Interest Groups and Public Policy

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Normative approach to public policy

- **First-best world**

  The social welfare is maximized subject only to the economy's resource and technology constraints.

- The fundamental theorems of welfare economics establish a link between the Bergson-Samuelson tradition and the positive competitive equilibrium theory.

Normative approach to public policy

- Implication

  Perfect markets and perfect governments do an equally good job of achieving efficiency.

- Role of the government

  correct market failure

Normative approach to public policy

- **Second-best world**

  Policy analysis includes additional constraints.

  - Ex. optimal taxation theory; revised Samuelson rule

Normative approach to public policy

- The normative approach assumes that once an optimal policy has been found, it will be implemented as designed.
- This approach views the political process as a social-welfare-maximizing black box.
- Analogy: The neoclassical theory views the firm as a profit-maximizing black box.

Problem of the normative approach

- Who is the government?
- Methodological inconsistence
- The public choice approach proposes consistency in the application of the principle of rationality

Government failure

- Problems that arise when one actor in the economy (the state) monopolizes the legitimate use of force.

Government failure

- Public policymaking is a political process.
- Involved agents:

  voters, bureaucrats, elected representatives, interest groups, and others.
- Each participant will try to manipulate the operation of the subsequent game , and then try to achieve an outcome that favors his own interests.

Like what Becker said, …

"I believe that voter preferences are frequently not a crucial independent force in political behavior. These 'preferences' can be manipulated and created through the information and mis-information provided by interested pressure groups… ."

(Becker 1983)

Example of interest groups

- There are two things in the world you never want to let people see how you make them --- ***sausages and laws***.

Example of interest groups

- Clean Coal/Dirty Air
- In 1977 Congress passed a set of Clean Air Act Amendments, including one provision, Section 111, aimed at new sources of sulfur-oxide emissions.
- It requires the "best available technology", but rather than requires the new plants meet a specific emission standard.

Models of Special Interest Groups

- Rent-seeking model
- Stigler-Peltzman model (or Chicago model)
- Becker model
- Common-agency model

Renting Seeking Model

Whose credit?

- The idea of *rent-seeking* was developed by **Gordon Tullock** in 1967.

- The expression *rent-seeking* was coined in 1974 by **Anne Krueger**.

