Information and Legislative Organization

Felix Munoz-Garcia

Advanced Microeconomics II - Washington State University

Legislative organization - Tadelis 18.3

- A paper by Gilligan and Krehbiel (1987) models the role of parliamentary committees and how their recommendations can affect policy.
  - The idea is that the committee is made up of experts on the policy under question. Their role is to communicate useful information to the governing body.
- Consider two players, where player 1 represents the committee and player 2 represents the governing body (who sets the policy).
- Player 1 has private information about the state of the world, which can take on two values, $\theta \in \{-w, w\}$ where $w > 0$.
- Player 2 only knows that each state is equally likely.

Legislative organization - Tadelis 18.3

- Player 1 must choose a message to send to player 2 as a policy recommendation, and his preferences are given by

$$v_1(a_2, \theta) = -(\theta + b - a_2)^2$$

where $b > 0$. This implies that player 1's optimal policy is $a_2 = \theta + b$, which takes into account his upward bias, b.

- Player 2 must then choose a policy $a_2 \in \mathbb{R}$, and his preferences are given by

$$v_2(a_2, \theta) = -(\theta - a_2)^2$$

which would imply that the optimal policy for player 2 is $a_2 = \theta$.

Legislative organization - Tadelis 18.3

- For comparison, consider what action player 2 would take without receiving a message.
  - He would optimize by maximizing his expected utility

$$\max_{a_2} \quad \frac{1}{2}\left[-(-w-a_2)^2\right]+\frac{1}{2}\left[-(w-a_2)^2\right]=-a_2^2-w^2$$

which yields solution $a_2^*=0$ and utility $v_2(0,\theta)=-w^2$

- This is known as the *Status Quo* policy (i.e., the policy is to make no change).

