P2) Rdo: $1 - Q_x$

Bertrand

$$q_i = \begin{cases} 1 - p_i & p_i < p_j,\ p_i \le 1 \\ \frac{1-p_i}{2} & p_i = p_j,\ p_i \le 1 \\ 0 & \sim \end{cases}$$

a) $$q_i(p_i, p_j) = \begin{cases} \frac{1-p_i}{2} & p_i < p_j,\ p_i \le 1 \\ \frac{1-p_i}{2} & p_i = p_j,\ p_i \le 1 \\ \frac{1-p_i}{2} & p_i > p_j,\ p_i \le 1 \\ 0 & \sim \end{cases}$$

b) $\max_{p \ge 0} (1-p)p \Rightarrow p^* = \frac{1}{2}$

c) EN?

$\left(\frac{1}{2}, \frac{1}{2}\right)$ EN?

i) $p_j = 1/2$

- Subir precio? → dejo igual $1/8$
- Bajar precio? → $p_i < 1/2 \to \frac{(1-p_i)}{2} p_i < \frac{1-1/2}{2}\frac{1}{2} = 1/8$

$\frac{1-x}{2}x$ $[0, 1/2]$ creciente.

Entonces: (p, p) EN $\forall\ p \in [0, 1/2]$

$p_i > 1/2$ (p_i, p) No es EN

$p_i < p_j$ (p_i, p_j) No es EN

P1

Nota: $\frac{1-\lambda}{2}$ demanda segura.

↳ pagan hasta v.

a) EN

i) (v,v)? No.

$p_i = v - \varepsilon \qquad \frac{1-\lambda}{2}(v-\varepsilon) + \lambda(v-\varepsilon)$

$p_i = v \qquad \frac{1-\lambda}{2} v + \frac{\lambda}{2} v$

ii) (c,c)? No

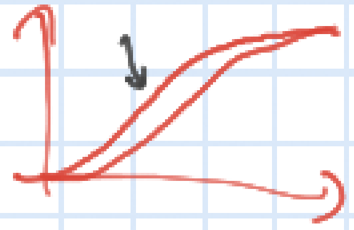
$p_i = v \rightarrow \frac{1-\lambda}{2} v > 0$

iii) (p,p), $p \in (c,v)$ No.

$p_i = p - \varepsilon$

iv) (p_i, p_j), $p_i < p_j < v$. No

b) ENEM.



$F(p)$. Soporte $[a,b]$

$$\pi^E = (p-c)\left[\frac{1-\lambda}{2} + \mathbb{P}[p<p_j]\,\lambda\right]$$

$$\pi^E = (p-c)\left[\frac{1-\lambda}{2} + (1-F(p))\lambda\right]$$

$\boxed{b = v}$ (Si $b = \bar{p} < v$, prefiero v)

$$\pi^E(p_i = v) = (v-c)\left(\frac{1-\lambda}{2}\right), \quad F(v) = 1$$

$$\Rightarrow (p-c)\left[\frac{1-\lambda}{2} + (1-F(p))\lambda\right] = (v-c)\frac{1-\lambda}{2}$$

$$\Rightarrow \boxed{F(p) = 1 - \left[\left(\frac{v-c}{p-c} - 1\right)\frac{1-\lambda}{2\lambda}\right]} \quad (*)$$

$F(a) = 0$

$$\Rightarrow \boxed{a = (v-c)\frac{1-\lambda}{1+\lambda} + c}$$

P3) $\{C, N\}$

a) $BR_i(N, N, \dots, N) = C$. $\quad V - c > 0$

$BR_i(C, \dots, C) = N$. $\quad V > V - c$

i contribuye solo si nadie lo hace.

b) $(N, \dots, N)$? No!

$(C, \dots, C)$? No

$(C, N, \dots, N)$ //

$(N, \dots, N, C, N, \dots, N)$

c) $\forall j \neq i$ juega $(\overset{C}{p_j}, \overset{N}{1-p_j})$

$U_i(N) = \mathbb{P}(\text{nadie contribuye}) \cdot 0 + \mathbb{P}(\text{alguno } C) V$

$= (1 - \mathbb{P}(\text{nadie } C)) V$

$U_i(N) = \left(1 - \prod_{j \neq i} (1 - p_j)\right) V$

$U_i(C) = V - c$

$U_i(p_i, p_j) = p_i (V - c) + (1 - p_i)\left(1 - \prod_{j \neq i} (1 - p_j)\right) V$

$= p_i \left(V \prod_{j \neq i} (1 - p_j) - c\right) + V\left(1 - \prod_{j \neq i} (1 - p_j)\right)$

$= p_i m + n$

$$BR(p_j, j \neq i) = \begin{cases} 1 & m > 0 \\ 0 & m < 0 \\ [0, 1] & m = 0 \end{cases}$$

d) ENEM Simétrico.

$p_i = p$ contribuyen.

$$U_i(N, p\ \forall j \neq i) = U_i(C, p\ \forall j \neq i)$$

$$\left(1 - \prod_{j \neq i}(1 - p_j)\right)V = V - c$$

$$\left(1 - (1-p)^{n-1}\right)V = V - c$$

$$c = V(1-p)^{n-1} \Rightarrow \frac{c}{V} = (1-p)^{n-1}$$

$$\Rightarrow \left(\frac{c}{V}\right)^{\frac{1}{n-1}} = 1 - p \Rightarrow \boxed{p = 1 - \left(\frac{c}{V}\right)^{\frac{1}{n-1}}}$$

$$\boxed{\frac{c}{V} < 1}$$