

Chapter 5 Market Failures: Public Goods and Externalities

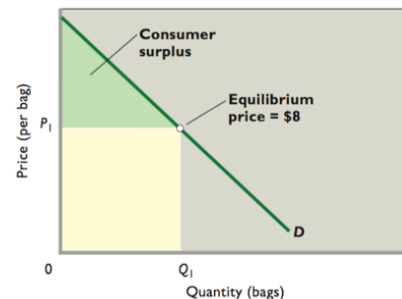
Market failures: what happens when market don't function properly

Market Failures in Competitive Markets

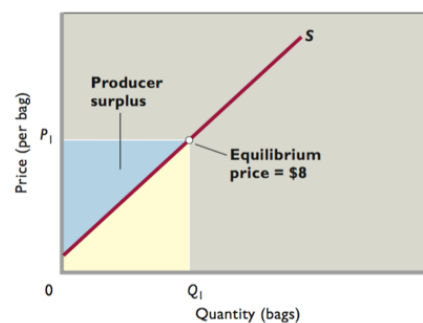
- 2 categories of market failures in competitive markets
 - **Demand-side market failures:** happens when demand curve don't reflect consumers' full willingness to pay for a good or service
 - arise because it's impossible to charge consumers what they are willing to pay for a product
 - example: fireworks
 - fireworks are displayed outdoors in public, people don't have to pay to see it
 - private firms will be unwilling to produce outdoor fireworks displays, becuz it is impossible for them to raise enough revenue to cover production costs
 - **Supply-side market failures:** occurs when supply curves do not reflect the full cost of producing a good or service
 - Firm doesn't have to pay the full cost of producing its output
 - Example: coal-burning power plant
 - firm have to pay for all the land, labor, capital, entrepreneurship
 - but the firm isn't charged for the smoke that it releases into the atmosphere
 - Market failures arise because it isn't possible for the market to correctly weigh costs and benefits in a situation in which some of the costs are completely unaccounted for

Efficiency Functioning Markets

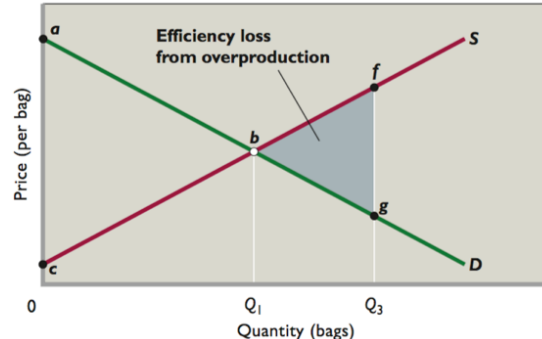
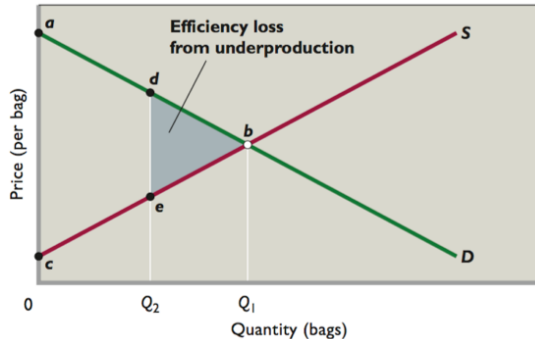
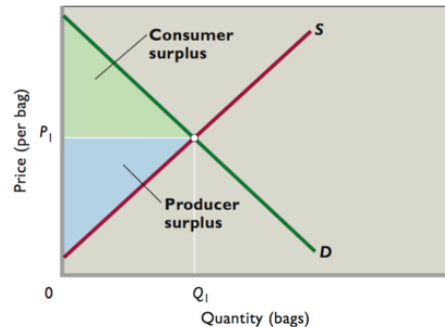
- Two conditions must hold true for competitive market to produce efficient outcomes
 - Demand curve must reflect consumers' full willingness to pay
 - Supply curve must reflect all the costs of production
- **Consumer Surplus:** benefit surplus received by a consumer(s) in a market
 - Defined as difference between max price consumer is willing to pay and actual price that they pay
 - Max price: depends on the opportunity cost of the alternatives
 - Consumers individual and collective gain greater total utility in dollar from purchases than their expenditures
 - this utility surplus arise because consumer pay the equilibrium price even though many would've been willing to pay more
 - Collective consumer surplus obtained by adding together each of their individual consumer surpluses
 - Consumer surplus can be defined as the area below the demand curve and above the price line that extends horizontally from equilibrium price
 - Higher price reduce consumer surplus; lower prices increase it



- **Producer Surplus:** difference between the actual price a producer receives and the min acceptable price that a consumer would have to pay the producer to make a particular unit of output available
 - min acceptable price = producer's marginal cost (sum of the rent, wages, interest, profit that producers need to pay in order to obtain land, labor, capital, entrepreneurship) of producing that particular unit
 - assume: marginal cost of producing will include *all* costs of production



