Endogenous Protection: Lobbying

Matilde Bombardini

UBC

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Two approaches to endogenize protection as outcome of political process: explicitly model political competition: elections and trade policy (e.g. Hillman and Ursprung (AER 1988))
incumbent politicians maximize “political support” (elections are not explicitly modeled) (e.g. Hillman (1989))
This paper follows second strand of literature
This model provide a micro-foundation of political support function
**Main ingredients**

Small open economy
Specific factors model of trade
Interest group = specific factor
Political organization is exogenous (some interest groups do not lobby government)
No electoral competition, interest groups lobby incumbent government
Interest groups offer monetary contributions to the government as a function of tariffs
Government may value monetary contributions for electoral reasons
Government also cares about general welfare (again, potentially related to re-election concerns)
Tariffs result from trading off monetary contributions and welfare loss deriving from protection
The economy and preferences

Small economy, population size $N$
Preferences are quasi-linear:

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

$u_i(\cdot)$ increasing, concave and differentiable
$x_0$ is numeraire, freely traded
other goods potentially bear a tariff:
$p_i^*$ international price
$p_i$ domestic price
Quasi-linear utility kills income effects
Consumption of good $i$ depends only on $p_i$
consumption of $x_i$ is $d_i(p_i)$
rest of expenditure $E$ spent on $x_0$: $E - \sum_{i=1}^{n} p_i d_i(p_i)$
Indirect utility function:

$$V(p, E) = E + s(p)$$

This is convenient because it reduces the degree of interaction among sectors
$x_0$ is produced using only labor (one to one)
assume the production of $x_0$ is positive $\implies w = 1$
$x_i$ is produced under CRS with:
labor
sector $i$ specific input (capital, human capital, etc.)
Return to specific factor $\pi_i(p_i)$
Using Hotelling’s lemma output is given by:

$$y_i(p_i) = \frac{d\pi_i}{dp_i}$$
Trade Policy

Restrict policy space to tariffs
Subsidies are more efficient, not allowed here
Net tariff revenues are redistributed back to consumers per capita:

\[ r(p) = \sum_{i=1}^{n} (p_i - p_i^*) \left[ d_i(p_i) - \frac{y_i(p_i)}{N} \right] \]

total imports \[ m_i(p_i) = N d_i(p_i) - y_i(p_i) \]
Owners of specific factor $i$ have stake in price of good $i$
May or may not organize politically
Set $L$ of sectors organize:
within each sector owners of specific factor form a cohesive interest group
no modelling of incentives to organize
no free-riding within sector
Lobbying the government

Technical innovation of paper is employing menu auction (Bernheim and Whinston, QJE 1986)
Set of $L$ interest groups try to induce government to choose costly action: common agency problem
Each lobby $i$ submits a contribution schedule $C_i(p)$
“menu” in the sense that it associates a monetary amount to each possible price vector
The government chooses an equilibrium price vector $p^0$ (which translates into tariffs) and collects contributions
Joint welfare of members of the lobby:

\[ W_i(p) = \ell_i + \pi_i(p_i) + \alpha_i N \left[ r(p) + s(p) \right] \]

where \( \ell_i \) is labor income of members of lobby \( i \) and \( \alpha_i \) is share of population represented by owners of sector \( i \) specific factor.
Government

Unitary government (no congress/parliament)
No explicit electoral competition
Government payoff:
\[ G = \sum_{i \in L} C_i (p) + aW (p) \]

Aggregate welfare:
\[ W (p) = \ell + \sum_{i} \pi_i (p_i) + N [r (p) + s (p)] \]

where \( \ell \) is total labor income in the country
Bernheim and Whinston (1986) emphasize, among possible equilibria, those sustained by Truthful Contribution schedules.

Truthful contribution schedule:

\[ C_i^T (p, B_i) = \max [0, W_i(p) - B_i] \]

Truthful in the sense of reflecting everywhere the willingness to pay for \( p \) (no asymmetric information here).

