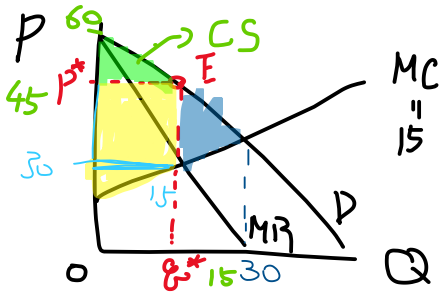
Part 4 市場結構

獨占非統一定價

隨堂 1: 如果獨占廠商所面對的市場需求函數為 P＝60－q，而成本函數為 TC＝30q：

(A) 廠商採單一訂價時，計算生產者剩餘、消費者剩餘、總剩餘及無謂損失。

$$MAX\pi \leftrightarrow \pi = TR - TC, MR = MC$$
$$\rightarrow Q*, P*$$
$$TR = Pq = (60 - q)q \text{作微分得出}$$
$$60 - 2q = 30 \rightarrow$$
$$q* = 15, P* = 45, \pi* = 225 = PS$$
$$CS = 15 \times \frac{15}{2} = 112.5$$
$$PS = 15 \times 15 = 225$$
$$SW = TS = CS + PS = 337.5$$
$$DWL = 15 \times \frac{15}{2} = 112.5$$



(B) 廠商採**完全差別取價**時，計算生產者剩餘、消費者剩餘、總剩餘及無謂損失。

完全剝奪 CS，故 CS=0，PS=SW→近似 "完全競爭"定家維 P=MC，DWL=0

$$P = MC \rightarrow 60 - q = 30, q* = 30, P* = 30,$$
$$PS = 30 * \frac{30}{2} = 450, CS = 0, SW = PS = 450, DWL = 0$$

(C) 廠商採第二級差別取價時，且打算分割成兩個價格區間，計算生產者剩餘、消費者剩餘、總剩餘及無謂損失。

市場被分隔成兩個價格區間

$$\boldsymbol{MAX\pi = P_1(q_1)q_1 + P_2(q_2)(q_2 - q_1) - TC(q_2)}$$

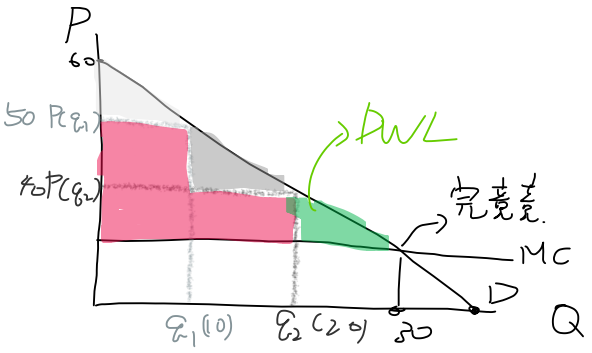
$$\boldsymbol{= (60 - q_1)q_1 + (60 - q_2)(q_2 - q_1) - 30q_2}$$

$$\begin{cases} \boldsymbol{\frac{\partial \pi}{\partial q_1} = 0 \rightarrow -2q_1 + q_1 = 0\,, q_1 *= 10, P_1 *= 50, \pi = 300} \\ \boldsymbol{\frac{\partial \pi}{\partial q_2} = 0 \rightarrow -2q_2 + 30 + q_1 = 0, q_2 *= 20, P_2 *= 40} \end{cases}$$

$$\boldsymbol{CS = \frac{10 \times 10}{2} + \frac{10 \times 10}{2} = 100}$$

$$\boldsymbol{PS = (10 \times 20) + (10 \times 10) = 300}$$

$$\boldsymbol{DWL = \frac{10 \times 10}{2} = 50, SW = 100 + 300 = 400}$$



(D) 廠商採第二級差別取價時，且打算分割成三個價格區間，計算生產者剩餘、消費者剩餘、總剩餘及無謂損失。

$$MAX\pi = P_1(q_1)q_1 + P_2(q_2)(q_2 - q_1) + P_3(q_3)(q_3 - q_2)$$
$$= (60 - q_1)q_1 + (60 - q_2)(q_2 - q_1) + (60 - q_3)(q_3 - q_2)$$

$$\begin{cases} \dfrac{\partial \pi}{\partial q_1} = 0 \to 60 - 2q_1 - 60 + q_2 = -2q_1 + q_2 = 0\,, q_2 = 2q_1 \\ \dfrac{\partial \pi}{\partial q_2} = 0 \to 60 - 2q_2 - 60 + q_1 + q_3 = 0, -2q_2 + q_1 + q_3 = 0, -4q_1 + q_1 + 3q_1 = 0 \\ \dfrac{\partial \pi}{\partial q_3} = 0 \to 60 - 2q_3 + q_2 = 0, 2q_3 - q_2 = 60, 6q_1 - 2q_1 = 60 \end{cases}$$

$$q_1 = 15, q_2 = 30, q_3 = 45, P_1 = 45, P_2 = 30, P_3 = 15$$

$$CS = \frac{15 \times 15}{2} * 2 = 225$$

$$PS = (15 \times 15) = 225$$

$$DWL = 0, SW = 450$$