, \ldots, n$

$$\sum_{i'=1}^{n} \alpha_{i'}(l_{i'} + a)[\delta_{i'i} - \alpha_i + (p_i^0 - p_i^w) m'(p_i^0)] = 0$$

Equilibrium Trade Policies (cont.)

- **Proof (cont.)**:
  3. 2+definition of $\alpha_L \equiv \sum_{i' \in L} \alpha_{i'} \Rightarrow$

$$(l_i - \alpha_L)\alpha_i + (p_i^0 - p_i^w)m'(p_i^0)(\alpha_L + a) = 0$$

  4. 3 $+\ t_i^0 = (p_i^0 - p_i^w)/p_i^w \Rightarrow$

$$t_i^0 = \frac{l_i - \alpha_L}{a + \alpha_L}\left(-\frac{\alpha_i}{p_i^w m'(p_i^0)}\right) = \frac{l_i - \alpha_L}{a + \alpha_L}\left(-\frac{z_i m(p_{i'}^0)}{p_i^w m'(p_{i'}^0)}\right)$$

  5. Equation (1) directly derives from 4 and the definition of z_i^0 and e_i^0

GH's (1994) Main Insights

- According to Proposition:
  1. Protection only arises if some sectors lobby, but others don't: if $\alpha_L = 0$ or 1, then $t_i^0 = 0$ for all $i = 1, \ldots, n$
  2. Only organized sectors receive protection (they manage to increase price of the good they produce and decrease the price of the good they consume)
  3. Protection decreases with the import demand elasticity e_0 (which increases the deadweight loss)
  4. Protection increases with the ratio of domestic output to imports (which increases the benefit to the lobby and reduces the cost to society)