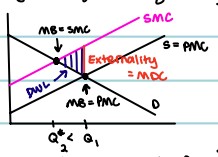
# EXTERNALITIES

market failure := resources are misallocated which leads to inefficiency

externality := a side effect of an activity that affects bystanders whose interests are ignored

↳ positive (benefits bystanders) or negative (harms bystanders)

negative externalities:




MR = PMC < SMC

=> DWL due to over production

$DWL = \frac{1}{2}(base)(height) = \frac{1}{2}(externality)(Q_1 - Q_2)$

MPC = marginal private cost = cost of consumption | production by consumer | firm

MDC = marginal damage cost = additional harm done by increasing level of externality producing activity

PMC + MDC = SMC

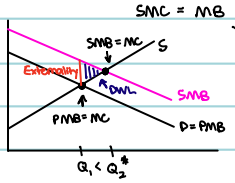
negative externalities ≈ taxes

supply curve: $P = 10 + Q = PMC$

$10 + Q + E = SMC$

SMC = MB to find $Q^*$

Positive Externalities:




MC = PMB < SMB

=> DWL due to underproduction

$DWL = \frac{1}{2}(base)(height) = \frac{1}{2}(externality)(Q_2 - Q_1)$

positive externalities ≈ subsidies

demand curve: $P = 10 - Q = MB$

$10 - Q + E = SMB$

SMB = MC to find $Q^*$

Rational Rule for Society: SMB = SMC

Addressing Externalities

fixed production technology: fixed relationship between output ⅓ externality

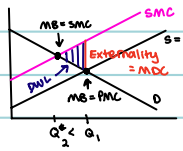
variable production technology: variable relationship between output ⅓ externality

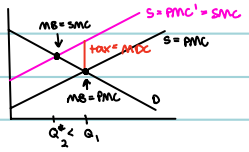
① Direct Regulation of Externalities: place hard quantity legal limits on externalities produced

② Taxes: set tax = MDC s.t. PMC + tax = PMC' = SMC

↳ hard to measure monetarily

↳ taxing the product does not incentivize cleaner production but taxing the externality does




③ Private Bargaining ⅓ Negotiation: assign property rights ⅓ let the free market work

→ there is a deal to be made if there is money on the table...

Coase Theorem: w/ clearly defined property rights, the efficient solution will be reached regardless of rights assignments

④ Legal Rules ⅓ Procedures: injunction := court ordered stoppings

liability rule := required compensation (lump sum tax)

⑤ Selling or Auctioning Permit Rights: cap the quantity ⅓ allow for trade

Goods

| | Rival | Excludable |
|---|---|---|
| Public | X | X |
| Private | ✓ | ✓ |
| Club | X | ✓ |
| Open Access | ✓ | X |

private goods: horizontal sum of individual demands = total demand

market finds optimal point

public goods: vertical sum of individual demands = total demand

market doesn't find optimal point

Public goods: free rider problem: the nonexcludable product is available to me whether or not I pay

drop in the bucket problem: total cost is so large that my individual contribution is negligible

} NO INCENTIVE TO PAY FOR PUBLIC GOODS