Group 7

Members

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Question 1:

Suppose that the demand curve derived from marginal benefit associated with a consumption of chocolate is 360 – 4Q and the marginal cost of chocolate production is 6Q. The marginal damage from pollutions generated by chocolate production is 2Q

D(WTP) $MB_p = 360 - 4Q$

$MC_p = 6Q$

External cost = Pollution Cost = 2Q

a) Find the social optimum or efficient production level (P*, Q*)

Soln $MB_p = MC_s$

$360 - 4Q = 6Q + 2Q$

$360 - 4Q = 8Q$

$360 = 12Q$

$Q^* = 30$ #

$\therefore P^* = 360 - 4(30) = 240$ #

b) Find the private equilibrium price and quantity when external costs could be ignored by firms

Soln $MB_p = MC_p$

$360 - 4Q = 6Q$

$360 = 10Q$

$Q_m = 36$ #

$\therefore P_m = 360 - 4(36) = 216$ #

c) What tax level should be set to achieve the efficient/social optimal

Soln $MB_p = MC_s$

$360 - 4Q^* = 6Q^* + t$

$360 - 4(30) = 6(30) + t$

$240 = 180 + t$

$t = 60$ #

d) Calculate deadweight loss from externalities in this case

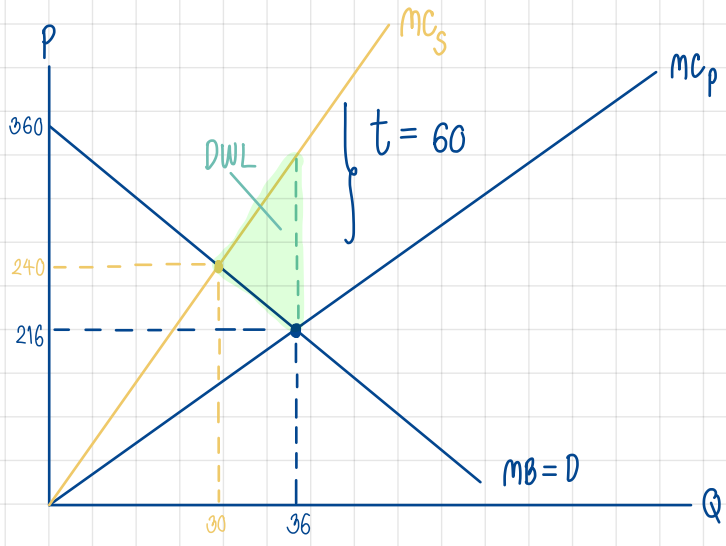
Soln $DWL = \frac{1}{2} \times base \times height$

$DWL = \frac{1}{2} \times 6^{3} \times 60$

$DWL = 180$ #

e) Drawing a graph to illustrate the result from a) to d)

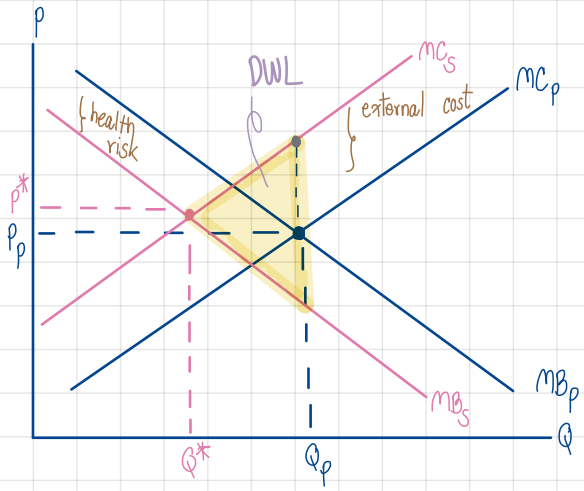
Soln



Question 2:

The production of cigarettes increases water pollutions while the consumption of cigarettes can put their neighbors at health risks (Hint: Impact on social marginal benefits as a whole)

a) Explain how externalities in this case create inefficiencies in the cigarette market and draw a graph to illustrate your explanation, including the market equilibrium for cigarettes at i) socially optimal level, P* and Q*; ii) private optimal level (P_p and Q_p) when externalities are not internalized by both firms and consumers and; iii) the deadweight loss area.



At P_p, Q_p Firms and consumers don't consider the result of the externalities (water pollutions and the health risk). The water pollution increases MB_p to MB_S and the health risk decreases MB_p to MB_S. Hence, the socially optimal level must be at P^*, Q^*
Finally, firms overproduce ($Q_p > Q^*$), which results in deadweight loss (DWL) in the highlighted area.

b) What policies could be considered to reduce deadweight loss in this case and describe the effects of such policies in the cigarette market.

- The government should be imposed tax to shift MC_p and MB_p to MC_S and MB_S
- Establishing the rules and regulations : this policy will permit the cigarette production to produce in the seperated area.