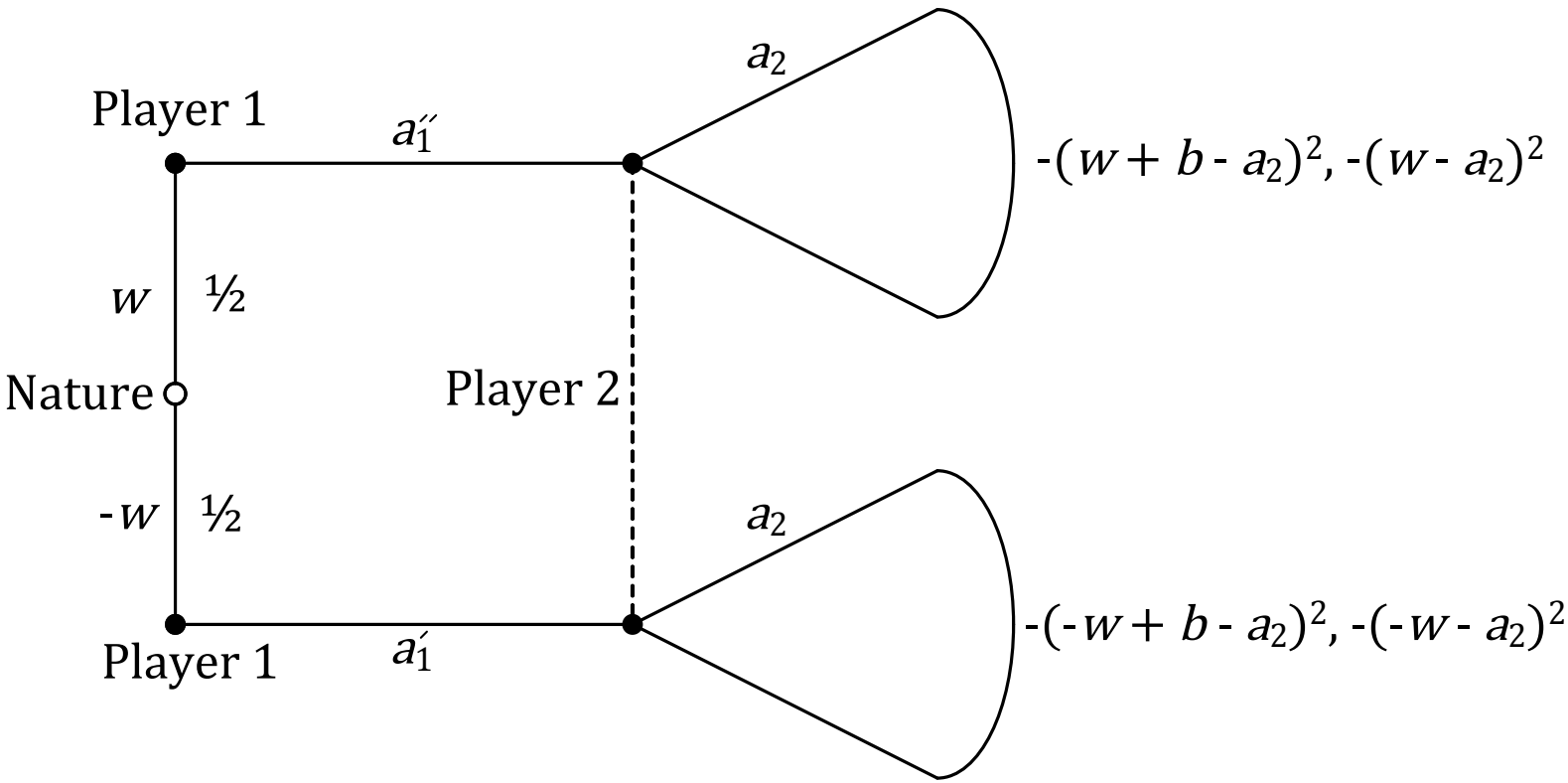
Legislative organization - Tadelis 18.3

- The question in Gilligan and Krehbiel's (1987) paper was whether the parliamentary rules in effect would change the amount of information being shared. We will consider two different types.
  - **Open rule**, where the floor may choose any policy it wants after the committee sends its message.
  - **Closed rule**, where the floor can only choose between the committee's recommendation or the status quo.

Legislative organization - Tadelis 18.3

- Starting with Open rule, what are the conditions under which player 1 will truthfully reveal the state of the world?
  - Figure on next slide.
  - Note that this is identical to our previous analysis of cheap talk games.
- From our previous analysis, we know that a babbling equilibrium equilibrium always exists in which player 1 chooses each of its messages with equal probability regardless of the value of θ.
  - This causes player 2 to reply with the status quo, since no useful information is transmitted.

Legislative organization - Tadelis 18.3



Legislative organization - Tadelis 18.3

- Consider a separating equilibrium where player 1 sends a_1' when $\theta = -w$ and a_1'' when $\theta = w$.
- In this equilibrium, the optimal response will be for player 2 to choose $a_2 = \theta$ since it will learn the state of the world from player 1.
- Under which conditions will this strategy be able to be sustained as a PBE?
    - Recall that player 1 has an upward bias, and thus, incentive to lie when the state of the world is the low type.

Time Inconsistent Preferences - Tadelis 18.3

- In the low state of the world, player 1 will find truth telling as the optimal strategy when his payoff from truthtelling and having player 2 choose $a_2 = -w$ must be higher than the payoff from lying, and having player 2 choose $a_2 = w$, i.e.,

$$\begin{aligned} v_1(-w, -w) &\geq v_1(w, -w) \\ -(-w + b - (-w))^2 &\geq -(-w + b - w)^2 \end{aligned}$$

