Summing Up Social Dilemmas
In Part II we learned about three kinds of social dilemmas—externalities, coordination problems, and commitment problems. Each of these models describes a broad array of social phenomena. Moreover, when any one of them occurs, the right policy intervention could achieve a Pareto improvement. The hope is that having a conceptual understanding of these dilemmas clarifies where there are opportunities for policy to do good.

Importantly, different dilemmas require different types of policy responses. Table 6.1 offers a summary, showing the policy technologies best matched to each social dilemma.

<table>
<thead>
<tr>
<th>Social Dilemma</th>
<th>Types of Intervention</th>
<th>Length of Intervention</th>
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<tbody>
<tr>
<td>Externality</td>
<td>Pigovian tax or subsidy, Regulation</td>
<td>Long Run</td>
</tr>
<tr>
<td>Coordination Problem</td>
<td>Leadership and Communication, Insurance</td>
<td>Short Run, Long Run</td>
</tr>
<tr>
<td>Commitment Problem</td>
<td>Enforceable contracts, Limit discretion, Vertical integration</td>
<td>Long Run</td>
</tr>
</tbody>
</table>

We also discussed the idea that for certain types of social dilemmas, ongoing relationships may make it possible for people to self-organize a solution. This is particularly likely in...
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

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

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

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

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

\[
c^* = \frac{b^2\pi}{100(b + \pi)^2 N} \quad \text{and} \quad F^* = \frac{b\pi^2}{100(b + \pi)^2}.
\]
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 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 $\lambda \in (\frac{1}{2}, 1)$, while value of money spent on less productive agenda is $1 - \lambda$

Politician always values money spent on her agenda at $\lambda$ and other ideological agenda at $1 - \lambda$
In period $t$, the stakes of public policy are $\alpha_t$ (equally likely to be any real number between 0 and 1)

The value of $\alpha_t$ is observed after the election, but before policy is set
Optimal Borrowing

If borrow, expected voter welfare is:

\[ U_V(\text{borrow}|\alpha_1) = \alpha_1 \lambda (1 + b) + \frac{1}{2} \lambda (1 - b) \]

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.