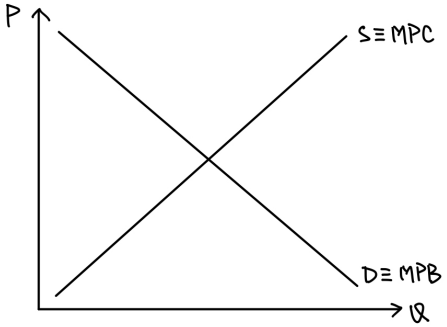
Discussion 7: Economics of the Public Sector [†]

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_{mkt} vs. Q_{eff}
  - Market reaches equilibrium quantity Q_{mkt}, where MPC (supply) intersects MPB (demand)
  - Efficiency quantity is reached at Q_{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)

[†] 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	**Common Resources**	**Public Goods**

- Common resources:
  - 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.