# Dynamic Inconsistency

# Constraints on Good Governance

Policy is made by governments

Governments are not Pareto improving machines

To understand why we get the policy we get, and how to improve it, we need to think beyond optimal policy to political constraints and political strategy

# Motivation for Today

Considerations about future outcomes can distort decisions today

Healthcare.gov debacle

- GAO reports failure of oversight by Centers for Medicar & Medicade Services (CMS)
- Major problems with work by contractor (CGI Federal) in early 2013
- CMS forwent punitive actions in order to "better collaborate with CGI Federal in completing the work in order to meet the October 1, 2013 launch"

Look at a variety of examples of these dynamic distortions

# Dealing Rationally with Uncertainty

Suppose there are three possible outcomes $(x, y, z)$ associated with some action

A *lottery*, $\mathcal{L}$, is a probability distribution over these outcomes: $p_x, p_y, p_z$

- $p_x + p_y + p_z = 1$

Person $i$ has a subjective utility associated with each outcome: $u_i(x), u_i(y), u_i(z)$

Evaluate the attractiveness of a lottery by its *expected utility*

$$EU_i(\mathcal{L}) = p_x \times u_i(x) + p_y \times u_i(y) + p_z \times u_i(z)$$

# An Example: Carrying an Umbrella

You must choose whether or not to carry an umbrella when the weather says the probability of rain is $p$

$\mathcal{L}_N$: *"No Umbrella and Rain" with probability $p$ and "No Umbrella and No Rain" with probability $1 - p$.*

$\mathcal{L}_U$: *"Umbrella and Rain" with probability $p$ and "Umbrella and No Rain" with probability $1 - p$.*

# Should You Carry and Umbrella?

Let's assume $p = 1/3$ and that you have the following utilities:

$$u(NN) = 9 \quad u(UN) = 6 \quad u(NR) = 0 \quad u(UR) = 3$$

$$EU\left(\mathcal{L}_N\right) = \frac{2}{3} \times 9 + \frac{1}{3} \times 0 = 6.$$

$$EU\left(\mathcal{L}_U\right) = \frac{2}{3} \times 6 + \frac{1}{3} \times 3 = 5.$$

Don't carry an umbrella

# A More General Approach to the Umbrella Problem

Consider an arbitrary $p$

$$EU\left(\mathcal{L}_N\right) = (1-p) \times 9 + p \times 0 = 9 - 9p.$$

$$EU\left(\mathcal{L}_U\right) = (1-p) \times 6 + p \times 3 = 6 - 3p.$$

Carry umbrella if and only if:

$$9 - 9p < 6 - 3p$$

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

# A Motivating Story

2008 Mayor Daley leases city parking meters for 75 years to private company for $1.15 billion

According to Inspector General, this is about one-half the value

90% of the revenue was spent within 5 years

# 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 $\lambda$ and other ideological agenda at $1 - \lambda$

# Stakes

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:

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

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:

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

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

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

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.

Consider current underfunding of pensions

# The Idea

Political power allows groups to extract benefits

Groups want to hold on to political power

Advocate for policies that retain group power, even if doing so is an inefficient way to achieve policy goal

# Power and Policy

Governments may pursue inefficient policies precisely because those policies preserve the power of some currently powerful group

Policies that appear to be socially beneficial may actually be socially harmful when one considers not just the direct economic consequences of the policy, but also the political consequences

- Another instance of the second best

# EXAMPLES

Farm subsidies

Price supports and protectionism for manufacturing

Immigration restrictions

# A Model

Population of size $N$ divided into two generations

New generation has population share $0 < \delta < 1$

Old generation is divided into farmers ($1/2 < \lambda < 1$) and manufacturers ($1 - \lambda$)

Old generation farmers are a majority of the old generation, but not of the overall population

$$(1 - \delta)\lambda < 1/2$$

# The Game

Majority of old generation chooses a policy:

1. Tax manufacturers at rate $t$ and redistribute to the existing farmers
2. Tax manufacturers at rate $t$ to fund price supports for agriculture
3. Don't tax manufacturers

The new generation observes the policy choice and then chooses which industry to enter and first period production occurs

The new majority chooses a new tax policy

Second period production occurs and the game ends

# Payoffs and Production

Each player has utility equal to sum of her individual production and transfers

Each farmer produces $F$

Each manufacturer produces $M > F$

It is only possible to tax the income from manufacturing

# Utilitarian Optimum

Taxes are not assumed to be distortionary, so taxes and transfers do not directly affect utilitarian payoff

Utilitarian payoff is determined by amount produced

Manufacturing is more productive than farming, so utilitarian outcome/Pareto efficiency requires that new generation enters manufacturing

Any policy choice that leads new generation to become farmers is inefficient

# Second Period Policy if New Generation Become Farmers

Farmers remain in majority

Implement tax $t$ and redistribute proceeds to farmers (doesn't matter how)

$$T_F = \frac{t(1-\delta)(1-\lambda)M}{(1-\delta)\lambda + \delta}.$$

Second period payoff for farmers:

$$F + T_F$$

Second period payoff for manufacturer:

$$(1-t)M.$$

# Second Period Policy if New Generation Become Manufacturers

Farmers lose majority

No redistribution, so second period payoffs are $F$ and $M$

# Following Lump Sum Transfers

Lifetime payoff to new generation if become farmer:

$$2F + T_F$$

Lifetime payoff to new generation if become manufacturer:

$$M(1-t) + M = M(2-t)$$

Farm if and only if:

$$2F + T_F \geq M(2-t)$$

# Following Price Subsidies

Lifetime payoff to new generation if become farmer:

$$2\left(F + T_F\right).$$

Lifetime payoff to new generation if become manufacturer:

$$M(2 - t).$$

Farm if and only if:

$$2(F + T_F) \geq M(2 - t)$$

# Following No Redistribution

Lifetime payoff to new generation if become farmer:

$$2F + T_F$$

Lifetime payoff to new generation if become manufacturer:

$$2M$$

Farm if and only if:

$$2F + T_F \geq 2M$$

# Price Subsidies Encourage Farming

Redistribution:

$$2F + T_F \geq M(2 - t).$$

Price support:

$$2F + 2T_F \geq M(2 - t).$$

No redistribution:

$$2F + T_F - 2t \geq M(2 - t)$$

# The Trade-Off

Always do some form of redistribution

Price supports make it more likely new generation become farmers, retaining future power

Transfers don't have to be shared with the new generation

Choose price supports if:

$$\frac{\delta}{(1-\delta)^2} \leq \lambda(1-\lambda)$$

# Inefficiency and Commitment

Old farmers lose their redistribution if new generation don't become farmers

Hence, they want a policy that incentivizes farming, even though this is inefficient

If the new generation could commit to redistribution in second period, old generation would not choose price supports and we would get efficient sectoral sorting

Once the new generation chooses manufacturing, they want to get rid of redistribution to farmers

# Take Aways

Dynamic considerations create constraints that prevent current governments from implementing optimal policies

These distortions can come from commitment problems, concerns for constraining future leaders, or the desire to hold onto power

This introduces a whole new set of political "second best" constraints