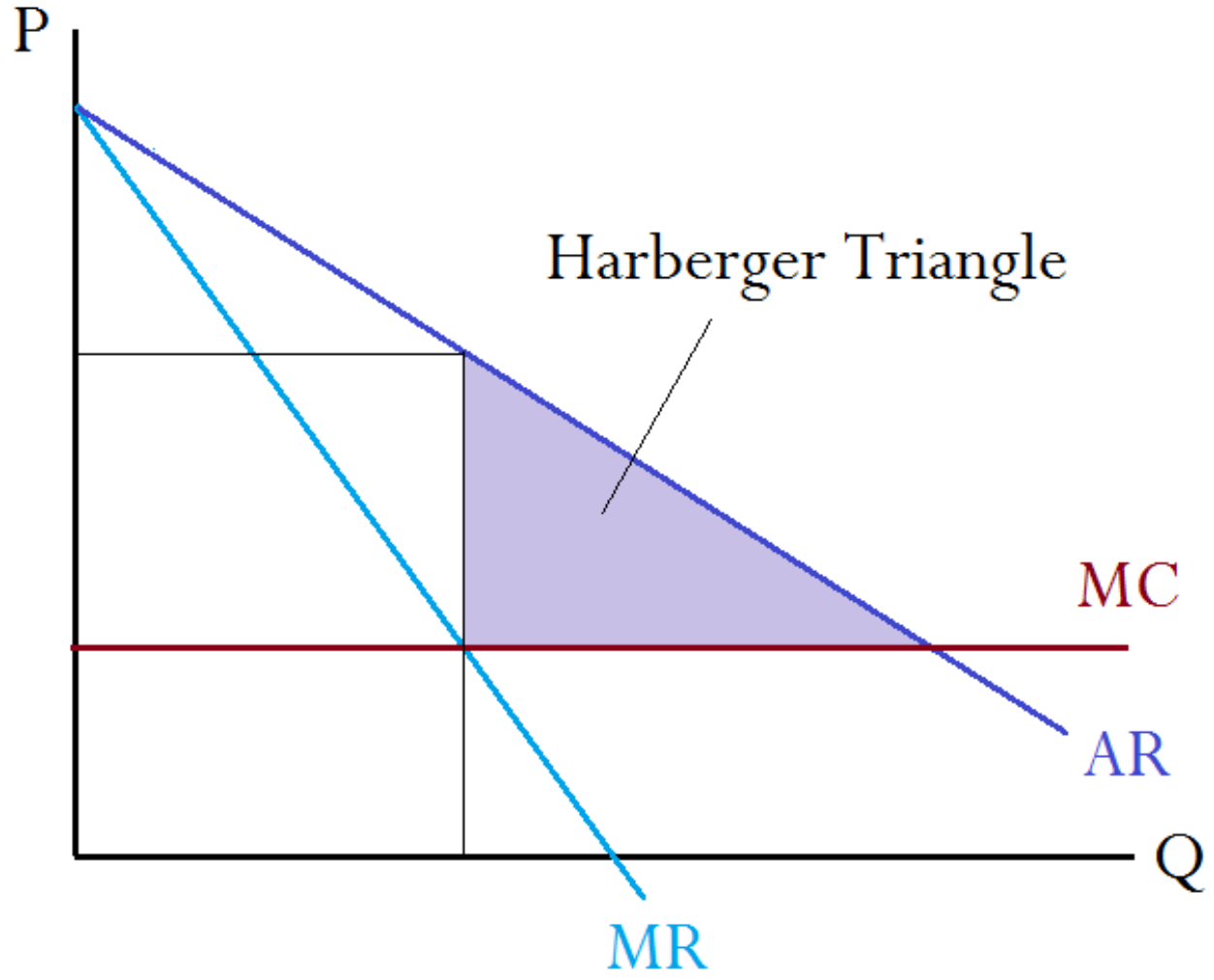
Profit-seeking vs. rent-seeking

- **Definition of rent-seeking**
  The political activity of individuals and groups who devote scarce resources to the pursuit of monopoly rights granted by government.
- Incentives for rent seeking are present whenever decisions of others influence personal outcomes or more broadly when resources can be used to affect distributional outcomes.

Harberger's triangle

- Welfare cost from monopoly
- The mainstream literature used the classic analysis of monopoly by Harberger (1954) to measure "deadweight" losses of such public policies, ignoring how they might have come to be adopted.

Harberger's triangle



Tullock's View

- If public policies are politically **endogenous**, then part of the social cost of those policies was the use of scarce personal abilities and resources in efforts to influence policy decisions.

Welfare cost and theft

"Transfers themselves cost society nothing, but for the people engaging in them they are just like any other activity, and this means ***large resources*** *may be invested in attempting to make or prevent transfers. These largely offsetting commitments of resources are totally wasted from the standpoint of society as a whole."*

(Tullock 1967)

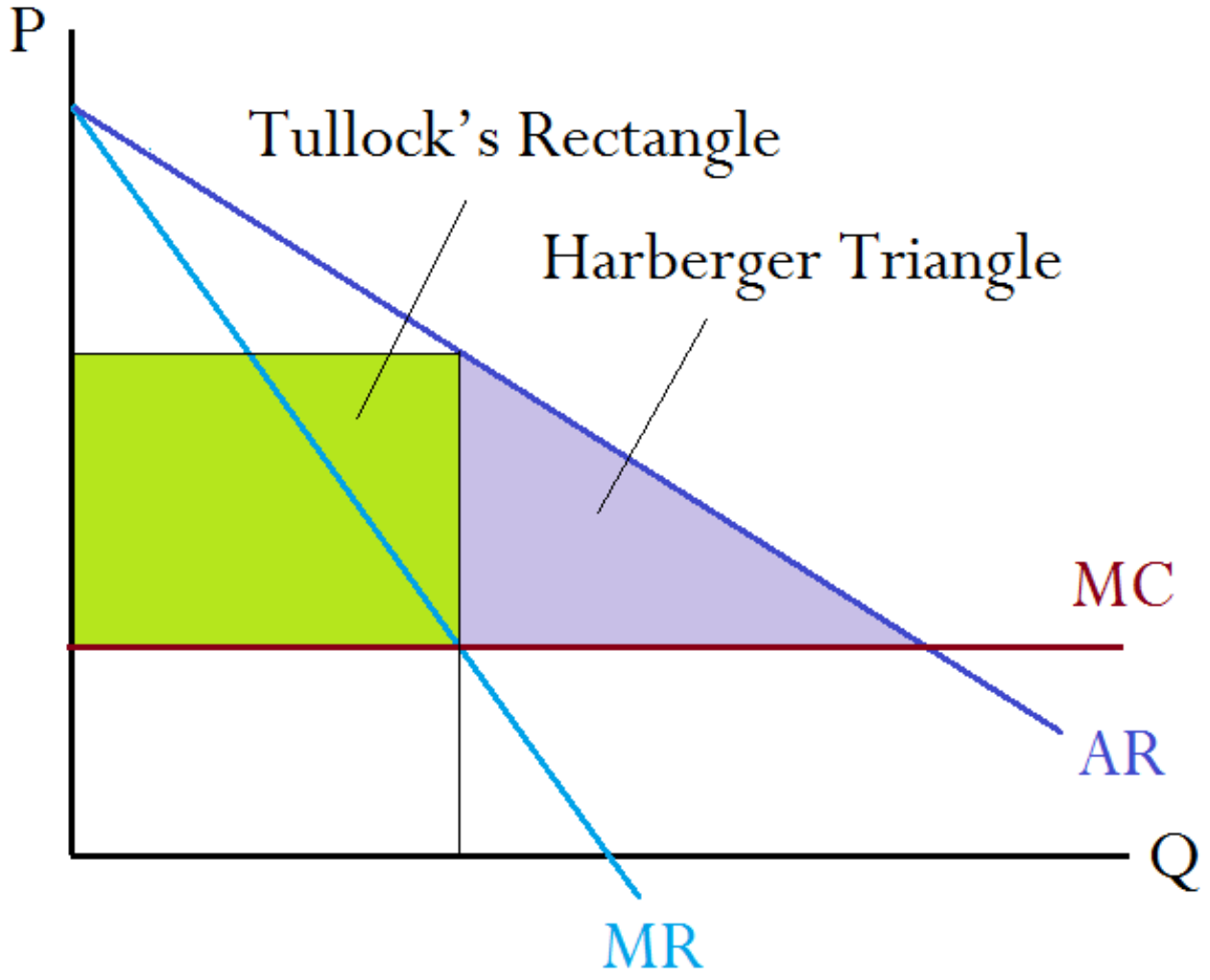
Unproductive expenditure

- The quests for income and wealth redistribution through public policy are comparable to the activities of **thieves**, who also use personal resources and initiative in unproductive endeavors to redistribute, rather than create wealth.