Truthful Nash Equilibria have the important property of being coalition-proof and truthful contributions are always in the best-response correspondence.
Under these contribution schedules, the maximization problem for the government is:

\[
p^0 = \arg \max_{p \in P} \left[ \sum_{i \in L} W_i (p) + a W (p) \right]
\]

FOC:

\[
\sum_{i \in L} \nabla W_i (p^0) + a \nabla W (p^0) = 0
\]

Impact of change in \( p_i \) on lobby \( i \) welfare:

\[
\frac{\partial W_i}{\partial p_i} = y_i + \alpha_i \left[ m_i + (p_i - p_i^*) \right] m_i' - d_i (p_i)
\]

Similarly impact of change in \( p_j \) on lobby \( i \) welfare:

\[
\frac{\partial W_i}{\partial p_j} = \alpha_i \left[ (p_j - p_j^*) \right] m_j' - y_j (p_j)
\]
Impact of change in $p_j$ on aggregate welfare:

$$\frac{\partial W}{\partial p_j} = \left( p_j - p_j^* \right) m_j^* + m_j - d_j(p_j) + y_j(p_j)$$

$$\frac{\partial W}{\partial p_j} = (p_j - p_j^*) m_j^*$$

Verify that optimal tariff is zero in the absence of lobbying $\implies$ see Grossman and Helpman (JPE 1995) for large country model with interest groups (optimal tariff considerations)

Substitute in the first order condition and rearrange to find the equilibrium level of protection
Equilibrium level of protection

Unique equilibrium in the tariff level (multiple equilibria in level of contributions sustaining it):

\[
\frac{t_i^0}{t_i^0 + 1} = \frac{l_i - \alpha_L}{a + \alpha_L} \left( \frac{z_i^0}{e_i^0} \right)
\]

where \( z_i^0 \) is the inverse import penetration \( y_i \left( p_i^0 \right) / m \left( p_i^0 \right) \) and \( e_i^0 \) is the elasticity of import demand.

\( l_i \) is an indicator function that is 1 if lobby \( i \) is politically organized and 0 if lobby \( i \) is not organized.

“Ramsey rule” for protection

For politically organized sectors protection:

- is decreasing in elasticity of imports (more distortionary if \( e \) is high)
- decreasing in import penetration (more distortionary if imports are a large fraction of consumption)
- lower if \( \alpha_L \) higher (more lobbying to lower tariff)
- higher if \( a \) is lower (lower weight on welfare)
For politically unorganized sectors: import subsidy ($\alpha_L$ share of population lobbying to reduce price of imports) decreasing in import penetration and import elasticity for same reasons larger subsidy if $\alpha_L$ is large (more lobbying)
Multiple equilibria in the level of contributions supporting tariffs $t_i^0$
Given truthful contribution schedule, each interest group $i$ will try to lower contributions as much as possible (increase $B_i$) without forcing the government to ignore them when setting tariffs
Imagine without interest group $i$ the government would choose price vector $p^{-i}$
The interest group $i$ will lower its contributions to keep government indifferent between $p^{-i}$ and $p^0$

$$\sum_{j \neq i} C_j (p^{-i}, B_j) + aW (p^{-i}) = \sum_j C_j (p^0, B_j) + aW (p^0)$$

There might be multiple levels of contributions that satisfy this condition
The amount of contributions and therefore the way the surplus is split between lobbies and government depends crucially on competition among interest groups.

If $\alpha_L = 0$ there is NO competition among lobbies (no one is lobbying to reduce the price on other products);

$\implies$ if government ignored sector $i$ it would set tariff to zero (free trade);

$\implies$ sector $i$ has to pay $\epsilon$ contribution to keep gov’t indifferent.

