Repaso Parcial 2c

Tuesday, October 29, 2019 4:04 PM

- OTOÑO 2016 → P1 ABIERTA

2 empresas $\qquad Q(P) = 100 - P$

$S_i = \{NP, 20, 50\}$ $\qquad K \to$ Costo Participación $= 1{,}000$

a)

E1 \ E2	NP	20	50
NP	0, 0	0, 600	0, 1500
20	600, 0	-200, -200	600, -1000
50	1500, 0	-1000, 600	250, 250

$\square : \pi_2 = \underbrace{(100-20)}_{P}\underbrace{20}_{Q} - \underbrace{1{,}000}_{\text{Costo Fijo}}$

$= 1600 - 1000 = 600$

$\square : \pi_2 = (100-50)50 - 1{,}000$

$= 2500 - 1000 = 1500$

No Hay E.N. en estrategias pura

- $OP = \{(50, NP); (NP, 50); (50, 50)\}$

$\llcorner$ estrategias, no pagos

$\square = \pi_i = \underbrace{\left(\frac{100 - P_i}{2}\right)}_{Q_i} P_i - 1000$

$\left(\frac{100-20}{2}\right)20 - 1000$

$800 - 1000 = -200$

$\left(\frac{100-50}{2}\right)50 - 1000$

$= 1250 - 1000 = 250$

$\square$

(b) $\sigma_2 = (\overset{NP}{0}, \overset{20}{\alpha}, \overset{50}{1-\alpha})$

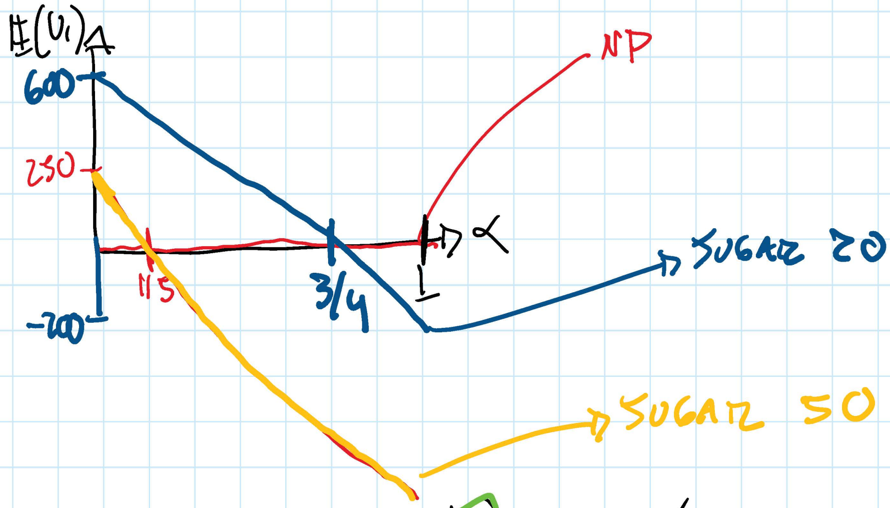
$E(U_1(NP, \sigma_2)) = 0 \cdot 0 + 0\alpha + 0(1-\alpha) = 0$

$E(U_1(20, \sigma_2)) = 600 \cdot 0 + (-200)\alpha + 600(1-\alpha) = \underline{600 - 800\alpha}$

$E(U_1(50, \sigma_2)) = 1500 \cdot 0 + (-1000)\alpha + 250(1-\alpha) = 250 - 1250\alpha$

$E(U_1(20, \sigma_2)) = 600 \ldots$

$E(U_1(50, \sigma_2)) = 1500 \cdot 0 + (-1000)\alpha + 250(1-\alpha) = 250 - 1250\alpha$



$$MR_1(\sigma_2) = \begin{cases} (0,1,\boxed{0}) & \alpha < 3/4 \\ (q,1-q,\boxed{0}) & \alpha = 3/4 \\ (1,0,\boxed{0}) & \alpha > 3/4 \end{cases}$$

