EE375: Applied Economics for Natural Resources and Environment
Assignment 2 (Group)
Due on Friday August 27, 2021

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

a) Find the social optimum or efficient production level (P*, Q*)
b) Find the private equilibrium price and quantity when external costs could be ignored by firms
c) What tax level should be set to achieve the efficient/social optimal
d) Calculate deadweight loss from externalities in this case
e) Drawing a graph to illustrate the result from a) to d)

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

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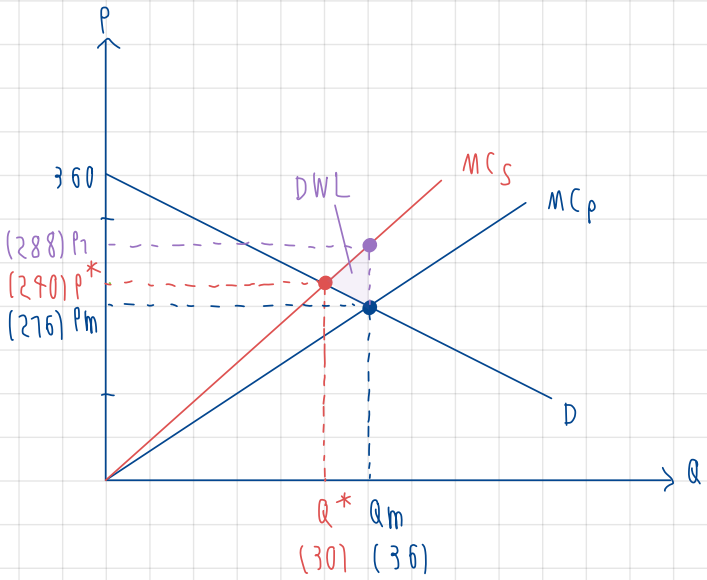

a) $360 - 4Q = 8Q$

$360 = 12Q$

$30 = Q^*$

$P = 360 - 4Q$

$P = 360 - 4(30)$

$P^* = 240$

b) $360 - 4Q = 6Q$

$360 = 10Q$

$36 = Qm$

$P = 360 - 4Q$

$P = 360 - 4(36)$

$Pm = 276$

c) pollution cost $= 2Q$

$Tax = 2(30)$

$Tax = 60$

d) $Q = 36$

$MC_S = 8Q$

$= 8(36)$

$= 288$

$DWL = \frac{1}{2}(72)(6)$

$DWL = 276$

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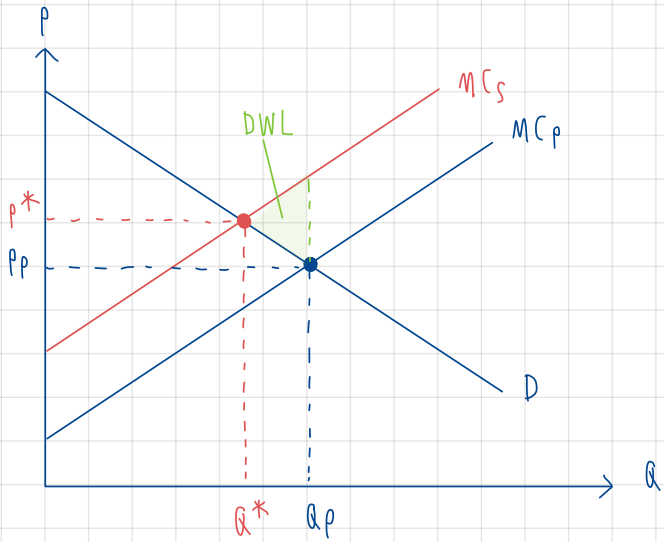
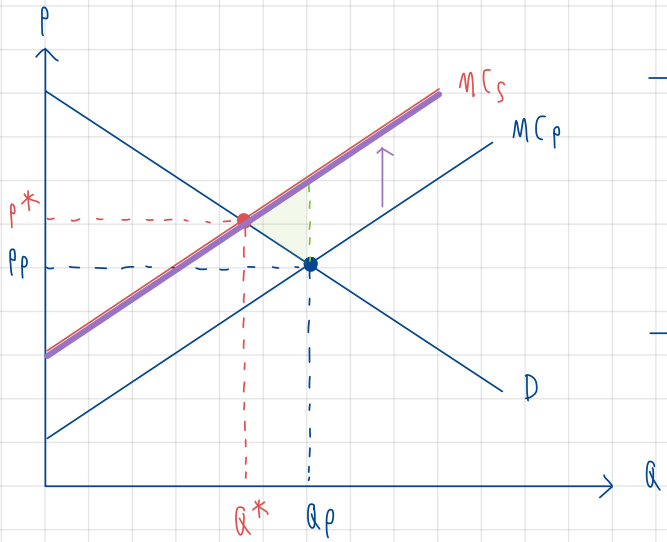
a)



The negative externality costs to the society and environment beyond the marginal private cost (MCp). It becomes new curve of marginal cost to the society (MCs) and hits the equilibrium point (Q*, P*). If we consume beyond the equilibrium point, it takes the less efficient to the society which is called dead weight loss.

b)



→ Putting a price : imposed the tax on cigarette to make the price up, the demand of cigarette will decrease. Hence, number of production and number of consumption will reduce.

→ less water pollution and less neighbors health risk.

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