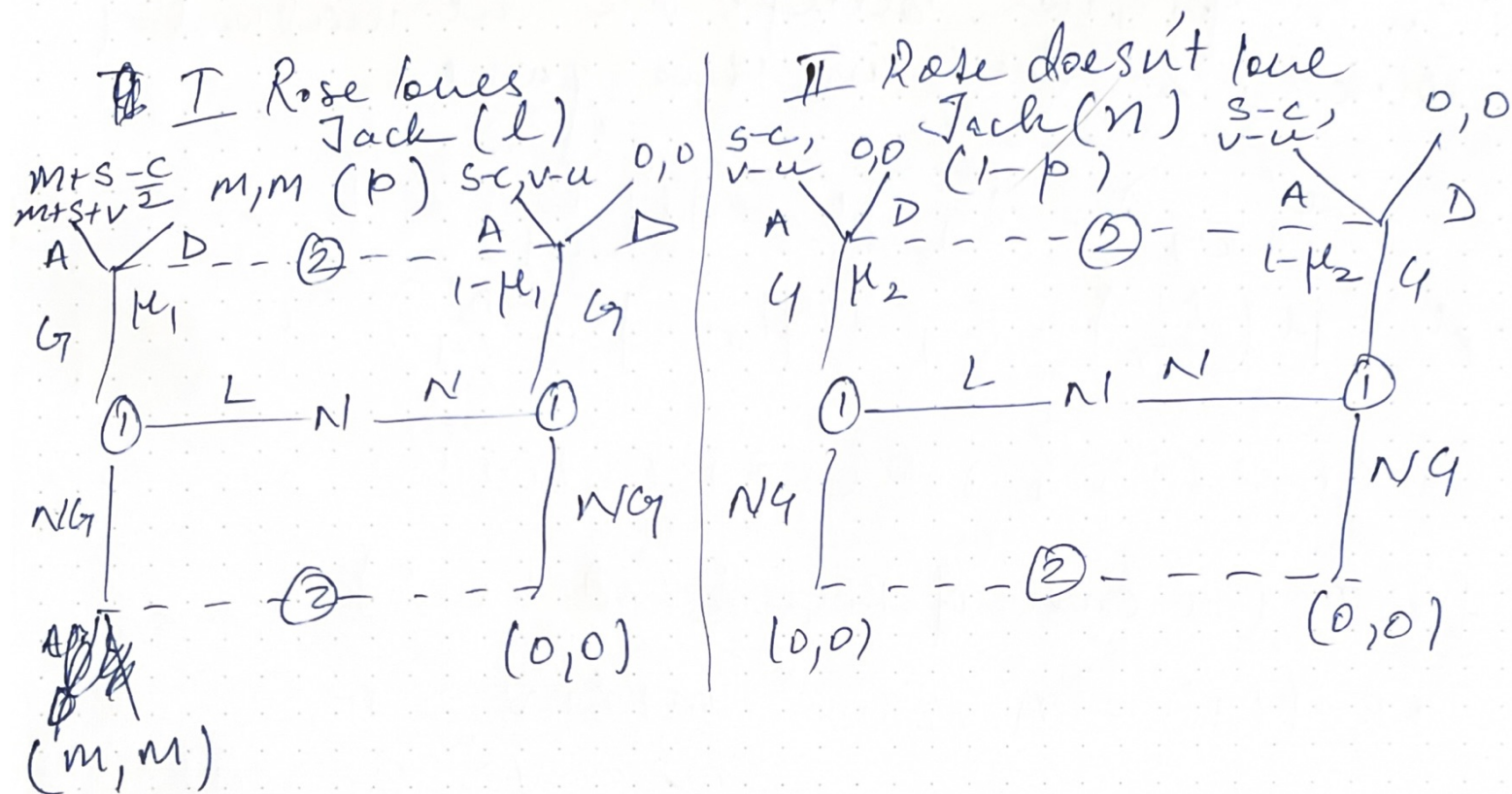


ANALYSIS of 2 sided game (Comments/Annotations in Blue)

Players - $\{1, 2\}$ 1 - $\{L, R\}$ 2 - $\{l, r\}$
to 1-10 to 1-10

1 - {G, NG} message 2 - {A, D} actions state (put info of each) state



1) we start with the egom profile we are interested in. Here the profile where info is conveyed for both

$$SE\ 1 \quad \left\{ \begin{array}{l} L \rightarrow G \\ N \rightarrow NG \\ l \rightarrow A \\ n \rightarrow D \end{array} \right\}$$

2) Then we proceed with player 2 beliefs and Best responses.

Belief = $\mu\left(\frac{L}{G}\right)$ - But here 2 instances
So a set μ_1 for I
 μ_2 for Π

3) we write down the beliefs in game tree.
 Since $\mu(\frac{L}{G})$ and since given G , beliefs
 in general $\left\{ \begin{array}{l} \mu \\ 1-\mu \end{array} \right\}$ of such form.