Unproductive expenditure

- The act of theft results in an **income transfer** that does not change total national income, but social losses do arise before a theft takes place.
- The social loss from rent seeking similarly occurs **ex ante**, through unproductively used resources and initiative before policy decisions are made.

Tullock's Rectangle



Basic Rent Seeking Model

- All rent-seekers are identical.
- Utility is measured in monetary units.
- Utility function

$$U = Y$$

Basic Rent Seeking Model

- Since entry is free, the equilibrium condition is

$$E(Y) = \frac{1}{n}(Y - I + R) + \frac{n-1}{n}(Y - I) = Y$$

- Rent-seeker's expected income equals non-rent-seeker's income

Basic Rent Seeking Model

- In equilibrium,

$$(Y - I + R) + (n - 1)(Y - I) = nY$$

$$\Rightarrow I = \frac{R}{n} \quad \Rightarrow \quad \boldsymbol{R = nI}$$

Basic Rent Seeking Model

- The value of rents generated by public policies can be used as a proxy for the resources used in rent seeking.
- Complete rent dissipation

Rent dissipation

- The early rent-seeking analyses sought accurate measures of social losses from public policies and monopoly.
- Tullock, Krueger, and Posner argued that the resources used to establish, maintain, or eliminate trade restrictions and monopolies are part of the social cost of those policies, but had previously been neglected.

Rent dissipation

- The idea that resources are **unproductively** used in rent-seeking contests has much broader application than the initial rent-seeking papers suggested.
- The rent seeking logic has been applied to issues in history, sociology, anthropology, biology, and philosophy.

Rent dissipation

- The core idea has also been formalized and analyzed more rigorously, using the tools of **modern game theory**.
- The modern rent-seeking literature describes the rational decision to invest in contesting pre-existing wealth or income, rather than undertaking productive activity.

Rent-seeking model

- n players, each invest I to capture a rent of R rent se
- Probability to get the rent:

$$\pi_i(I_i) = \frac{f_i(I_i)}{\sum_{j=1}^{n} f_j(I_j)}$$

$\partial \pi_i / \partial I_i > 0$, $\partial^2 \pi_i / \partial {I_i}^2 < 0 \rightarrow$ rent seeking is DRTS

$= 0 \rightarrow$ rent seeking is CRTS

$> 0 \rightarrow$ rent seeking is IRTS

Rent-seeking model

- Tullock (1980): assume $f_i(I_i) = {I_i}^r$
- Assume all rent seekers are risk neutral, each chooses I_i to maximizes her expected gain $E(G)$:

$$E(G) = \left(\frac{I^r}{I^r + T}\right) R - I$$

$E(G)$ cannot be negative

$T = \sum_{j \neq i} {I_j}^r$

T is the impact of total outlays of the other n-1 rent seekers

Rent-seeking model

- Under Cournot Nash assumption, first order condition is

$$\frac{rI^{r-1}R}{I^r+T}-\frac{rI^{r-1}I^rR}{(I^r+T)^2}-1=0$$

- Assume symmetric equilibrium, we obtain:

$$\mathrm{I}=\frac{(n-1)}{n^2}rR$$

Diminishing and Constant Returns

- Case of $r \leq 1$
- By the condition $r \leq 1$, we know that

$$\frac{n}{n-1} \geq r$$

- Ensure a nonnegative expected gain from participation.
- An equilibrium always exists with positive rent-seeking investment.

Diminishing and Constant Returns

- Total amount invested in rent seeking over total rent:

$$\frac{nI}{R} = \frac{(n-1)}{n} r$$

- Constant returns to scale : $r = 1$
  - The fraction of rent dissipated range from ½ to full dissipation (as n ↑)
- Decreasing returns to scale : $r < 1$
  - The fraction of rent dissipated is always less than 1

Increasing Returns

- $1 < r \leq 2$
  - Full dissipation when $\frac{n}{n-1} = r$
  - For all other equilibria: $I > 0,\ nI < R$
- $r > 2$
  - No pure strategy equilibria exist.
  - Each rent seeker has an incentive to try to outbid the other rent seeker so long as $I < R \Rightarrow I \rightarrow R$
  - Before that, some competitors drop out, competition can begin again…..

Stigler-Peltzman model or Chicago model

Stigler-Peltzman model
or Chicago model of political economy

Stigler-Peltzman model

- Does regulation actually serve the public interest?
- Traditional view: YES
- Chicago school: NO

Stigler-Peltzman model

- The state has a unique source: the power to coerce.
- **Four** policies that a group may seek of the government
  - direct subsidy of money
  - entry barriers
  - substitutes and complements
  - price-fixing

Stigler-Peltzman model

- **Crucial elements** in Stigler-Peltzman model
  - regulatory legislation redistributes wealth
  - the regulator is driven by their his desire to maximize political support
  - interest groups offer political support in exchange for favorable policy.

General results

- Regulation is likely to be biased toward benefiting interest groups that are **better organized**.
- Regulation is likely to benefit **small SIPs** with strongly felt preferences at the cost of large groups with weakly felt preferences.

