Lecture 17 5 Nov 07

Ultimatums & Bargaining

2 players 1 and 2 ($1)

1 can make a "take it or leave it" offer to 2 $(s, 1-s)$

$\left\{ \begin{array}{l} \text{2 can accept offer} \rightarrow (s, 1-s) \\ \text{or 2 can reject} \rightarrow (0,0) \end{array} \right.$

BI $\rightarrow$ (99¢, 1¢) or (100, 0)

2-period bargaining ($1)

Stage 1 Player 1 makes offer to 2 $(s', 1-s')$

Player 2 can accept $\rightarrow (s', 1-s')$

if 2 rejects

Stage 2 2 gets to make an offer to 1 $(s^2, 1-s^2)$

1 can accept $\longrightarrow (s^2, 1-s^2)$

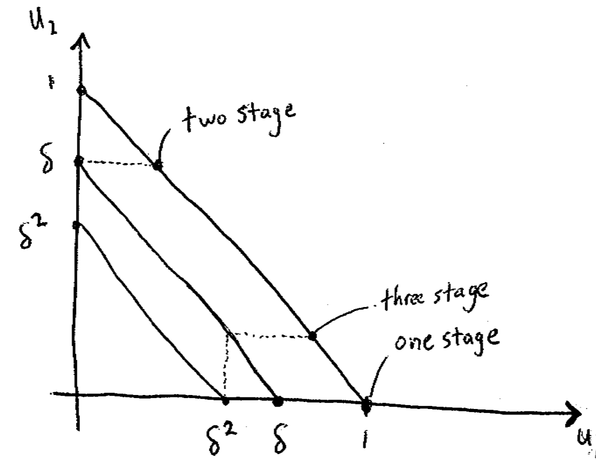
if rejects $\longrightarrow (0,0)$

discounting $\$\delta$ (90¢) $\delta < 1$

	offerer	receiver
one stage	$\boxed{1}$	0
two stage	$\boxed{1-\delta}$	$\boxed{\delta}$
three stage	$1-\delta(1-\delta)$	$\delta(1-\delta)$
four stage	$1-\delta(1-\delta(1-\delta))$	$\delta(1-\delta(1-\delta))$
	$= 1-\delta+\delta^2-\delta^3$	$= \delta-\delta^2+\delta^3$
0 stage	$1-\delta+\delta^2-\delta^3 \cdots +\delta^8-\delta^9$	

if player 1 offer 2 $> \delta \cdot 1$ 2 will accept

.... $< \delta \cdot 1$ 2 will reject



3 stage

① 1 makes offer — if accepted done

if reject

② 2 makes offer — if accepted done — δ

if reject

③ 1 makes offer — if accepted (0,0) — $\delta \cdot \delta = \delta$

« Solving geometric series »

$$1-\delta+\delta^2-\delta^3 \cdots +\delta^8-\delta^9 = s^{10}$$

$$\delta-\delta^2-\delta^3+\delta^4 \cdots +\delta^9-\delta^{10} = \delta s^{10}$$

$$+ \quad 1 \qquad -\delta^{10} = (1+\delta) s^{10}$$

not an exponent, just a superscript

$$\boxed{s^{10} = \frac{1-\delta^{10}}{1+\delta}}$$

power, exponent

$$\boxed{(1-s^{10}) = \frac{\delta+\delta^{10}}{1+\delta}}$$

$$s^\infty = \frac{1-\delta^\infty}{1+\delta} \qquad 1-s^\infty = \frac{\delta+\delta^\infty}{1+\delta}$$

$$\boxed{s^\infty = \frac{1}{1+\delta}} \qquad \boxed{1-s^\infty = \frac{\delta}{1+\delta}}$$

Suppose rapid offers, so $\delta \approx 1$

$\delta \to 1 \Rightarrow \quad s = \frac{1}{2}, \quad 1-s = \frac{1}{2}$

CONCLUDE Alternating offer bargaining

(1) Even split if

- potentially can bargain forever
- $\delta \to 1$, no discounting or rapid offers
- Same discount factor $\delta_1 = \delta_2$

(relax on homework)

(2) The first offer is accepted

(no haggling in equilibrium)

Value of the pie and the value of time $\Big\}$ when assumed known

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« the poor will do less well in bargaining »

« when valuations unknown, sometimes you fail to execute a deal that is efficient »

(efficient in that buyer's valuation > seller's valuation)

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