4) In SE profiles, beliefs are automatically
 resolved, so that in this game

$$\mu_1 = \mu\left(\frac{L}{G}\right) = 1; \mu_2 = \mu\left(\frac{L}{G}\right) = 1$$

$$1 - \mu_1 = \mu\left(\frac{N}{G}\right) = 0; 1 - \mu_2 = \mu\left(\frac{N}{G}\right) = 0$$

PLAYER 2 (ROSE) BEST RESPONSES

for I (ie case if Rose ~~does not~~ loves)

$$BR_2(G) = A \text{ since } m+s+v > m$$

$$\text{or } s+v > 0 \text{ --- (1)}$$

for II

$$BR_2(G) = A \text{ iff. } \underline{V-u > 0} \text{ --- (2)}$$

5) we need to interpret such results
 intuitively also, so when we say
 that when Rose doesn't love Jack, she
 accepts if the ring is very valuable

~~But~~

c) There is a contradiction here very imp't.
 According to eqn (1) \rightarrow Accepts Gift only if
 loves. So it must be that $V < u$ (we can
 interpret this too)

from assumption $BR_2(G) = A$ for Π iff

$v > u$ \therefore it must be in this eqbm

that $|v < u|$ - (3) (gift should be expensive but not too much so that

PLAYER 1 STRATEGY

a) ① can afford
b) ② doesn't value ring too much*

7) Now we look into player 2 (yachi) Best Responses and deviations for each type

(eqbm) we use probabilities of L, N (conditions) for calc. (The Best Responses as eqbm actions to check if sustained)

L type

$$BR_1 = G \text{ iff } EU_1(G) > EU_1(NG)$$

$$\text{I} \rightarrow \text{I} \rightarrow L \rightarrow G \rightarrow \text{II} \rightarrow A$$

$$\text{II} \rightarrow \text{I} \rightarrow L \rightarrow G \rightarrow \text{II} \rightarrow D$$

$$\text{I} \rightarrow \text{I} \rightarrow L \rightarrow NG \rightarrow \text{II} \rightarrow A$$

$$\text{II} \rightarrow \text{I} \rightarrow L \rightarrow NG \rightarrow \text{II} \rightarrow D$$

$$|S \leq C \leq 2S| - (6)$$

condition for sustained

(8) Interpret as if L then gifts if not too expensive (2S)

$$p(m + s - \frac{c}{2}) + (1-p)0 > pm + (1-p)0$$

to get $|2s \geq c| - (4)$ and if N then doesn't gift if expensive (s)

(or if s is low \rightarrow Rose is ugly)

N type

$$BR_1 = NG \text{ iff } EU_1(G) < EU_1(NG)$$

$$\text{I} \rightarrow \text{I} \rightarrow N \rightarrow G \rightarrow \text{II} \rightarrow A$$

$$\text{II} \rightarrow \text{I} \rightarrow N \rightarrow G \rightarrow \text{II} \rightarrow D$$

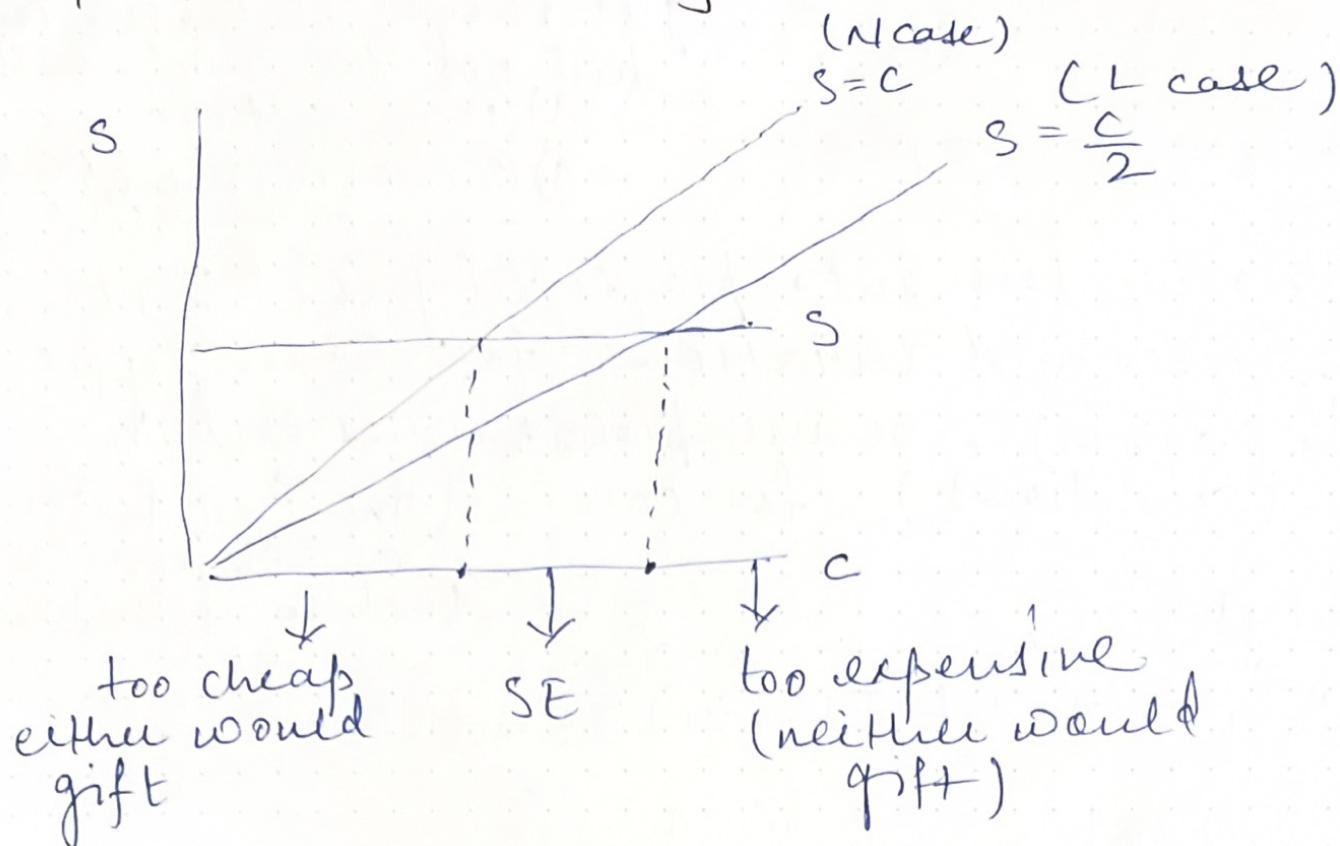
$$\text{I} \rightarrow \text{I} \rightarrow N \rightarrow NG \rightarrow \text{II} \rightarrow D$$

