Gradualism Notes

1 Big Picture

- From repeated game paper: if $\gamma(e) \uparrow$, need lower τ^a; so if $\gamma(e) \downarrow$, can get away with lower τ^a and still be self-enforced
- Caroline Freund: lobbying wastes productive resources; that's what I've built in here
- Need feedback mechanism
  - Need feedback from shock to lead to future lower investment
  - Investment by lobby shifts political support function
    - Investment complements/substitutes for shock?

2 Modeling choices

1. Small country: commitment to lower tariff, but no TOT change, just internal price
2. Want to focus on lobby's dynamic problem
3. Uncertainty vs certainty
   - With certainty, you know you'll get a given amount of support, i.e. know the price of maintaining support, which is getting your people re-elected (perhaps combined with getting them to vote your way)
     - Think of θ as shocks to who's in office, which changes the price of maintaining support; it would take more e to get a given γ, either because you need to work harder to get other people elected next time, or you have to pay more to convince people who are fundamentally less agreeable to your cause
4. Cobb-Douglas with fixed-factor (decreasing returns to scale)
   - If I do CRS, then to get a solution/equilibrium, there is a fixed amount of labor that must be used to get zero profits given the price ratio.
   - All reactions to changes in price are not really profit maximizing but to get the zero profit condition.
   - Maybe tradeoffs between tariffs and investment in productivity for a given price, but again, it's baked into zero-profit condition

5. Tariff vs. quota

Within each period t, taking initial wealth as given

1. Election occurs (reduced form based on e_{t-1})
2. Lobby/firm chooses l_t and makes investments in technology μ_t and politics e_t
3. Government chooses tariff (τ_t)
4. Production takes place, workers are paid (profits realized)
5. Tariff revenue is distributed and consumption takes place (not explicitly modeled)

3 One-period model

Given γ_0

$$\max_{l_1,e_1,\mu_1} A(m_0+\mu_1)\cdot F^{\alpha}\cdot l_1^{1-\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]-l_1-\mu_1-e_1$$

Interior F.O.C.'s

$$(1-\alpha)\,A(m_0+\mu_1)\cdot\left(\frac{F}{l_1}\right)^{\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]=1$$

$$\frac{\partial A(m_0+\mu_1)}{\partial\mu_1}\cdot F^{\alpha}\cdot l_1^{1-\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]=1$$

$$A(m_0+\mu_1)\cdot F^{\alpha}\cdot l_1^{1-\alpha}\frac{\partial\tau}{\partial\gamma}\frac{\partial\gamma}{\partial e_1}=1$$

Combining these

$$(1-\alpha)\,A(m_0+\mu_1)\cdot\left(\frac{F}{l_1}\right)^{\alpha}=\frac{\partial A(m_0+\mu_1)}{\partial\mu_1}\cdot F^{\alpha}\cdot l_1^{1-\alpha}$$

$$(1-\alpha)\,A(m_0+\mu_1)=\frac{\partial A(m_0+\mu_1)}{\partial\mu_1}\cdot l_1$$

And

$$(1-\alpha)\,A(m_0+\mu_1)\cdot\left(\frac{F}{l_1}\right)^{\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]=A(m_0+\mu_1)\cdot F^{\alpha}\cdot l_1^{1-\alpha}\frac{\partial\tau}{\partial\gamma}\frac{\partial\gamma}{\partial e_1}$$

$$(1-\alpha)\left[P^W+\tau\left(\gamma_0\right)\right]=l_1\frac{\partial\tau}{\partial\gamma}\frac{\partial\gamma}{\partial e_1}$$

And combining these two

$$\frac{A(m_0+\mu_1)}{P^W+\tau\left(\gamma_0\right)}=\frac{\frac{\partial A(m_0+\mu_1)}{\partial\mu_1}}{\frac{\partial\tau}{\partial\gamma}\frac{\partial\gamma}{\partial e_1}}$$

Notice there is no constraint assumed on e_1 or μ_1.

4 Two-period model

Given γ_0

$$\max_{l_1,e_1,\mu_1,l_2,\mu_2} \left\{A(m_0+\mu_1)\cdot F^{\alpha}\cdot l_1^{1-\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]-l_1-\mu_1-e_1\right\}+ \\ \left\{A(m_1+\mu_2)\cdot F^{\alpha}\cdot l_2^{1-\alpha}\left[P^W+\tau\left(\gamma(e_1)\right)\right]-l_2-\mu_2\right\}$$

where $m_1 = m_0 + \mu_1$

4.1 Interior F.O.C.'s

$$l_1 : (1-\alpha)\,A(m_0+\mu_1)\cdot\left(\frac{F}{l_1}\right)^{\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]=1 \tag{1}$$

$$\mu_1 : \frac{\partial A(m_0+\mu_1)}{\partial\mu_1}\cdot F^{\alpha}\cdot l_1^{1-\alpha}\left[P^W+\tau\left(\gamma_0\right)\right]+\frac{\partial A(m_0+\mu_1+\mu_2)}{\partial\mu_1}\cdot F^{\alpha}\cdot l_2^{1-\alpha}\left[P^W+\tau\left(\gamma(e_1)\right)\right]=1 \tag{2}$$

$$e_1 : A(m_0+\mu_1+\mu_2)\cdot F^{\alpha}\cdot l_1^{1-\alpha}\frac{\partial\tau}{\partial\gamma}\frac{\partial\gamma}{\partial e_1}=1 \tag{3}$$

$$l_2 : (1-\alpha)\,A(m_0+\mu_1+\mu_2)\cdot\left(\frac{F}{l_2}\right)^{\alpha}\left[P^W+\tau\left(\gamma(e_1)\right)\right]=1 \tag{4}$$

$$\mu_2 : \frac{\partial A(m_0+\mu_1+\mu_2)}{\partial\mu_2}\cdot F^{\alpha}\cdot l_2^{1-\alpha}\left[P^W+\tau\left(\gamma(e_1)\right)\right]=1 \tag{5}$$

4.2 What happens when γ_0 decreases?

Two cases:

1. $\mu_1\uparrow$ and $l_1\uparrow$: increase investment in productivity
   - investment in politics (e_1) $\downarrow$
   - $l_2\uparrow$
2. $\mu_1\downarrow$ and $l_1\downarrow$: reduce investment in productivity
   - investment in politics (e_1) $\uparrow$
   - $l_2\downarrow$

5 Literature

- Hillman (1991): decide between lobbying and investing in internal monitoring of production. In book at library, HF1372.158 1991 3rd Floor (Helpman and Razin)
- Rodrik (1996): use labor to make lobbying (p. 5/15)
- Krueger (1974)
- Sturzenegger F. (1993) never got published