

# SUMMING UP SOCIAL DILEMMAS

Social Dilemma	Types of Intervention	Length of Intervention
Externality	Pigovian tax or subsidy Regulation	Long Run
Coordination Problem	Leadership and Communication Insurance	Short Run Long Run
Commitment Problem	Enforceable contracts Limit discretion Vertical integration	Long Run

# SOCIAL DILEMMAS AND GOVERNANCE

Each of our social dilemmas also happens within government

Externalities and interest groups

Coordination failure in the bureaucracy

Commitment problems and fiscal policy

Let's see a couple examples

# A MODEL OF INTEREST GROUPS

Factory owner and  $N$  citizens invest in lobbying

Each hour of lobbying costs \$100

If the citizens do  $C$  hours of lobbying and factory owner does  $F$  regulator sides with the citizens with probability

$$\frac{C}{C + F}$$

If citizens win, each benefits  $b > 0$ . If factory owner wins, she benefits  $\pi$

$$b < \pi < Nb$$

## CITIZEN'S BEST RESPONSE

If citizen  $i$  believes other citizens all invest  $c$  and owner invests  $F$ , then solves

$$\max_{c_i} \left( \frac{c_i + (N-1)c}{c_i + (N-1)c + F} \right) b - 100c_i$$

$$\text{BR}_i(c, F) = \frac{\sqrt{bF}}{10} - F - (N-1)c$$

Each citizen will make the same contribution

$$\text{BR}_i(F) = \frac{\sqrt{bF}}{10} - F - (N-1)\text{BR}_i(F)$$

$$\text{BR}_i(F) = \frac{\sqrt{bF} - 10F}{10N}$$

# FACTORY OWNER'S BEST RESPONSE

If the factory owner believes citizens purchase a total of  $C$  hours

$$\max_F \left( \frac{F}{C + F} \right) \pi - 100F$$

$$\text{BR}_f(C) = \frac{\sqrt{C\pi} - 10C}{10}.$$

# EQUILIBRIUM

$$\text{BR}_i(F) = \frac{\sqrt{bF} - 10F}{10N}$$

$$\text{BR}_f(C) = \frac{\sqrt{C\pi} - 10C}{10}.$$

$$c^* = \frac{b^2\pi}{100(b + \pi)^2N} \quad \text{and} \quad F^* = \frac{b\pi^2}{100(b + \pi)^2}.$$

## WHO WINS?

$$C^* = Nc^* = \frac{b^2\pi}{100(b + \pi)^2}$$

$$F^* = \frac{b\pi^2}{100(b + \pi)^2}$$

Since  $\pi > b$ , factory owner lobbies more. Citizens win with probability

$$\frac{C^*}{C^* + F^*} = \frac{\frac{b^2\pi}{100(b+\pi)^2}}{\frac{b^2\pi}{100(b+\pi)^2} + \frac{b\pi^2}{100(b+\pi)^2}} = \frac{b}{b + \pi} < 1/2.$$

## AN EXAMPLE

Suppose  $b = 1000$ ,  $N = 100,000$  and  $\pi = 1,000,000$

Citizens' total value of stopping pollution is \$100,000,000, while factory owner's value of polluting is only \$1,000,000

Probability citizens win is

$$\frac{1000}{1000 + 1,000,000} = \frac{1}{1001}.$$

# CONCENTRATED VS. DIFFUSE INTERESTS

Diffuse interests are hampered by internal externalities problems

This makes it hard to organize in support of even very important issues

All else equal, concentrated interests (fewer people) are better able to wield political power than diffuse interests (more people)