  which simplifies to

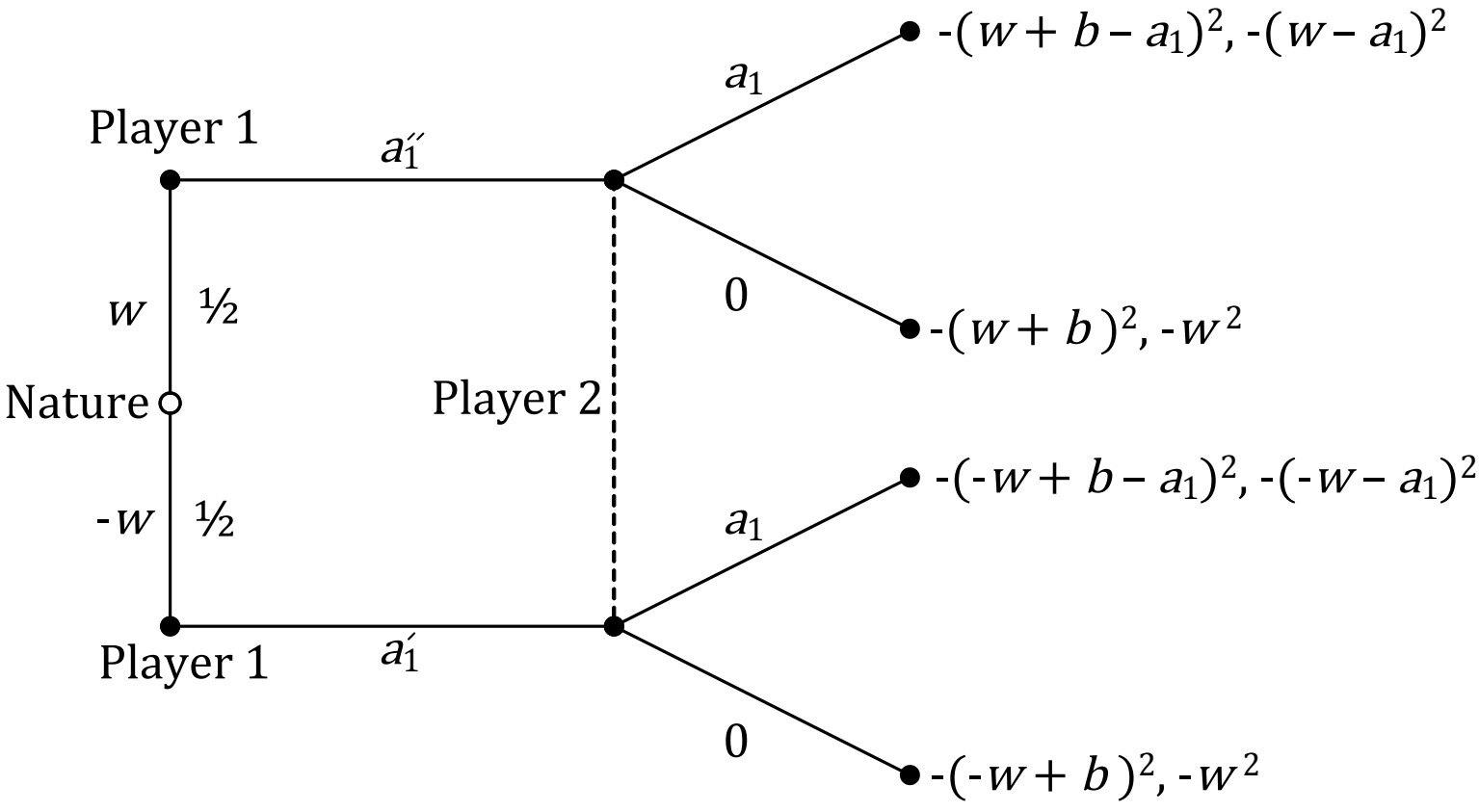
$$b \leq w$$

- Thus, as long as the committee's bias isn't too large, a separating equilibrium can exist, yielding payoffs of $-b^2$ for player 1 and 0 for player 2.

Legislative organization - Tadelis 18.3

- Now, let's look at the Closed rule institution. Recall that now, player 2 can only choose between player 1's recommendation and the status quo.
  - Remember that player 1's optimal outcome is for player 2 to play $a_2 = \theta + b$
  - Also remember that player 2, at worst, can choose the status quo and receive a payoff of $-w^2$.
  - Figure on next slide.
- Under what conditions can a fully truthful (separating) equilibrium exist where $a_2 = \theta + b$?

Legislative organization - Tadelis 18.3



Legislative organization - Tadelis 18.3

- For the separating strategy to exist, we must have that the best response for player 2, upon observing a message of $a_1 = \theta + b$, is to accept, rather than choose the status quo, i.e.,

$$\begin{aligned} v_2(\theta + b, \theta) &\geq v_2(0, \theta) \\ -(\theta - (\theta + b))^2 &\geq -(\theta - 0)^2 \\ -b^2 &\geq -w^2 \end{aligned}$$

  where regardless of the value of θ, $\theta^2 = w^2$. This expression simplifies to $b \leq w$, and thus, under the same conditions as in the Open rule institution, a separating strategy can be sustained in a Closed rule institution. Player 1 receives a payoff of 0 and player 2 receives a payoff of $-b^2$.

  - Note that it's trivial to show that Player 1 will not deviate, since his payoff is maximized.

Time Inconsistent Preferences - Tadelis 18.3

- What if $b > w$? Can there still exist a separating equilibrium in the Close rule institution?
  - Yes! Since the legislature is constrained to choosing either player 1's recommendation or the status quo, player 1 could still raise his recommendation and get his proposal accepted.
- Consider the separating equilibrium where player 1 proposes $a_1 = \theta + w$.

Legislative organization - Tadelis 18.3

- Player 2 will accept player 1's proposal as long as it gives a higher payoff than the status quo, i.e.,

$$\begin{aligned} v_2(\theta + w, \theta) &\geq v_2(0, \theta) \\ -(\theta - (\theta + w))^2 &\geq -(\theta - 0)^2 \\ -w^2 &\geq -w^2 \end{aligned}$$

Thus, player 2 is indifferent between player 1's proposal and the status quo and will accept by assumption.

  - What about player 1? (Next slide)

Legislative organization - Tadelis 18.3

- For player 1 to not deviate, he must also receive a higher payoff from revealing himself as the low type, rather than the high type.
- Recall that when player 1 is the low type, his message is $a_1 = -w + w = 0$ and when player 1 is the high type, his message is $a_1 = w + w = 2w$. Comparing the payoffs,

$$\begin{aligned} v_1(0, -w) &\geq v_2(2w, -w) \\ -(-w + b - 0)^2 &\geq -(-w + b - 2w)^2 \\ -(b - w)^2 &\geq -(b - 3w)^2 \end{aligned}$$

Simplifying, we find that this condition holds as long as $b \leq 2w$.

Legislative organization - Tadelis 18.3

- Thus, we found that the Closed rule institution can sustain information transmission (a separating strategy) for a much larger committee bias than the Open rule institution.
- Gilligan and Krehbiel (1987) argue that empowering committees by tying the hands of the voting body can actually result in more information transmission.