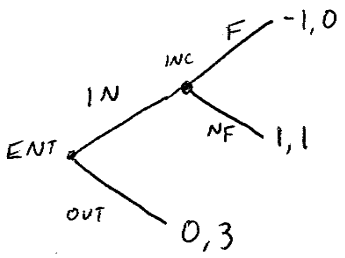
Lecture 16 31 Oct 07

last time



		INC: F	INC: NF
ENT: In		-1,0	1,1
ENT: Out		0,3	0,3

NE $\begin{cases} (In, NF) \\ (Out, F) \end{cases}$

BI $In \to NF$

If ε (1%) - chance that Ale is crazy,
Then he can deter entry by fighting : seeming crazy

Chain-Store paradox

reputation

≫

Two points
1) Small probability of crazy changes things
2) Reputation matters, too...

≪ - hostages : reputation of toughness
- doctors, accountants :
want reputation as good, nice, honest ≫

≪ Assume : abilities known ≫

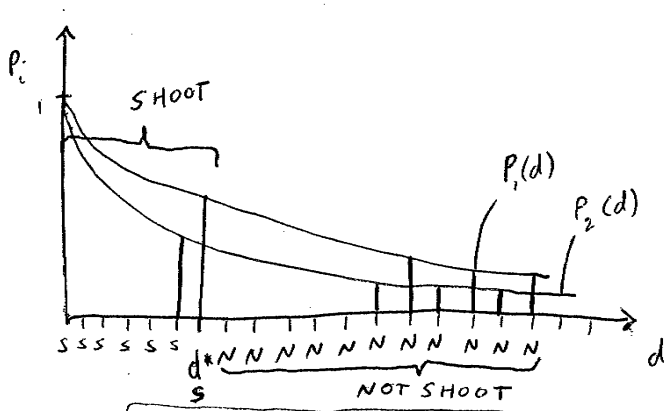
PRE-EMPTION

≪ use dominance and backward induction ≫

FACT (A) Assuming no-one has thrown, if i knows (at d) that j will not shoot "tomorrow" (at d-1), then i should not shoot "today."

FACT (B) ---------- will shoot ---------- (at d-1), then i should shoot if i's prob of hitting at d $\boxed{P_i(d) \geq 1 - P_j(d-1)}$ j's prob of missing at d-1

$\Leftrightarrow \boxed{P_i(d) + P_j(d-1) \geq 1}$ *



Claim The first shot should occur at d*

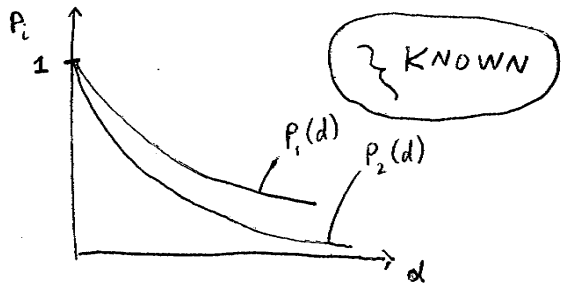
≪ Shown no one should shoot before d* - by dominance
but at d*, there is no dominance - need BI
↳ you need to know what you believe about their next move ≫

At d=0 (say 2's turn)
Shoot ($P_2(0) = 1$)

At d=1 (say 1's turn)
1 knows that 2 will shoot tomorrow
by (B) → should shoot if $P_1(1) + P_2(0) \overset{?}{\geq} 1$
✓ shoot

Duel - when

≪ shooting, cycling, product launch ≫

- Let $P_i(d)$ be player i's probability of hitting if i shoots at distance d
- 

At d=2 (2's turn) 2 ..... 1 ....

.... => 2 should shoot if $P_2(2) + P_1(1) \gtrless ?\ 1$

<< Who shoots first is not necessarily better or worse shooter, but whoever's turn it is first at d* (where d* is determined by their joint ability) >>

<< You can solve hard problems with dominance and BI >>

<< If playing an un-sophisticated player
- still don't shoot before d* (dominated strategy) >>

<< People shoot early
- overconfidence
- pro-active bias

=> sometimes waiting is a good strategy >>