(c)

E1

	NP	20
NP	0,0	$\boxed{\underline{0},\underline{600}}$
20	$\boxed{\underline{600},\underline{0}}$	$\boxed{-200,-200}$

HAY 2 E.N.
EN ESTRATEGIAS
PURAS = {(20,NP); (NP,20)}

$\sigma_1 = (p, 1-p)$

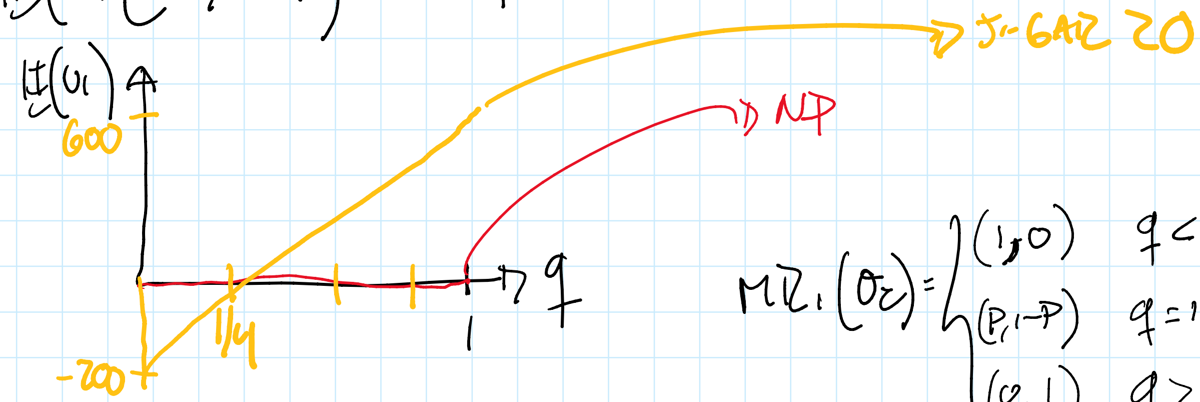
$\sigma_2 = (q, 1-q)$

$MR_1(\sigma_2) \ldots$

$E(U_1(NP, \sigma_2)) = 0$

$E(U_1(20, \sigma_2)) = 600q + (-200)(1-q) = 800q - 200$

$$E(U_1(20, \sigma_2)) = 600q + (-200)(1-q) = 800q - 200$$



$$MR_1(\sigma_2) = \begin{cases} (1,0) & q < 1/4 \\ (p, 1-p) & q = 1/4 \\ (0, 1) & q > 1/4 \end{cases}$$

NP >> 20

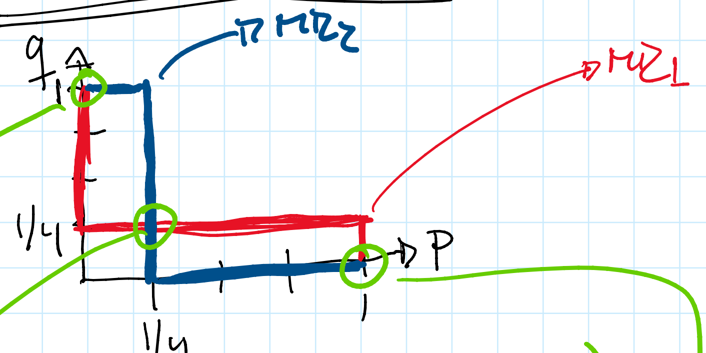
$0 > 800q - 200$

$200 > 800q$

$\frac{1}{4} > q$

$$MR_2(\sigma_1) = \begin{cases} (1,0) & p < 1/4 \\ (q, 1-q) & p = 1/4 \\ (0, 1) & p > 1/4 \end{cases}$$

GRAFICA DE MR



$\Rightarrow q = 1, p = 0 \Rightarrow (20, NP)$

$\Rightarrow \left(\sigma_1 = \left(\frac{1}{4}, \frac{3}{4}\right), \sigma_2 = \left(\frac{1}{4}, \frac{3}{4}\right)\right)$

$p = 1$
$q = 0$
(NP, 20)

3. E.N.

PRIMAVERA 2017 → P1 ABIERTA.