The model

- A regulator chooses a price so as to maximize his political support.
- The political support function

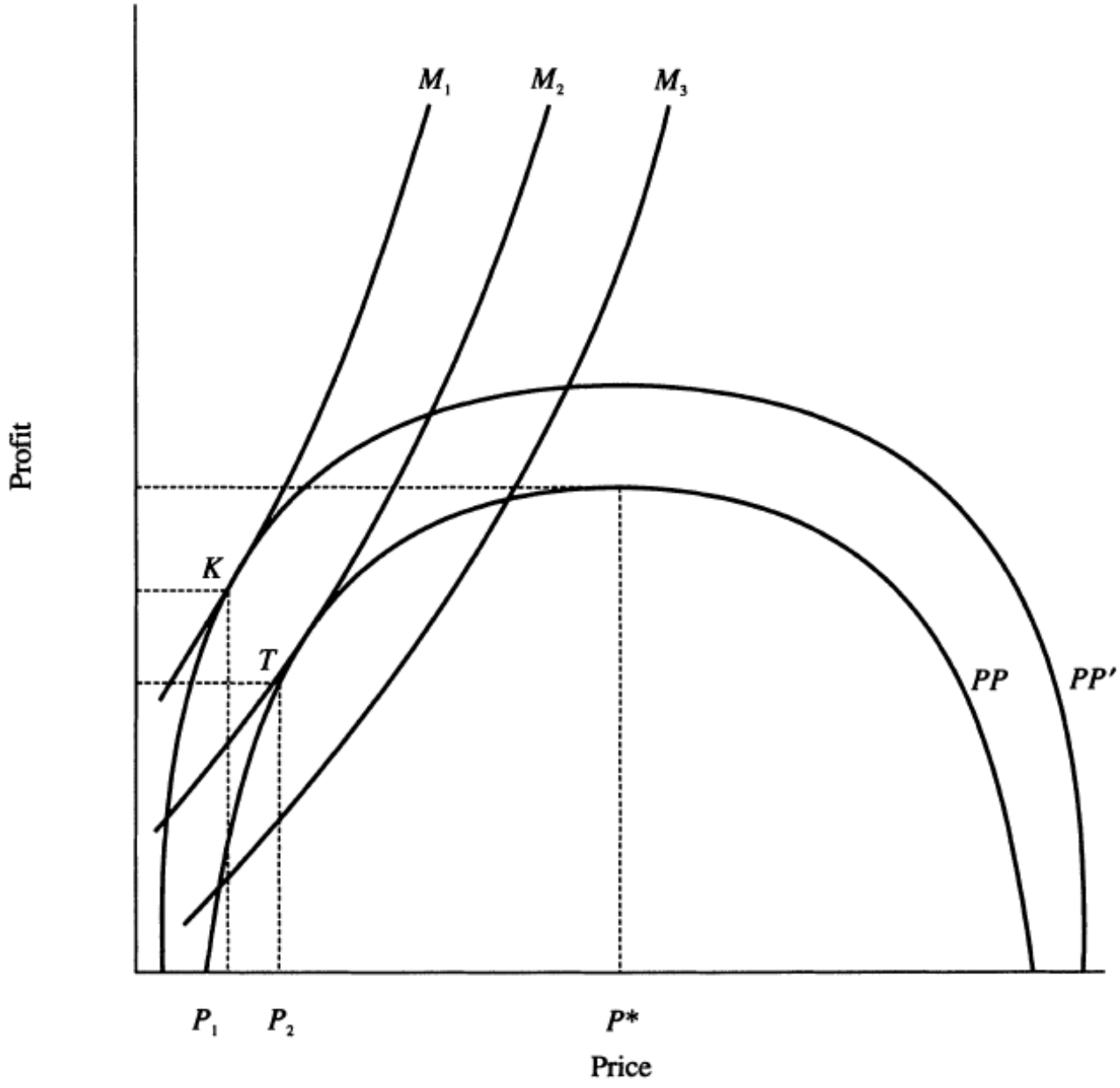
$$M = M(p,\ \pi)$$

p : price ; π : industry profit

- And also,

$$\frac{\partial M}{\partial p} < 0 \quad ; \quad \frac{\partial M}{\partial \pi} > 0$$