If $\alpha_L = 1$ maximum competition, entire population is lobbying no protection (tariffs are zero) but government is appropriating all rents interest groups are paying just to prevent government to place import subsidies on their product.
Evidence on the Protection for Sale model

Two papers: Gawande and Bandyopadhyay (Restat 2000) and Goldberg and Maggi (AER 1999)
Follow GB
Data for 1983 on:
tariffs and non-tariff barriers (coverage ratios)
import penetration ratios
import elasticity
PAC monetary contributions
Use political contributions to classify sectors into politically organized or not: GB try to identify the part of campaign contributions related to trade

Empirical specification:

\[
\frac{t_i}{1 + t_i} = \gamma_0 + \gamma_1 \frac{I_i}{e_i} + \gamma_2 \frac{z_i}{e_i} + Z_{1i} + \varepsilon_i
\]

Taking into account that import penetration depends on protection (Trefler 1993):

\[
\frac{1}{z_i} = \delta_0 + \delta_1 \frac{t_i}{1 + t_i} + Z_{2i} + \eta_i
\]
Table 3a.—2SLS Estimates from Aggregate U.S. NTBs: Three-Equation Model [NTB, LOBBYING, IMPORT] Grossman-Helpman Specification (Parsimonious)

<table>
<thead>
<tr>
<th></th>
<th>NTB Eq.</th>
<th>LOBBY Eq.</th>
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<tbody>
<tr>
<td></td>
<td>Coef. s.e.</td>
<td>Coef. s.e.</td>
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<tr>
<td>NTB/(1 + NTB)</td>
<td>DEP —</td>
<td>— —</td>
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<tr>
<td>Ln (PACFIRM/VA)</td>
<td>— —</td>
<td>— —</td>
</tr>
<tr>
<td>z/t_e</td>
<td>— —</td>
<td>— —</td>
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<tr>
<td>I × z/t_e</td>
<td>3.145** 1.575</td>
<td>— —</td>
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<tr>
<td>INTERMTAR</td>
<td>0.780** 0.242</td>
<td>— —</td>
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<tr>
<td>INTERMNTB</td>
<td>0.362** 0.062</td>
<td>— —</td>
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<tr>
<td>Ln (HERF)</td>
<td>— —</td>
<td>0.177** 0.068</td>
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<tr>
<td>Ln (IMP/CONS)</td>
<td>— —</td>
<td>0.298** 0.064</td>
</tr>
<tr>
<td>Ln (NTB/(1 + NTB))</td>
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<tr>
<td>Ln (ELAST1)</td>
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<td>0.376* 0.247</td>
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<tr>
<td>Ln (DOWNSTREAMSHR)</td>
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<tr>
<td>Ln (DOWNSTREAMHERF)</td>
<td>— —</td>
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<tr>
<td>Constant</td>
<td>-0.042** 0.017</td>
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<tr>
<td>N</td>
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<td>242</td>
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<td>k</td>
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<td>R²</td>
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<td>18.10**</td>
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<td>AIC</td>
<td>-1.369</td>
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<td>SIC</td>
<td>0.648</td>
<td>-1.574</td>
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<tr>
<td>Ln L</td>
<td>170.7</td>
<td>-361.7</td>
</tr>
<tr>
<td≯∂ Ln (PAC/VA)/ ̸∂ Ln (DWL/VA)</td>
<td>—</td>
<td>0.639** 0.250</td>
</tr>
</tbody>
</table>
Introduces a fixed cost of organization at the level of the interest group
Posits that lobby will organize if total surplus created by lobbying is larger than fixed cost
“Firm heterogeneity and lobby participation”
Shift perspective to individual firms
Empirically, in GB-type regression average firm size and dispersion (s.d.) of firm size affect positively protection
Model individual firms decision to participate in the sector lobby and pay fixed cost of lobbying
Obtain a “modified” GH prediction:

$$\frac{t_i^0}{t_i^0 + 1} = \frac{\theta_i - \alpha_L}{\alpha_L + \alpha_L} \left( \frac{z_i^0}{e_i^0} \right)$$

Measured $\theta_i$ for each sector and tested against GH