ECON 0100 | Part C

Vignette C1

Smoked Toffee

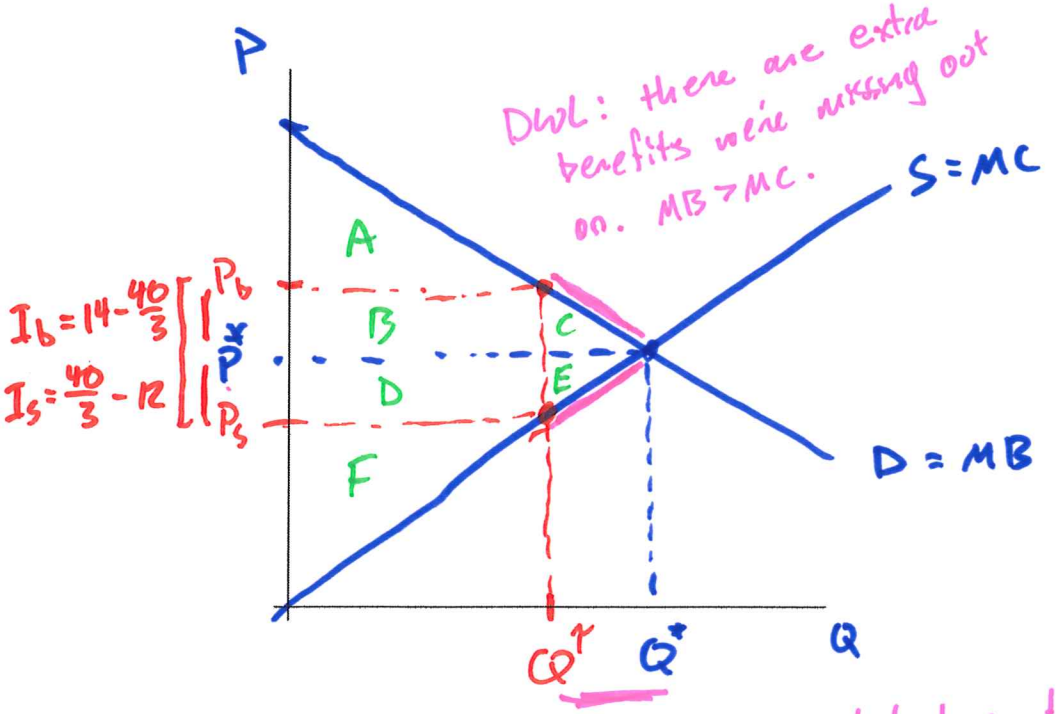
In recent years Hogsmeade has seen a proliferation of candy shops selling smoked toffees. The Demand (marginal benefit) curve and Supply (marginal cost) curve for smoked toffee can be represented by the following relationships.

$$D : P_b = 20 - \frac{1}{2}Q_b \tag{1}$$

$$S : P_s = Q_s \tag{2}$$

Q1. Tax Equilibrium

To raise government funds the Ministry of Magic imposed a 2 Galleon tax on the sale of smoked toffee. Use a graph and algebra to discuss the impact of the tax on the equilibrium quantity and prices. Include but do not calculate welfare measures and discuss what changed after the policy.



DWL: there are extra benefits were missing out on. MB > MC.

Excludes the market does not engaged in but which have benefits greater than their costs.

PRE-TAX
CS = A + B + C
PS = D + E + F

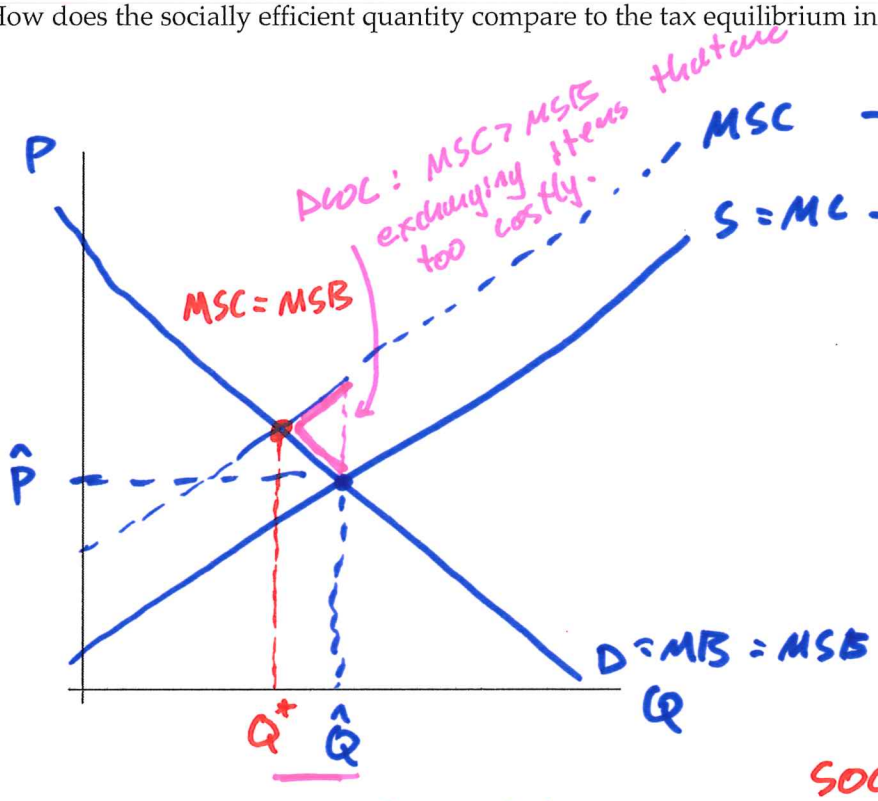
POST-TAX
CS = A
PS = F
GOV = B + D
DWL = C + E

PRE TAX
$P_b = P_s$
$20 - \frac{1}{2}Q = Q$
$20 = \frac{3}{2}Q$
$Q^* = \frac{40}{3}$
$P^* = \frac{40}{3}$

POST TAX
$P_b = P_s + 2$
$20 - \frac{1}{2}Q = Q + 2$
$18 = \frac{3}{2}Q$
$Q^T = 12$
$P_s = 12$
$P_b = 14$

Q2. The Effects on Residents

Public health officials have estimated the externality to be equal to 2 Galleons per unit of smoked toffee produced. Use a graph to find the socially efficient quantity of smoked toffee and deadweight loss associated with the wood smoke. How does the socially efficient quantity compare to the tax equilibrium in Q1?



DWL: MSC > MSB exchanging items that are too costly.

Exchanges the market engages in but which have a higher cost than benefit.

SOCIALLY EFFICIENT

$MSC = MSB$

$Q + 2 = 20 - \frac{1}{2}Q$

$\frac{3}{2}Q = 18$

$Q^* = 12$

$DWL = \frac{1}{2} \cdot 4 \cdot b$

$= \frac{1}{2} \cdot 2 \cdot \left(\frac{40}{3} - 12\right)$

$= \frac{4}{3}$