Figure



According to the Figure, we know…

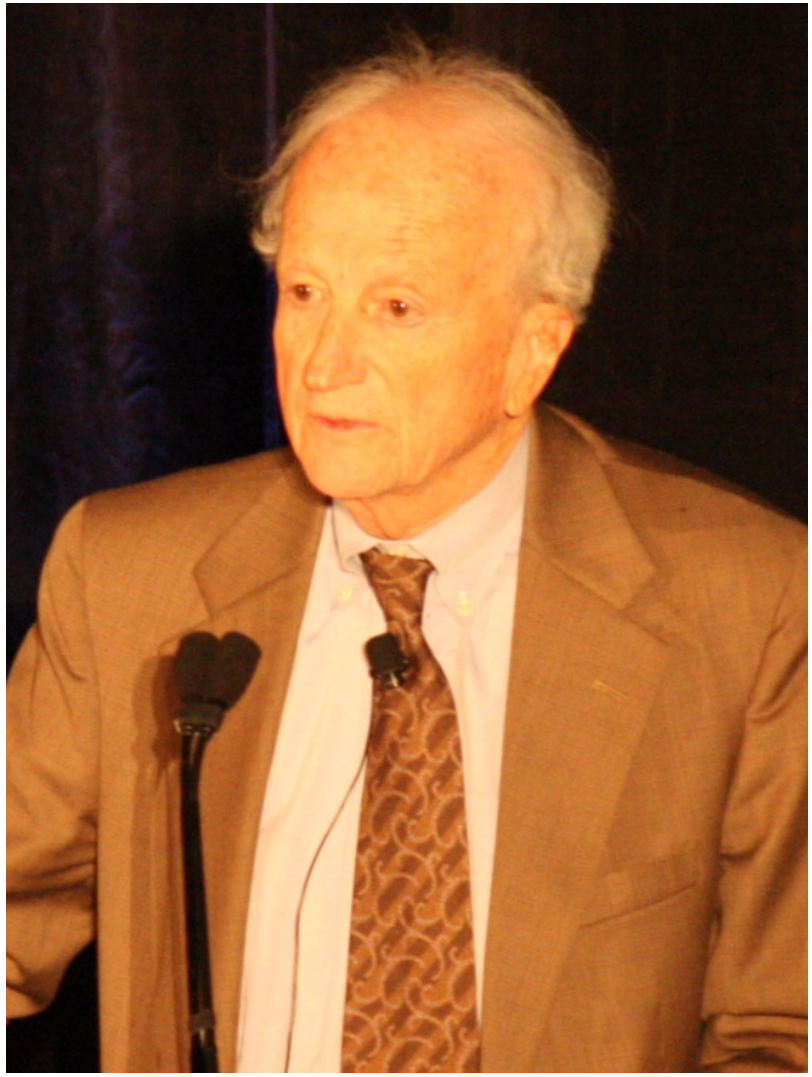
- If the equilibrium price an industry would achieve in the absence of regulation is close to the price that would exist under regulation, then regulation is **unlikely**.
- This suggests that the industries most likely to be regulated are those that are either **relatively monopolistic** or **relatively competitive**.

Critics of Stigler-Peltzman model

- Regulatory agencies are passive
- Fail to consider the competition among interest groups

Becker's Model

Gary Becker



Becker's Model

- focuses on the **competition among interest groups**.
- Two groups, group 1 and group 2.
- The wealth transfer that group 1 receives depends on both the pressure it exerts on the regulator (p_1) and the pressure exerted by group 2 (p_2)

Becker's Model

- Transfers received by group 1 are

$$T = I(p_1, p_2)$$

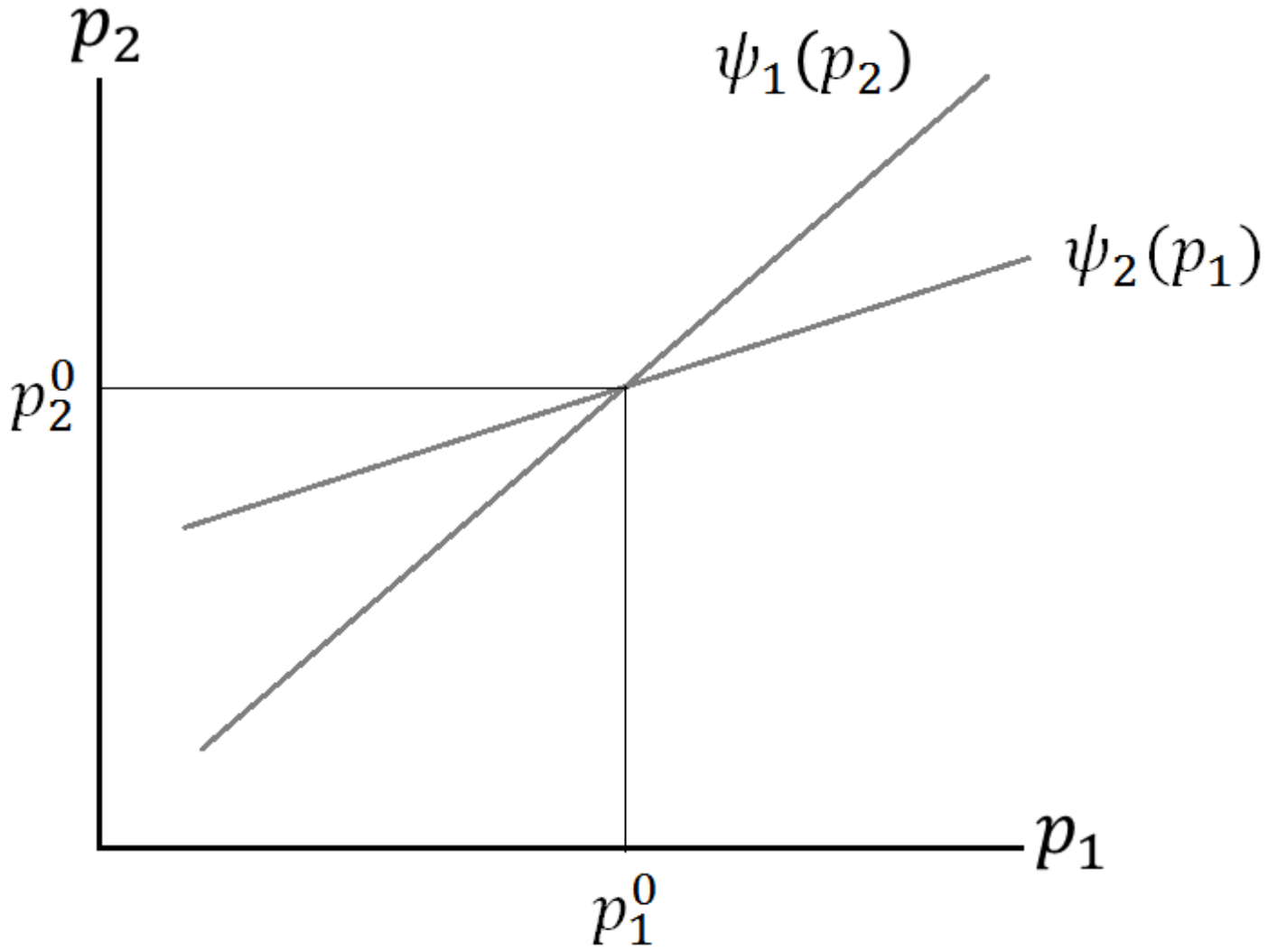
$I(p_1, p_2)$ is the influence function

- And also,

$$\partial T/\partial p_1 > 0, \partial T/\partial p_2 < 0$$

- The *relative* pressure does matter.

