

$$P = a - Q \quad Q \Rightarrow q_1 + q_2$$

F1 to get
 $1) a = a_H, q_1^*(a_H), q_2^*(a_L)$

$$\pi_1 \Rightarrow (a_H - Q) \cdot q_1 - c \cdot q_1$$

$$a_H \cdot q_1 - Q \cdot q_1 - c \cdot q_1$$

$$a_H \cdot q_1 - (q_1 + q_2^*) \cdot q_1 - c \cdot q_1$$

$$a_H \cdot q_1(a_H) - q_1^2(a_H) - q_1 \cdot q_2^* - c \cdot q_1$$

$$a_H - 2q_1(a_H) - q_2^* - c = 0$$

$$\boxed{q_1(a_H) = \frac{a_H - q_2^* - c}{2}}$$

$$\boxed{q_1(a_L) = \frac{a_L - q_2^* - c}{2}}$$

10 - (A)

F2 to get
 $1) a = a_L, q_1^*$

$$\theta \cdot [(a_H - Q) \cdot q_2 - c \cdot q_2] + (1 - \theta) \cdot [(a_L - Q) \cdot q_2 - c \cdot q_2]$$

$$\theta \cdot (a_H - q_1^*(a_H))$$

$$\theta \cdot [(a_H - q_1^*(a_H) - q_2) \cdot q_2 - c \cdot q_2] + (1 - \theta) \cdot [(a_L - q_1^*(a_L) - q_2) \cdot q_2 - c \cdot q_2]$$

$$(1 - \theta) \cdot [(a_L - q_1^*(a_L) - q_2) \cdot q_2 - c \cdot q_2]$$

$$\theta \cdot [a_H \cdot q_2 - q_1^*(a_H) \cdot q_2 - q_2^2 - c \cdot q_2] +$$

$$(1 - \theta) \cdot [a_L \cdot q_2 - q_1^*(a_L) \cdot q_2 - q_2^2 - c \cdot q_2]$$

$$\begin{aligned} & \theta \cdot a_H \cdot q_2 - \theta \cdot q_1^*(a_H) \cdot q_2 - \theta \cdot q_2^2 - c \cdot \theta \cdot q_2 + a_L \cdot q_2 - q_1^*(a_L) \cdot q_2 - q_2^2 - c \cdot q_2 \\ & - \theta \cdot a_L \cdot q_2 + \theta \cdot q_1^*(a_L) \cdot q_2 + \theta \cdot q_2^2 + \theta \cdot c \cdot q_2 \end{aligned}$$

$$\theta \cdot a_H - \theta \cdot q_1^*(a_H) - 2\theta \cdot q_2 - c \cdot \theta + a_L - q_1^*(a_L) - 2q_2 - c$$

$$- \theta \cdot a_L + \theta \cdot q_1^*(a_L) + 2 \cdot \theta \cdot q_2 + \theta \cdot c$$

$$\theta \cdot a_H - \theta \cdot q_1^*(a_H) + \theta \cdot a_L - \theta \cdot q_1^*(a_L) - 2q_2 - c - \theta \cdot a_L + \theta \cdot q_1^*(a_L)$$

$$\theta(a_H - q_1^*(a_H)) + a_L(1 - \theta) + (\theta - 1) \cdot q_1^*(a_L) - 2q_2 - c = 0$$

$$\theta(a_H - q_1^*(a_H)) + (1 - \theta)[a_L - q_1^*(a_L)] - c = 2q_2$$

Final result is

$$q_2^* = \frac{\theta(a_H - q_1^*(a_H)) + (1 - \theta)(a_L - q_1^*(a_L)) - c}{2}$$

$$q_1^*(a_H) = \frac{a_H - q_2^* - c}{2}$$

$$q_1^*(a_L) = \frac{a_L - q_2^* - c}{2}$$