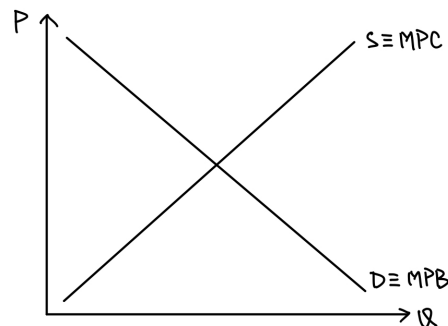


## Discussion 7: Economics of the Public Sector<sup>1</sup>

### 1 Externality

**Definition 1 (Externality).** Uncompensated cost or benefit of one person's actions on the well-being (welfare) of another.

- Recall:
  - MSB: Marginal Social Benefit
  - MPB: Marginal Private Benefit, which is equivalent to the demand (D) in market
  - MSC: Marginal Social Cost
  - MPC: Marginal Private Cost, which is equivalent to the supply (S) in market
- Externality can exist in production, consumption, or both
- $Q_{\text{mkt}}$  vs.  $Q_{\text{eff}}$ 
  - Market reaches equilibrium quantity  $Q_{\text{mkt}}$ , where  $MPC$  (supply) intersects  $MPB$  (demand)
  - Efficiency quantity is reached at  $Q_{\text{eff}}$ , where  $MSC$  intersects  $MPC$
  - Note that the value of marginal externality cost is the **vertical** distance between  $MSC$  and  $MPC$  (or between  $MSB$  and  $MPB$ )
- Positive vs. Negative Externality
  - Positive externality in consumption:  $MSB > MPB \equiv D$   
ex. Market for vaccines (immunization creates a safer environment for everyone else)  
 $\Rightarrow Q_{\text{mkt}} < Q_{\text{eff}}$   
 $\Rightarrow$  Market – if left alone – under-produces relative to efficiency
  - Negative externality in production:  $MSC > MPC \equiv S$   
ex. Market for electricity (production of electricity pollutes the atmosphere)  
 $\Rightarrow Q_{\text{mkt}} > Q_{\text{eff}}$   
 $\Rightarrow$  Market – if left alone – over-produces relative to efficiency



(For your review: Depict a positive externality in production on the graph above)

<sup>1</sup>Produced based off Ziwei Wang's handout for Spring 2016

- Ways to address externality:
  - Public venue: government interventions
  - Private venue: Coase theorem

**Theorem 1 (Coase Theorem).** If private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.

## 2 Common Resources and Public Goods

**Definition 2 (Excludability).** The extent to which non-payers can be kept from consuming the good.

**Definition 3 (Rivalry in Consumption).** The extent to which one's consumption of a good inhibits (or even, prohibits) another's consumption of the same good.

		Rivalry in Consumption?	
		Yes	No
Excludable?	Yes	Private Goods	Club Goods
	No	<b>Common Resources</b>	<b>Public Goods</b>

- Common resources:
  - The tragedy of the commons: Private decision makers use the common resources too much.  
ex. Polluted air and water; Congested roads; Excessive fishing and whaling.
  - Why “tragedy”?
    - \* Rivalry in consumption can be viewed as negative externalities in consumption, so the market outcome will be over-consumption of the common resources.
    - \* Government can help market internalize the externalities by taxing those goods: ex. carbon tax, toll.
- Public Goods:
  - The free-rider problem: People have an incentive to be free riders who receive the benefit of a good but avoid paying for it.
  - This market failure can be viewed as a result of positive externalities.
    - \* Production of public goods benefits everyone in the society, but the decision to produce is reached by considering  $MPB$ .
    - \* Here,  $MSB > MPB$ , so we have a positive externality in production.