PRECIO = 400

$C_A \geq 0$
$C_B \geq 0$ $\}$ CALIDAD

$$q_{fi} = 100 + C_i - C_{-i}$$

$$CT(q_{fi}, C_i) = C_i q_{fi}$$

a) $\Pi_i = P_i q_{fi} - CT = 400(100 + C_i - C_{-i}) - C_i(100 + C_i - C_{-i})$

$$\boxed{= (400 - C_i)(100 + C_i - C_{-i})}$$

$$\frac{\partial \Pi_i}{\partial C_i} = (-1)(100 + C_i - C_{-i}) + (1)(400 - C_i)$$

$$= 300 - 2C_i + C_{-i} = 0$$

$$\frac{300 + C_{-i}}{2} = C_i$$

$$\frac{300 + C_2}{2} = C_1$$

$$\frac{300 + C_1}{2} = C_2$$

$\Rightarrow$ ALGEBRA

EN UN EQ. SIMETRICO

$$\frac{300 + C^*}{2} = C^*$$

$$300 + C^* = 2C^*$$

$$\boxed{300 = C^*}$$

$$EN = (300, 300)$$

$$\Pi_i = (400 - 300)(100 + 300 - 300) = 10{,}000$$

(b) CORTA

PROBAR: ($C_i = 0$ $i=1,2$). PARETO DOMINA.

$$\pi_i = (400-0)(100+0-0) = 40{,}000$$

($C_1 = 0, C_2 = 0$) PARETO DOMINA EL E.N.

LARGA (ENCONTRAR TODOS LOS O.P.).

MAX π_1 S.A. $\pi_2 \geq \overline{\pi_2}$

$$\max\ (400-C_1)(100+C_1-C_2) + \lambda\left((400-C_2)(100+C_2-C_1) - \overline{\pi_2}\right)$$

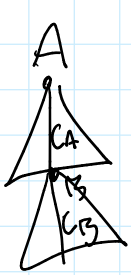
$$\frac{\partial \mathcal{L}}{\partial C_1} = (-1)(100+C_1-C_2) + (400-C_1) + \lambda\left((-1)(400-C_2)\right) = 0$$

$$\frac{\partial \mathcal{L}}{\partial C_2} = (-1)(400-C_1) + \lambda\left((-1)(100+C_2-C_1) + (400-C_2)\right) = 0$$

$$\frac{(-1)(100+C_1-C_2) + (400-C_1)}{(-1)(400-C_1)} = \frac{(-1)(400-C_2)}{(-1)(100+C_2-C_1) + (400-C_2)}$$

⋮

(c)



INDUCCIÓN HACIA ATRAS:

B:

$$\pi_B = (400-C_B)(100+C_B-C_A)$$

$$\frac{\partial \pi_B}{\partial C_B} = (-1)(100+C_B-C_A) + (400-C_B)(1) = 0$$

$$\frac{\partial \pi_B}{\partial C_B} = (-1)(100 + C_B - C_A) + (400 - C_B)(1) = 0$$

$$\boxed{C_B = \frac{300 + C_A}{2}}$$ ESTRATEGIA DE B.

