BERTRAND

(P_1, P_2)

$$C = cMg$$

$$P(q)$$

$$\underset{\{q_1\}}{MAX} \quad P_1 q_1 - c q_1 \qquad \underset{\{q_2\}}{MAX} \quad P_2 q_2 - c q_2$$

$$q_j = \begin{cases} q(P_j) & \text{si} \quad P_j < P_{-j} \\ \frac{1}{2} q(P_j) & \text{si} \quad P_j = P_{-j} \\ 0 & \text{si} \quad P_j > P_{-j} \end{cases}$$

$$\left[(P_j - \varepsilon) - C\right] \, q(P_j - \varepsilon) > \frac{1}{2}(P_j - C) \, q(P_j = P_{-j})$$

$$(P_j = C, \; P_{-j} = C)$$

$$\underset{\{q_i\}}{MAX} \quad q_i P - C q_i$$

P_1 ─── P_2 = P_{Φ}

C ━━━

P_i
P_{-j}

COMPETITIVO:

P_m / $P_i = C$ P_D ← ... → q

STACKELBERG

$$\binom{3}{2} \quad \binom{1}{5} \quad \binom{8}{0} \quad \binom{7}{3}$$

$$\binom{u_1}{u_2}$$

$$P = a - b(q_1 + q_2) \qquad CT(q) = c \cdot q$$

LIDER: $\displaystyle \max_{\{q_1\}} q_1 P(q_1 + q_2) - CT(q_1)$

$$\max_{\{q_1\}} q_1 [a - b(q_1 + q_2)] - c\, q_1$$

SEGUIDOR: $\displaystyle \max_{\{q_2\}} q_2 P(q_1 + q_2) - CT_2(q_2)$

$$\max_{\{q_2\}} q_2 [a - b(q_1 + q_2)] - c\, q_2$$

$$a - b(q_1 + q_2) + q_2[-b] = c$$

$$a - b q_1 - c = 2b q_2$$

$$q_2(q_1) = \frac{a - b q_1 - c}{2b}$$

$$\left[\max_{\{q_1\}} q_1 [a - b(q_1 + q_2(q_1))] - c\, q_1 \right.$$

$$a - b y_1 - c = 2b y_2$$

$$y_2(y_1) = \frac{a - b y_1 - c}{2b}$$

$$y_2'(y_1) = -\frac{1}{2}$$

$$\left[\begin{array}{l} \underset{\{y_1\}}{Max} \quad y_1[a - b(y_1 + y_2(y_1))] - c y_1 \end{array}\right.$$

$$a - b(y_1 + y_2(y_1)) + y_1(-b)(1 + y_2'(y_1)) = c$$

$$a - b\left[y_1 + \frac{a-c}{2b} - \frac{y_1}{2}\right] + y_1(-b)\left(1 - \frac{1}{2}\right) = c$$

$$a - c - \frac{a-c}{2} = \left[b\left(+\frac{1}{2}\right) + b\left(\frac{1}{2}\right)\right] y_1 \qquad \boxed{p^* = \frac{a + 3c}{4}}$$

$$\frac{a-c}{2} = y_1 b \qquad \boxed{\frac{a-c}{2b} = y_1^*} \quad \boxed{y_2^* = \frac{a-c}{4b}}$$

$$\xi_0 \cdot 15 = \sum_{i=1}^{15} i = \frac{15 \cdot 16}{2} = 120$$

$$8 \cdot 8 < \sum_{i=8}^{15} i$$

$$\boxed{\xi_0 = 8}$$

$$\xi_1 \cdot 8 = \sum_{i=8}^{15} i$$

$$P = a - bq$$
$$CT(q) = c \cdot q$$

BERTRAND: $P_j^* = c$, $\dfrac{a-c}{b} = q^*$

COURNOT:

~~$\underset{\{q_1\}}{MAX} \; q_1(a-bq) - cq_1$~~

$\underset{\{q_1\}}{MAX} \; q_1\big(a - b(q_1 + q_2)\big) - cq_1$

J PRODUCTORES:

$\underset{\{q_j\}}{MAX} \; q_j\Big(a - b\big(\underbrace{q_j + \sum_{h \neq j} q_h}_{q_T}\big)\Big) - cq_j$

$j = 1, 2, \ldots J. \Big\} \rightarrow J(a - bq_T) - q_T b = J c$

C.P.O.: $(a - bq_T) + q_j(-b) = c$

$$J(a - b q_T) - q_T b = J c$$

$$J a - J c = (J+1) b q_T$$

$$\boxed{q_T = \left(\frac{a-c}{b}\right)\left(\frac{J}{J+1}\right)}$$

$$j = 1, 2, \dots J : \qquad q_j = \left(\frac{a-c}{b}\right)\left(\frac{1}{J+1}\right)$$

$$p = a - b\left(\frac{a-c}{b}\right)\left(\frac{J}{J+1}\right) = \frac{a(J+1) - J a + J c}{J+1} = \frac{a + J c}{J+1}$$