Interaction function of two interest groups



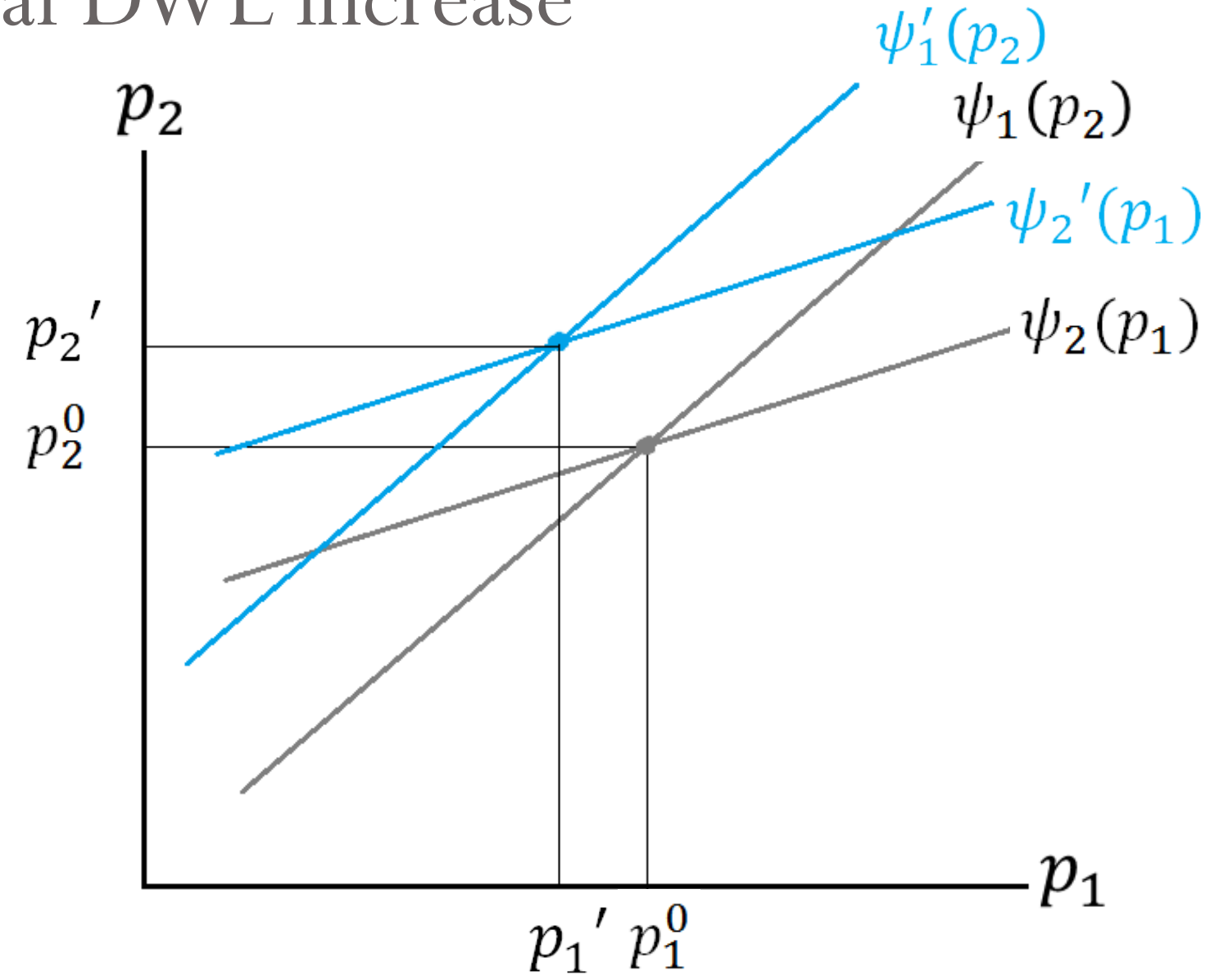
Becker's Model

- In order to transfer T to group 1, group 2's wealth will be reduced by $(1 + x)T$.

Becker's Model

- What will happen when the marginal DWL increases?
- Group 2 will increase its pressure.
- Group 1 will reduce its pressure.
- Result: the amount of regulatory activity will decrease.

Marginal DWL increase



Implications

- Regulatory policies that are efficiency-improving are more likely to be implemented than ones that are not.
- Industries plagued by market failures (so that the marginal DWL from regulation is low) are more likely to be regulated.
- Becker's model links the view that governments correct market failures to the view that policies are shaped by the competition among SIPs.

Critics of Becker's Model

- The regulator does not exist.

