

Deadweight loss from private provision of a public good.

$$MB_A = 15 - Q$$

$$MB_B = 10 - Q$$

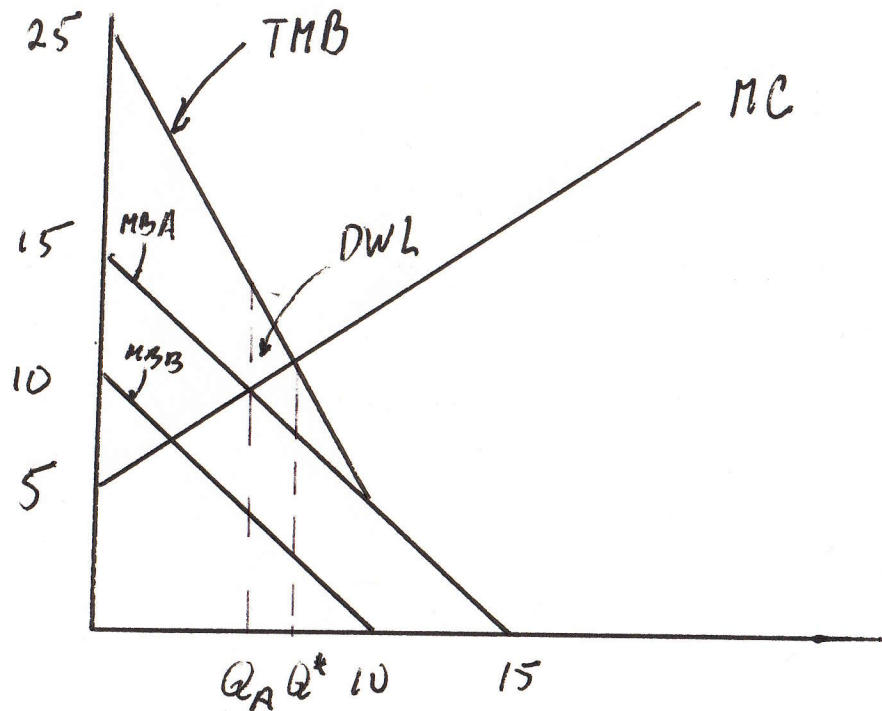
$$0 \leq Q \leq 10$$

$$TMB = 25 - 2Q$$

$$10 \leq Q \leq 15$$

~~$$TMB = 15 - Q$$~~
^{TMA}

$$MC = 5 + Q$$



$$MB_A = MC \Rightarrow 15 - Q = 5 + Q \Rightarrow Q_A = 5$$

$$TMB = MC \Rightarrow 25 - 2Q = 5 + Q \Rightarrow Q^* = \frac{20}{3}$$

$$MC(Q_A) = 5 + Q_A = 10$$

$$TMB(Q_A) = 25 - 2Q_A = 15$$

$$DWL = \frac{1}{2} (15 - 10) \left(\frac{20}{3} - 5 \right) = \left(\frac{1}{2} \right) (5) \left(\frac{5}{3} \right) = \frac{25}{6}$$