$$A: \pi_A = (400 - C_A)(100 + C_A - \underbrace{C_B}_{\frac{300+C_A}{2}})$$

$$\pi_A = (400 - C_A)\left(100 + C_A - \left(\frac{300 + C_A}{2}\right)\right)$$

$$\frac{\partial \pi_A}{\partial C_A} = (-1)\left(100 + C_A - \left(\frac{300 + C_A}{2}\right)\right) + (400 - C_A)\left(1 - \frac{1}{2}\right) = 0$$

$$= -100 - C_A + 150 + \frac{C_A}{2} + 200 - \frac{C_A}{2} = 0$$

$$= 250 - C_A = 0$$

$$\boxed{C_A = 250}$$

$$EPS = \left\{ C_A = 250,\ C_B = \frac{300 + C_A}{2} \right\}.$$

EN EQ $\rightarrow$ $C_A = 250$, $C_B = \frac{300 + 250}{2} = 275$

$$\pi_A = (400 - 250)(100 + 250 - 275) = (150)(75) = 11{,}250$$

$$\pi_B = (400 - 275)(100 + 275 - 250) = (125)(125) = 15{,}625.$$

- NOVIEMBRE 2017 $\rightarrow$ PL ABIERTO

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$$\Pi = \sum_{j=1}^{n} e_j \qquad C_i(e_i) = \frac{e_i^2}{2}$$

$$\Pi_i = \frac{1}{n}\sum_{j=1}^{n} e_j - \frac{e_i^2}{2}$$

a) $$\frac{\partial \Pi_i}{\partial e_i} = \frac{1}{n} - \frac{2e_i}{2} = 0$$

$$\boxed{\frac{1}{n} = e_i^*}$$

$$EN = \left(\frac{1}{n}, \frac{1}{n}, \dots, \frac{1}{n}\right)$$

DECRECIENTE EN n.

b) $$\Pi^{EN} = \sum_{i=1}^{n} e_i^* = \sum_{i=1}^{n} \frac{1}{n} = \frac{1}{n}(n) = 1$$

c) $$\max_{e_1,\dots,e_n} \Pi_1 \quad \text{s.t.} \quad \Pi_2 \geq \overline{\Pi}_2, \ \dots, \ \Pi_n \geq \overline{\Pi}_n$$

$$\mathcal{L} = \frac{1}{n}\sum e_i - \frac{e_1^2}{2} + \lambda_2\left(\frac{1}{n}\sum e_i - \frac{e_2^2}{2} - \overline{\Pi}_2\right) + \dots + \lambda_n\left(\frac{1}{n}\sum e_i - \frac{e_n^2}{2} - \overline{\Pi}_n\right)$$

d) $$\frac{\partial \mathcal{L}}{\partial e_1} = \frac{1}{n} - e_1 + \lambda_2\left(\frac{1}{n}\right) + \lambda_3\left(\frac{1}{n}\right) + \dots + \lambda_n\left(\frac{1}{n}\right) = 0$$

$$\frac{\partial \mathcal{L}}{\partial e_2} = \frac{1}{n} + \lambda_2\left(\frac{1}{n} - e_2\right) + \lambda_3\left(\frac{1}{n}\right) + \dots + \lambda_n\left(\frac{1}{n}\right) = 0$$

$$\frac{\partial \mathcal{L}}{\partial e_2} = \frac{1}{n} + \lambda_2\left(\frac{1}{n} - e_2\right) + \lambda_3\left(\frac{1}{n}\right) + \dots + \lambda_n\left(\frac{1}{n}\right) = 0$$

$$\frac{1}{n}(1+\lambda_2+\dots+\lambda_n) = e_1$$

$$\frac{1}{n}(1+\lambda_2+\dots+\lambda_n) = \lambda_2 e_2$$

$$\Rightarrow \quad e_1 = \lambda_2 e_2$$

$\boxed{\lambda_2 = 1}$ Por q $\underline{e_1 = e_2}$

Por el mismo Arg.

$\lambda_3 = \lambda_4 = \dots \lambda_n = 1$

$$\frac{1}{n}(\overbrace{1+1\dots+1}^{n}) = e_1$$

$$\boxed{1 = e_1 = e_2 = \dots = e_n} \qquad \boxed{\Pi^{op} = \sum_{i=1}^{n} e_i = n}$$

(e) $\cancel{\boxed{n=2}}$ Por q́ la $MR_i(S_{-i})$ NO depende de S_{-i}

En español, la MR_i domina estrictamente

a todas las demás estrategias.