*"A **more general** analysis would incorporate this principal-agent relation between bureaucrats, politicians, and pressure groups into the determination of political equilibrium."* *(Becker 1983)*

Common-agency Model

Common-agency model

- Breheim and Whinston (1986)

  "Menu auction, resource allocation, and economic influence," *Quarterly Journal of Economics* 101, 1-31.

- Grossman and Helpman (1994)

  "Protection for sale," *American Economic Review* 84, 833-850.

General model

- An economy contains N groups of people.
- Only groups in the set L are groups that are organized to lobby the policymaker.
- Lobbying group offers the policymaker a contribution schedule $C_j(\mathbf{p})$, which is contingent on the vector of policy $\mathbf{p}$.
- Lobbying group j aims to maximize its net welfare, which is equal to its gross welfare, W_j, minus the political contributions.

General model

- First stage:
  each lobbying group offers a contribution schedule to the policymaker, given the other groups' contribution schedules.
- Second stage:
  the policymaker maximizes his objective function, which is a weighted average of the political contributions received and the social welfare.

General model

- policymaker's objective function:

$$\alpha \sum_{j \epsilon L} C_j(\mathbf{p}) + \sum_{j=1}^{N} W_j(\mathbf{p})$$

α is the weight the policymaker attaches to the political contributions.

General model

- By Grossman and Helpman (1994), the equilibrium policy (**p***) should satisfy the following conditions:

(1) **p*** maximizes $\alpha \sum_{j \epsilon L} C_j(\mathbf{p}) + \sum_{j=1}^{N} W_j(\mathbf{p})$

- given the contribution schedule provided by the lobbyists, the policy-maker chooses *t* to maximize his own welfare.

(2) **p*** maximizes $W_i(\mathbf{p}) - C_i(\mathbf{p}) + +[\alpha \sum_{j \epsilon L} C_j(\mathbf{p}) + \sum_{j=1}^{N} W_j(\mathbf{p})]$

- equilibrium tax rate should maximize the joint welfare of the lobbyists and the policy-maker.

General model

- (1) implies

$$\alpha \sum_{j \epsilon L} \frac{\partial C_j(\mathbf{p})}{\partial \mathbf{p}} + \sum_{j=1}^{N} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} = 0 \qquad \text{(C1)}$$

- From (2), we know

$$\frac{\partial W_i(\mathbf{p})}{\partial \mathbf{p}} - \frac{\partial C_i(\mathbf{p})}{\partial \mathbf{p}} + \alpha \sum_{j \epsilon L} \frac{\partial C_j(\mathbf{p})}{\partial \mathbf{p}} + \sum_{j=1}^{N} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} = 0 \qquad \text{(C2)}$$

General model

- Taken together, the two conditions ensure that

$$\frac{\partial W_i(\mathbf{p})}{\partial \mathbf{p}} = \frac{\partial C_i(\mathbf{p})}{\partial \mathbf{p}} \qquad \text{(C3)}$$

- The contribution schedule is *locally truthful* around the equilibrium t.

General model

- Inserting (C3) into (C1) gives

$$\alpha \sum_{j \in L} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} + \sum_{j=1}^{N} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} = 0$$

$$\Rightarrow \quad (1+\alpha) \sum_{j \in L} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} + \sum_{j \notin L} \frac{\partial W_j(\mathbf{p})}{\partial \mathbf{p}} = 0$$

Implications of common-agency model

- When choosing the policy, the policymaker maximizes a weighted social welfare function, in which the lobbies receive a larger weight.
- If all groups are engaged in lobbying, then the equilibrium policy is equal to the policy that maximizes the social welfare.
- The influence of each of the groups exactly offsets each of the others.

Application

Does a stricter enforcement policy protect the environment? —A political economy perspective

Introduction

- Neglecting enforcement policy or assuming full compliance would lead to inadequate designs of policies
- Enforcement policy has no real effect (Harford 1978, 1987; Sandmo 2002)
- An imperfect compliance model while take the influence of lobbying groups into consideration
- The enforcement policy is assumed to be determined by other divisions of the government and to not be subject to the influence of lobbies
  - enables us to investigate the effects of an exogenous change in the enforcement policy on the stringency of pollution regulation

Introduction

- Main findings:
  - In the presence of lobbying, the actual net emissions do change with the enforcement policy
  - A stricter enforcement policy (an increase in the probability of detection or the penalty) can bring about a larger amount of pollution emissions, in particular when the polluting firms have a relatively large political influence
  - A stricter enforcement policy can reduce social welfare

The model

- The objective function of a representative firm (without considering the enforcement policy) or the rent of the fixed input is given by:

$$\pi = f(x) - cx - A(a) - t(x-a)$$

- The firm's expected profit function under a system of random detections is as follows:

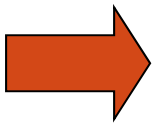
$$E\pi = f(x) - cx - A(a) - t\left[\alpha e + (1-\alpha) y\right] - \alpha\tau(e-y)$$

where $e=x-a$

The model

- The first-order conditions for the firm's profit maximization are:

$$f' - c - \alpha(t + \tau') = 0$$
$$A' - \alpha(t + \tau') = 0$$
$$(1 - \alpha)t = \alpha\tau'$$



$$f' - c = t$$
$$A' - t = 0$$

- **Lemma 1**:

(i) An increase in the emission tax rate reduces both the actual net emissions (e), and the declared amount of net emissions (y); it also increases the amount of net emissions evaded;

(ii) a higher detection probability results in a larger declared amount of net emissions, but does not alter the true amount.