$$\text{II} \rightarrow \text{I} \rightarrow N \rightarrow NG \rightarrow \text{II} \rightarrow D$$

$$p(0) + (1-p)(0) > p(s-c) + (1-p)0$$

$$\Rightarrow |S \leq C| - (5)$$

⑨ we can now draw some figures for PBE
SE profile in terms of S vs C



Now coming back to

for II

$$BR_2(G) = A \text{ iff } v - u > 0$$

⑩ ie ② Rose accepts the gift even if she doesn't love it values ring too highly or expensive ring

Now again analyzing ① BR and deviation for each type in eqbm actions

For L

$$BR_1 = G \text{ iff } EU_1(G) > EU_1(NG)$$

$$p \left(m + s - \frac{c}{2} \right) + (1-p)(s-c) > 0$$

(when values)
ring too much

$$\left| \frac{2s}{2-p} \geq c \right| \quad (7)$$

$$\left| s \leq c \leq \frac{2s}{2-p} \right| \quad (9)$$

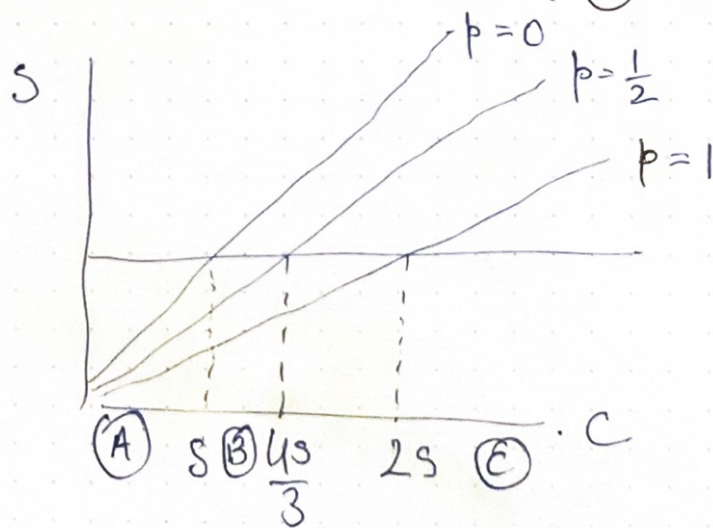
For N

$$BR_1 = NG \text{ iff } EU_1(G) < EU_1(NG)$$

$$p(s-c) + (1-p)(s-c) < 0$$

$$\left| s \leq c \right| \quad (8)$$

⑪ Again we draw figures. we can do for (7) with diff values of p say $p=0$, $p=\frac{1}{2}$, $p=1$ to get 4 lines in 1 (7 has 3, 8 has 1)



① - Both types gift

(12) When $v > u$ or Rose accepts gift even if not to
we interpret $\frac{2s}{2-p}$ range as the higher

p (more Rose loves Jack) SE can be
supported for larger set

when $p=1$ (which was the case that
 $v < u$ ie only accepts when loves)

we have $c \in [s, 2s]$

at $p=0$ $c \in [s, s] = \emptyset$ ie No SE

at any $p > 0$ $c \in [s, \frac{2s}{2-p}]$