

- Production beyond this amount produces negative externality, shown by the area of the shaded triangle which is called welfare loss.

From IB COMPANION

- NEP occurs when the production of a good or service create external costs that are damaging to third parties
- These relate mainly to environmental problems
- Pollution from firm-- the firm has its private costs but is also creating external costs
- The cost to community is greater than costs of production paid by firm
 - Thus, MSC is greater than MPC
 - $MSC = MPC + \text{external cost}$ - shown in graph
- In the diagram, MPC is below MSC , because there is an extra cost to society caused by pollution such as respiratory problems
 - The distance represents the size of the externality
- The firm will only be concerned with private costs and thus produce at P_1 and Q_1
- It is not producing at the socially efficient output, where marginal social cost equals marginal social benefit, so it is a market failure
- There is a misallocation of resources; too much is being produced at too low a price
- There is welfare loss to society of the extra units from Q_1 to Q^* as MSC is greater than MSB . This shown by shaded triangle
- In a free market, the firm would continue because profit maximization only takes private costs into account
 - Thus govts must intervene to rectify situation

Potential Solution

- A tax will shift MPC to the left as it increases production cost
- Reduces externality as - it reduces the amount consumed to Q_{tax} and raises the price to P_{tax} .
- Only covers a portion of the externality costs
- Welfare loss triangle still present, though it is significantly reduced.
- Prices are increased to nearly optimal market price and quantity has decreased to nearly optimal market quantity.

Advantages:

- Reduces the size of the externality (shaded triangle box)
- Brings output level down towards the optimal level, Q^*
- 'internalizes the externality' by compelling producers and consumers to pay the costs of their transaction

Disadvantages:

- Assessing the magnitude of the externality is extremely difficult; governments and firms normally hire cost-benefit analysts to determine this
- Determining the appropriate amount of tax is a challenge
- Taxing the good may not deter pollution, only reduce it

- At P_e , the MPC indicates private costs at point A where the MSC indicates social costs at point B. This suggests more could be produced and society would enjoy the extra benefits of that production, shown by the blue triangle as 'potential welfare gain'
- Output is at optimal point at P^* and Q^* where $MSC = MSB$

The IB COMPANION

- Occurs when production of a good or services external benefits that are good for third parties
- The PEP produced (such as training) leads to MSC being lower than MPC
- The firms are indirectly paying for the benefit of society
 - Thus, $MSC < MPC$
 - $MPC = MSC + \text{positive externality}$
- We can see on the graph that MSC curve is below MPC because of the positive externalities of production such as education or high quality training
- As firms are not producing at the socially efficient level where $MSB = MSC$, it is market failure
- Resources are being misallocated as production is lower than socially optimal level at Q_1 and the prices are too high at P_1
 - Thus goods are being under-provided at too high a price
- The amount of potential welfare gain when increasing output to P^* is indicated by the area of the shaded triangle

Potential solution

Subsidies

- The government could actively encourage extra production by the payment of subsidies. (lump-sum payment to the industry or per-unit subsidy)
- Goal: push MPC outwards towards the production of the socially optimal Q^* units of output.
- Disadvantage:
 - Subsidy is paid by tax revenue, and is drawn from other areas of government budget. It can be very expensive so the opportunity cost must be considered.
 - Difficult to estimate the amount of subsidy

Subsidy shifts MPC to where MSC is located, lowering the price to P^* and encouraging production to optimal point, Q^* .

- Depends on accurate assessment of the value of the positive externality and expert designation of the subsidy amount.
- Also granting of such subsidies could create political problems - other firms may see an opportunity to be subsidized and this may lead to a barrage of appeals to government for subsidies. (on the basis that of their product's external benefit)

State provision of the article

- Government may decide to provide directly the good creating the positive externality
 - For eg. States can build and staff worker-training centres to provide the same training experience private firms offer.
- However, this can be costly and depends on government accurately predicting the need amount of product or service
- Also the quality of training may not be as high
- May dissuade firms from offering training of their own