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 = \[ P_i(d) \geq 1 - P_j(d-1) \]

i's prob of missing at d-1

\[ P_i(d) + P_j(d-1) \geq 1 \]

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)

I knows that 2 will shoot tomorrow \(/\) should shoot if \( P_i(1), P_j(0) \geq 1 \)

\( \checkmark \) shoot

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

Duel - when

(shooting, cycling, product launch)

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

\[ P_1(d) \rightarrow \text{KNOW} \]

\[ P_2(d) \rightarrow \]

\[ d \]

\[ \text{Shoot} \]

\[ P_1(d) \]

\[ P_2(d) \]

Fly
\[
\text{At } d = 2 \quad (2's \text{ win}) \quad 2 \cdots 1 \cdots \\
\cdots = \Rightarrow 2 \text{ should shoot if } P_2(z) + P_1(w) > 1
\]

<< 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
   \Rightarrow \text{sometimes waiting is a good strategy} >>