

# 1 Two-period model

Given  $\gamma_0$

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

where  $m_1 = m_0 + \mu_1$

## 1.1 Interior F.O.C.'s

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

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

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

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

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

## 1.2 What happens when $\gamma_0$ decreases?

From Equation 1, when  $\gamma_0 \downarrow$ ,  $\frac{A(m_0 + \mu_1)}{l_1^\alpha} \uparrow$ . Two cases:

- $\mu_1 \uparrow$ ,  $l_1$  unchanged /  $\mu_1 \uparrow \uparrow$ ,  $l_1 \uparrow$
- $\mu_1$  unchanged,  $l_1 \downarrow$  /  $\mu_1 \downarrow$ ,  $l_1 \downarrow \downarrow$

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 ( $e_1$ )  $\uparrow$
  - $l_2 \downarrow$

## 2 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