The political equilibrium

- The economy contains three types of residents: owners of the polluting firms (shareholders), ordinary consumers, and consumers with environmental concerns (environmentalists)
- The aggregate welfare of the shareholders, ordinary consumers and environmentalists is given by:

$$W_f = E\pi + \beta_f S$$

$$W_c = n_c y_c + \beta_c S$$

$$W_g = n_g y_g + \beta_g S - D(e)$$

$$S = t[\alpha e + (1-\alpha) y] + \alpha\tau(e - y).$$

The political equilibrium

- The timing of events is as follows:
  - First, each lobbying group offers a contribution schedule, m_f, m_g to the policymaker
  - Then the policymaker determines the emission tax rate and collects political contributions
  - Finally, given the environmental tax rate, each firm in the polluting sector decides the net pollution emissions, and the reported amount of the emissions

The political equilibrium

- The social welfare function, denoted by W, is defined as the sum of all residents' welfare, which is equal to:

$$W = W_f + W_c + W_g = f(x) - cx - A(a) + n_c y_c + n_g y_g - D(e)$$

- The objective function under lobbying and assuming global-truthfulness in lobbying:

$$\max_t \; G = \theta_f W_f + \theta_g W_g + W.$$

The political equilibrium

- The first-order condition for the policymaker's optimization is given by:

$$\frac{\partial G}{\partial t} = \theta_f \frac{\partial W_f}{\partial t} + \theta_g \frac{\partial W_g}{\partial t} + \frac{\partial W}{\partial t} = 0.$$

- The equilibrium emission tax:

$$t^* = \frac{1+\theta_g}{1+\hat{\theta}} D' - \frac{f'' \cdot A'' \cdot [\hat{\theta} - \theta_f][\alpha e + (1-\alpha) y]}{(A'' - f'')(1+\hat{\theta})}$$

$$\hat{\theta} = \beta_f \theta_f + \beta_g \theta_g$$

The political equilibrium

- **Lemma 2:** *In the absence of lobbying, the emission tax rate that maximizes social welfare is equal to the Pigouvian tax.*

$$t^* = \frac{1+\theta_g}{1+\hat{\theta}} D' - \frac{f'' \cdot A'' \cdot [\hat{\theta} - \theta_f][\alpha e + (1-\alpha) y]}{(A'' - f'')(1+\hat{\theta})}$$

$$\Rightarrow \quad t^o = D' \qquad \text{Pigouvian tax}$$

The political equilibrium

- **Proposition 1:** *(i) If* $\theta_f > \hat{\theta}$ *and* $\theta_g < \hat{\theta}$ *, then* $t^* < t^o$

  (ii) if $\theta_f < \hat{\theta}$ *and* $\theta_g > \hat{\theta}$ *, then* $t^* > t^o$

  (iii) in other cases, the relationship between t^* *and* t^o *is ambiguous.*

The effects of enforcement policy

- The effect of the *audit policy* on the true net emissions is given by:

$$\frac{de}{d\alpha} = \underbrace{\frac{\partial e}{\partial \alpha}}_{0} + \underbrace{\frac{\partial e}{\partial t}}_{-} \underbrace{\frac{\partial t^*}{\partial \alpha}}_{?}$$

$$\frac{\partial t^*}{\partial \alpha} = \frac{(\theta_f - \hat{\theta}) \cdot f'' \cdot A'' \cdot \left[(1-\alpha) \dfrac{t^* + \tau'}{\alpha \tau''} + e - y \right]}{(A'' - f'')(1+\hat{\theta})}$$

- **Lemma 3:** *In the case where the shareholders have a relatively large political influence, the equilibrium emission tax rate decreases with* α. *In the case where the environmentalists have a relatively large political influence, the equilibrium emission tax rate increases with* α.

The effects of enforcement policy

- **Proposition 2:** *(i) An increase in the detection probability either raises or reduces the equilibrium emission tax rate, depending on the relative political influence of the lobbies; (ii) the welfare effect of tightening the audit policy is ambiguous, which implies that an increase in* α *can reduce social welfare.*

The effects of enforcement policy

- **Case. Only the shareholders lobby:**

  (i) t^* is lower than t^o

  (ii) t^* decreases with α ⇨ an increase in α causes the emission tax rate to deviate further from the optimal level, and thus tightening the audit policy reduces social welfare

The effects of enforcement policy

- Penalty function: $\tau(e-y)=\gamma(e-y)^2$
- The effect of the *penalty policy* on the true net emissions is given by:

$$\frac{de}{d\gamma}=\underbrace{\frac{\partial e}{\partial \gamma}}_{0}+\underbrace{\frac{\partial e}{\partial t}}_{-}\underbrace{\frac{\partial t^*}{\partial \gamma}}_{?}$$

$$\frac{\partial t^*}{\partial \gamma}=\frac{(\theta_f-\hat{\theta})\cdot f''\cdot A''\cdot\left[(1-\alpha)\dfrac{e-y}{\gamma}\right]}{(A''-f'')(1+\hat{\theta})}$$

- **Proposition 3:** *(i) An increase in the penalty either raises or reduces the equilibrium emission tax rate, depending on the relative political influence of the interest groups; (ii) the welfare effect of a stiffer penalty is ambiguous, which implies that an increase in γ can reduce social welfare.*

Concluding remarks

- How the influence of lobbying shapes environmental policy in the presence of imperfect compliance
- Possible perverse effects arising from a tightening of the enforcement policy

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Thank you for your Attention !

Presented by Yu-Bong Lai　2014.10.06