Political Favors / Trade Agreements

Pork-barrel spending: the wasteful earmarking of public funds to the benefit of a politician's own constituents in return for their political support.

Logrolling: the trading of favors — for example in the form of voting. The you scratch my back, I'll scratch yours.

Period t 2 legislators A & B vote to allocate spending S where $S = 1$

- A spending bill $S = (x, y_A, y_B)$
  - earmarked spending for both districts $y_i \geq 0$
  - General purpose funds x
  - Any bill must satisfy the budget constraint: $x + y_A + y_B = 1$
- y_i can either equal 0 or y where $y < 1/2$

A: Favor B's earmark \ B: Favor A's earmark	No	Yes
No	$1, 1$	$1-y, 1-y$
Yes	$1-y, 1-y$	$1-2y, 1-2y$

NE: (No, No)

Why vote for earmarks?

- Impact on a lawmaker's electoral vulnerability.
- Legislator has a baseline probability $\pi > 0$ of being re-elected
- Earmarked spending $y > 0$ guarentees re-election
- Both legislators discount the future at the same rate $\delta \in (0,1)$

• Obtaining "Pork" in any period t "increases a lawmakers discount factor

Can we find SPNE w/ Grim Trigger?

• A trigger strategy reduces the chance of re-election and therefore lowers the discount factor of all future payoffs from δ to $\delta\pi$.

→ Coop through logrolling V_C:

$$V_C = 1-2y + \delta(1-2y) + \delta^2(1-2y) + \dots = \frac{1-2y}{1-\delta} = \frac{1-2y}{1-\delta}$$

→ Vetoing forever V_V:

$$V_V = 1 + \delta\pi + (\delta\pi)^2 + \dots = \frac{1}{1-\delta\pi} = \frac{1}{1-\delta\pi}$$

For any $\delta > \delta^T(\pi, y) = \dfrac{2}{1-\pi(1-2y)}$ it is the case that $V_C > V_V$

Deviations from cooperative strategy.

• Deviation payoff stream V_D:

$$V_D = 1-y + \delta[1 + \delta\pi + (\delta\pi)^2 + \dots] = 1 - y + \delta V_V = 1 - y + \frac{\delta}{1-\delta\pi}$$

• No legislator will want to deviate if $V_C > V_D$. The critical level of patience $\delta^*(\pi, y)$ solves

$$\delta^2(1-\pi(1-y)) - \delta(y(1-\pi)) - y = 0$$

→ There is always such a $\delta^*(\pi, y) < 1$

We must check that the legislators do not wish to deviate during the punishment phase, once triggered.

• A deviation in punishment phase implies a legislator votes in favor of another's earmark.

- ... leading to a lower payoff without improving re-election ~~___~~ prospects, followed by vetoes ever after
- Which means that no profitable deviation from repeating the NE in the stage game exists.

For any $\delta > \delta^*(\pi, y)$ the proposed grim trigger ~~___~~ strategies constitute a SPNE.

1. $\delta^*(\pi, y)$ is increasing in π.
   ↳ re-election factor
2. $\delta^*(\pi, y)$ is increasing in y.
   ↳ the amount of pork we give & receive to others

When Bygones are Bygones (Renegotiation after the grim trigger strategy has been activated)

- Ex post means renegotiation after deviation → a good idea but it could destroy credibility of grim trigger.
- Ex ante, setting the precedance of renegotiation before deviation → not sustainable.

Renegotiation Proofness:

A SPE strategy σ is (weakly) renegotiation proof if there are no two continuation equilibrium strategies $\hat{\sigma}$, and $\tilde{\sigma}$ of σ such that all players have a higher payoff stream in $\tilde{\sigma}$ compared to $\hat{\sigma}$.

$\hat{\sigma}$ → payoff from continuing to play the strategy

$\tilde{\sigma}$ → payoff stream from switching to a different continuation equilibrium strategy.

Example: Simple strategy σ

→ for a high enough discount factor, σ supports pork-barrel spending as a renegotiation proof SPE. σ has 3 phases.

1. C is coop phase (Yes, Yes)
2. P_A is punishment phase of legislator A: play (Yes, no) after which play (Yes, Yes) forever
3. P_B is the punishment phase of legislator B: play (No, Yes) after which play (Yes, Yes) forever

→ "Penance strategy": when someone defects, it calls for reparation of the damage done before cooperation is back on the table.

1. V_C payoff

$$V_C = \frac{1-2y}{1-\delta}$$

2. V_P: payoff of i being punished in P_i:

$$V_P = 1-y+\delta\pi V_C = 1-y+\delta\pi\frac{1-2y}{1-\delta}$$

3. V_R: payoff of i being rewarded in P_i:

$$V_R = 1-y+\delta V_C = 1-y+\delta\frac{1-2y}{1-\delta}$$

* We need to see, is...

$\cdot V_R > V_P \quad \cdot V_R > V_C \quad \cdot V_P < V_C$

or $V_R > V_C > V_P$

$V_R > V_P$

$V_R = 1-y+\delta V_C > V_P = 1-y+\delta\pi V_C$

$V_R > V_C$

When would $V_C > V_P$

$V_C \geq V_P = 1 - y + \delta \pi V_C$

- which is = to

$$\delta(1 - y - \pi(1-2y)) - y \geq 0$$

$$\delta > \delta^{RP}(\pi, y) = \frac{y}{1 - y - \pi(1 - 2y)} < 1$$

m

For any δ larger than $\delta^{RP}(\pi, y) = y / 1 - y - \pi(1-2y)$ the "penance" strategy is renegotiation proof