Module 5: "Dynamic games of incomplete information"

Lecture 34: "Signaling Game: Another numerical example"

The Lecture Contains:

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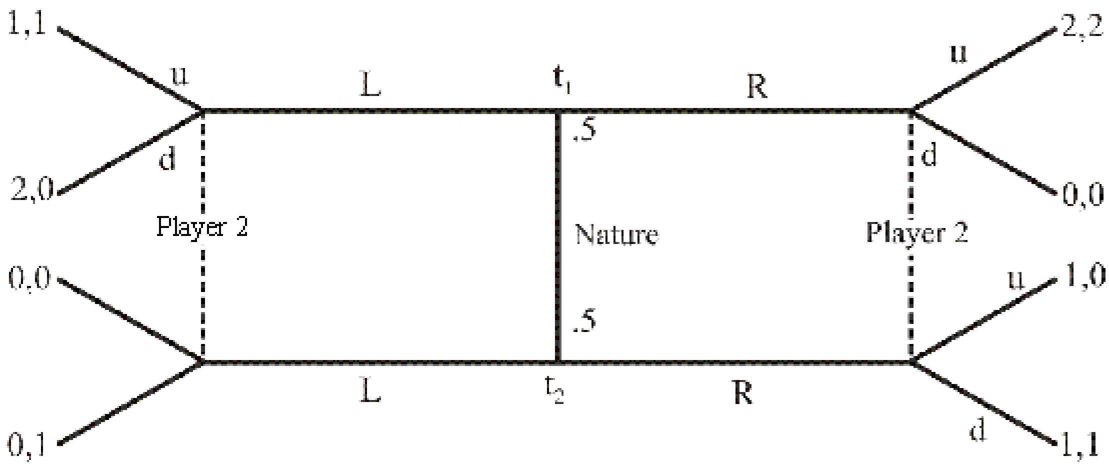
Module 5: "Dynamic games of incomplete information"

Lecture 34: "Signaling Game: Another numerical example"

PBNE: Another numerical example



Find all the pure strategy PBNE:

There are four possible pure strategy PBNE

(R, R); (L, L) } Pooling PBNE

(R, L); (L, R) } Separating PBNE

Note, for a sender of type 2, R dominates L irrespective of the actions of the receiver.

Hence (L, L) and (R, L) are ruled out.

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Numerical example [contd.]

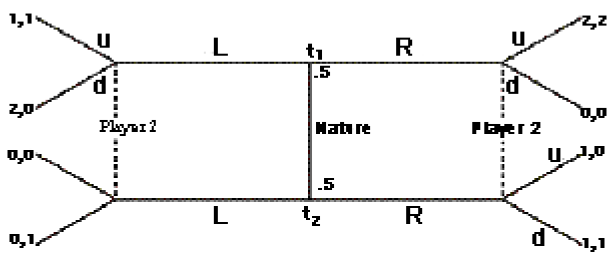
Let’s analyze that whether there is a pooling PBE involving (R, R) strategy by sender

$\Longrightarrow q = \mu(t_1/R)$ is pinned down by requirement (3)

$\Longrightarrow q = 0.5$

$\Longrightarrow$ a* (R)= ?

- Payoff to receiver by playing u= 0.5 (2)+ 0.5 (0)= 1
- Payoff to receiver by playing d
- = 0.5 (0)+ 0.5 (1)= 0.5



$\Longrightarrow$ a*(R) = U

$\therefore$ at (R, R)

Payoff of type t_1 = 2

Payoff of type t_2 = 1

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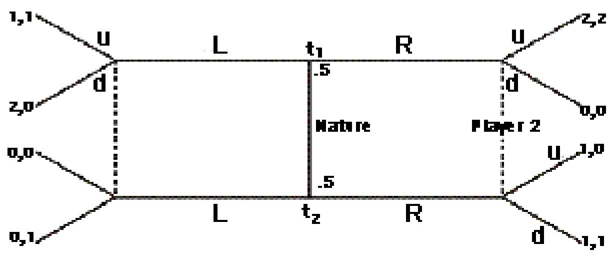
Numerical example [contd.]

We have to check whether any of the types have any incentive to deviate.

That depends on action of receiver on seeing L i.e. a(L) which depends on p.

However here if a(L) = u or d

none of the types would have an incentive to deviate.



Payoff to receiver by playing u = p

Payoff to receiver by playing d = 1-p

Receiver will play u if $p \geq 1-p$

Receiver will play d if $p \leq 1-p$

Hence there is a bunch of pooling PBE

$[(R,R);(u,u),q\ =\ .5,p \geq 0.5]$

$[(R,R);(d,u),q\ =\ .5,p \leq 0.5]$

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Numerical example [contd.]

Let's analyze that whether there is a separating PBNE involving (L, R) strategy

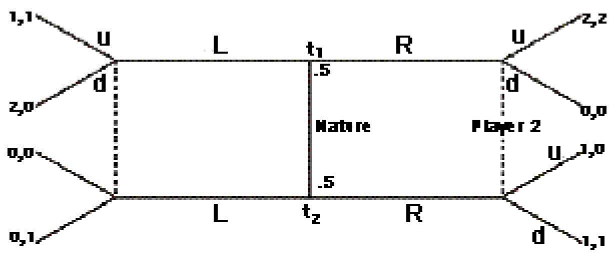
$\Longrightarrow$ p =1, q= 0

$\Longrightarrow$ a*(L)= u a*(R)=d

$\therefore$ At (L, R) strategy,

Payoff of type t_1= 1

Payoff of type t_2= 1



If type t_1 deviates from L to R, Payoff = 0 $\Longrightarrow$ no incentive to deviate given receiver's strategy (u, d)

If type t_2 deviates from R to L Payoff = 0 => no incentive to deviate given the receiver's strategy. There is a separating PBNE: $[(L, R); (u, d);\ p = 1, q = 0]$

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