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 oner wins, she benefits π

$$b < \pi < Nb$$

Citizen's Best Response

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

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

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

Each citizen will make the same contribution

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

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

Factory Owner's Best Response

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

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

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

Equilibrium

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

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

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

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 concentrated interests

The Model

Three players: a voter, a left-wing politician, a right-wing politician

Two periods

Prior to each period, voter elects a politician

During each period, there is a budget of size 1.

In period 1, politician in office can borrow $b \in (0, 1)$, which must be paid back in period 2

Policy

In each period, budget can be spent on right-wing agenda (R) or left-wing agenda (L)

In each period, one of these two agendas is more productive (this is observed before election)

Value to voter of money spent on the more productive agenda is $\lambda \in \left(\frac{1}{2}, 1\right)$, while value of money spent on less productive agenda is $1 - \lambda$

Politician always values money spent on her agenda at λ and other ideological agenda at $1 - \lambda$

Stakes

In period t, the stakes of public policy are α_t (equally likely to be any real number between 0 and 1)

The value of α_t is observed after the election, but before policy is set

Optimal Borrowing

If borrow, expected voter welfare is:

$$U_V(\text{borrow}|\alpha_1) = \overbrace{\alpha_1\lambda(1+b)}^{\text{1st Period Welfare}} + \overbrace{\frac{1}{2}\lambda(1-b)}^{\text{Expected 2nd Period Welfare}}$$

If don't borrow, expected voter welfare is:

$$U_V(\text{don't borrow}|\alpha_1) = \alpha_1\lambda + \frac{1}{2}\lambda$$

Voter welfare maximized by borrowing if

$$\alpha_1 > \frac{1}{2}$$

Equilibrium Borrowing

Politician's expected payoff if she borrows:

$$U_1(\text{borrow}|\alpha_1) = \alpha_1\lambda(1{+}b){+}\frac{1}{2}\left(p\lambda(1{-}b){+}(1{-}p)(1{-}\lambda)(1{-}b)\right)$$

Politician's expected payoff if she doesn't borrow:

$$U_1(\text{don't borrow}|\alpha_1) = \alpha_1\lambda + \frac{1}{2}\left(p\lambda + (1-p)(1-\lambda)\right)$$

Borrow in equilibrium if

$$\alpha_1 > \frac{p\lambda + (1-p)(1-\lambda)}{2\lambda}$$

Politicians borrow too much from future in equilibrium

Dynamics and Fiscal Distortions

Because of dynamic concerns, politicians over emphasize the present

This can be because of partisan issues (as in our model), various other kinds of risk, individual vs. party interests, etc.

Think of current problems with unfunded pensions