Maskin: cooperative game theory could still be useful.

- Two classes of stock: A and B
- Two players: $\{I, R\}$.
- Cash flow shares s_A, s_B
- Voting right shares v_A, v_B

eg. from last tim: $y_I = 200, y_R = 180, z_I = 0, z_R = 12,$

$s_A = s_B = 1/2, \quad v_A = 1, v_B = 0.$

- R will gain control, and this is inefficient.

Two more examples:

eg 3: Suppose $z_I = z_R = 0$. Whoever has the larger y_i gains control: I controls $\Leftrightarrow y_I \geq y_R$.

eg 4: $z_I = 4, z_R = 5, y_I = 90, y_R = 100$

$\Rightarrow$ 1 share 1 vote might not be optimal

1S1V $\Rightarrow$ R buys all the shares for $100+\varepsilon$ and wins.

- cannot offer $100-\varepsilon$, since shareholders will not want to sell if they think everyone else will sell. Thus, no one will sell

Suppose A shares vote but no cashflow rights

$v_A = 1, v_B = 0, s_A = 0, s_B = 1.$

- R needs to offer $4+\varepsilon$ for A shares
- R needs to offer $100+\varepsilon$ for B shares

$\Rightarrow$ Will pay up to $104+\varepsilon$.

- This security design increases the value of the shares. (Now 104)
  - Not optimal from a corporate charter perspective.

Under what circumstances should we have collateral
What should the maturity structure of a loan be

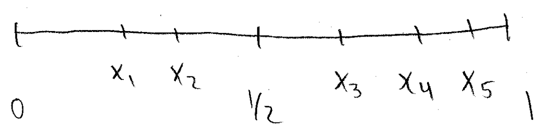
Incomplete contracting and broad decision rules

- What should α be? We see many different α's in the real world.

Setting:

- n voters
- social decision $\theta \in [0,1]$
- voter i's utility: $v_i = -u(|\theta - x_i|)$
  where x_i is the preference of voter i

Time 1: Behind the veil of ignorance. (Harsanyi, Lerner)

- Suppose $x \overset{cdf}{\sim} F(x)$ is absolutely continuous
- choose (a) $\theta^* \in [0,1]$ status quo
  (b) $1 \leq \alpha \leq n$
- 

  = θ^* ex ante decision

- Rule out transfer payments.
- suppose $\{x_3, x_4, x_5\}$ coalition forms and ex post decision is given by closest person to θ^*

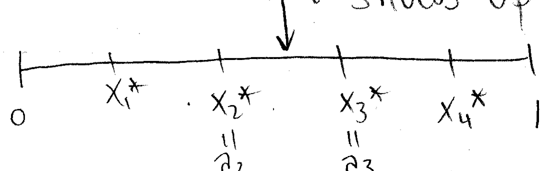
<u>Remark:</u> Aghion-Bolton "Incomplete Social Contracts"

Suppose
- $u_i = -\exp\{\beta|\theta - x_i|\}$
- $F(x)$ uniform on $[0,1]$
- $n=5$
- $\theta^* = \frac{1}{2}$
- We want to find optimal α for various β's.

Take out voter i, and suppose $x_1^* \le x_2^* \le x_3^* \le x_4^*$, x_k^* is the k^{th} order-statistic (used frequently in auction theory.)

Consider the majority rule case is. What is the joint density of (x_2^*, x_3^*)?
- $f(a_2, a_3) = 24\, a_2(1-a_3)$

If i shows up here, is pivotal



$\boxed{1}$ • if $x_i \in [x_2^*, x_3^*]$, $u_i = -1$

$\boxed{2}$ • If $x_i \in [0, x_2^*]$, $u_i = -\exp\{\beta(a_2 - t)\}$

$\boxed{3}$ • if $x_i \in [x_3^*, 1]$, $u_i = -\exp\{\beta(t - a_3)\}$.

Expected utility is:

$$E[u_i^m | a_2, a_3] = -\int_0^{a_2} \exp\{\beta(a_2 - t)\}dt - (a_3 - a_2) - \int_{a_3}^1 \exp\{\beta(t - a_3)\}dt$$

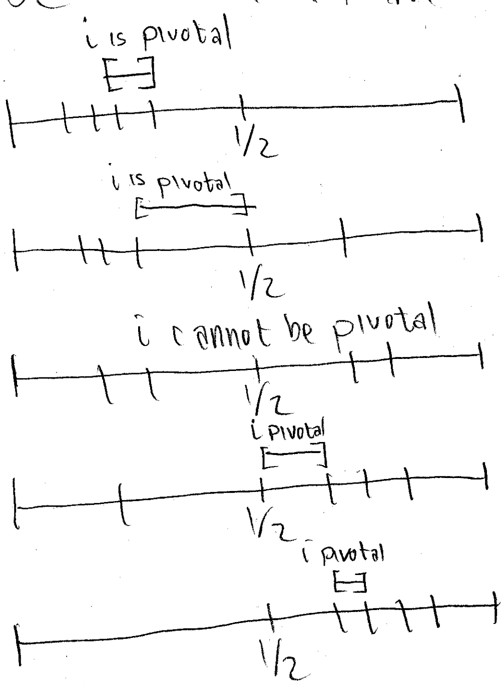
when a_2, a_3

$$E[u_i^m] = \int_0^1 \int_0^{a_3} \left(\int_0^{a_2} -\exp\{-\beta(a_2-t)\}dt + \int_{a_2}^{a_3} (-1)dt + \int_{a_3}^{1} -\exp\{-\beta(t-a_3)\}dt \right) \cdot \underbrace{24 a_2 (1-a_3)}_{f(a_2, a_3)} da_2 \, da_3$$

Mathematica

$$= -\frac{\beta(\beta^4 - 10\beta^3 + 120\beta + 480) + 240e^{\beta}(\beta-3) + 720}{5\beta^5}$$

Suppose $\alpha = 4$. Have to worry about:



1/16

1/16

When β low, what dominates? $\alpha = 3$

β high, $\alpha = 5$ dominates

When $n \uparrow$, want $\alpha \downarrow$

When variance of distribution $\uparrow$, $\alpha \uparrow$