- min acceptable price = opportunity cost of bidding resources away from the production of other products
 - if a producer's min price is lower, he/she is a more efficient producer
 - surplus = sum of the vertical distances between the supply curve and the equilibrium price at each of the quantities to the left of equilibrium price
- *Efficiency Revisited*
 - **Productive efficiency:** competition forces producers to use the best technologies and combination of resources available to minimize the per-unit cost of the output produced
 - **Allocative efficiency:** achieved because the correct quantity of a product is produced (produced equilibrium quantity)
 - Occurs when
 - $MB = MC$
 - Max willingness to pay = min acceptable price
 - total surplus is at a max
 - Supply curve = marginal cost curve
 - Demand curve = marginal benefit curve
- *Efficiency Losses (or Deadweight Losses)*
 - **Efficiency losses:** reductions of combined consumer and producer surplus that result in underproduction and overproduction
 - When demand reflects consumers' full willingness to pay and when supply reflects all costs, the market equilibrium quantity will automatically equal the allocatively efficient output level—ensures no efficiency losses from underproduction or overproduction



Public Goods

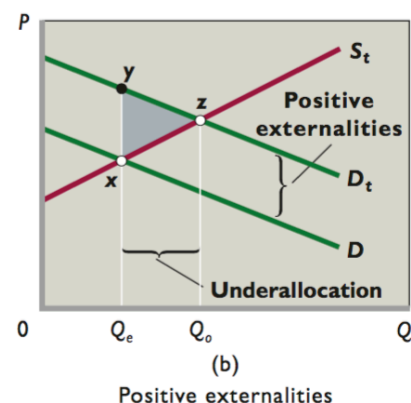
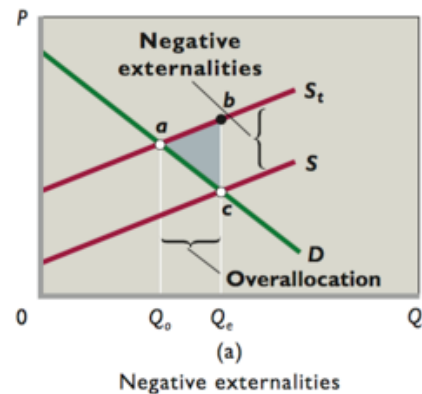
- Demand-side market failure arises in competitive market when demand curve fails to reflect consumers' full willingness to pay for a good or service
 - underreport how much consumers are willing and able to buy
 - most extreme form: market fail to produce *any* of the public goods because its demand curve may reflect none of its consumers' willingness to pay
- *Private Goods Characteristics*
 - **Private goods:** goods offered for sale by individual suppliers
 - Distinguished by **rivalry** and **excludability**
 - **Rivalry:** means that when one person buys and consumes a product, it will no longer be available for another person to buy and consume
 - **Excludability:** sellers can keep people who do not pay for a product from obtaining its benefits
 - only people who are willing and able to pay for the market price can obtain the product
- *Public Goods Characteristics*
 - **Public goods** possess opposite characteristics of private goods

- **Nonrivalry**: one person's consumption doesn't preclude consumption of the goods by others; everyone can simultaneously obtain the benefit from public good
 - **Nonexcludability**: there is no effective way of excluding individuals from the benefits of the good
- The 2 characteristics above create a **free-rider problem**: once a producer has provided a public good, everyone, including nonpayers, can obtain the benefit
 - People don't voluntarily pay for things they can get for free = people become free riders
 - Free riding means that the willingness to pay of the free riders isn't expressed in the market
 - More free riding, less demand
 - Society suffer efficiency loss because goods which MB exceeds MC aren't produced
 - Examples of public goods: national defense, fireworks
- *Optimal Quantity of a Public Good*
 - How can society determine the optimal amount of that good?
 - Government estimates the demand for public good through surveys or public votes
- *Demand for Public Goods*
 - Demand for public good is unusual
 - Some people are willing to pay more while some are not
- *Comparing MB and MC*
 - Supply curve measures society's marginal cost of each unit
 - Demand curve measures society's marginal benefit of each unit
- *Cost-Benefit Analysis*
 - Used for deciding whether to provide a particular public good and how much of it to provide
 - Involves comparison of marginal costs and marginal benefits
- *Concept—Highway construction plan*
 - Cost is the loss of satisfaction resulting from the accompanying decline in the production of private goods; benefit is the extra satisfaction resulting from the output of more public goods
 - Should the needed resources be shifted from the private to the public sector?
 - Yes; benefit from the extra public goods exceeds the cost that result from having fewer private goods
 - No; cost of the forgone private goods is greater than the benefit associated with the extra public goods
 - Cost-benefit analysis
 - indicates if a public program is worth doing
 - help the government decide on the extent to which a project should be pursued
- *Illustration*
 - **Marginal-cost-marginal-benefit rules**: tells us which plan provides the max excess of total benefits over total costs (aka the plan that provides society with max benefit)
 - if marginal costs of a proposed government program exceed its marginal benefit = public program shouldn't be undertaken
 - if marginal benefit exceeds the marginal cost = would be uneconomical not to spend on that government program
 - economy in government = allocating resources between the private and public sectors and among public goods to achieve max net benefit
- **Quasi-Public Goods**: goods and services that could be produced and delivered in such a way that exclusion would be possible

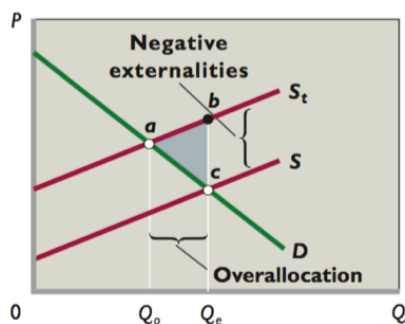
- Example: education, streets and highways, police and fire protection, libraries and museums
- These goods could be priced and provided by private firms but the benefits of these goods flow well beyond the benefit to individual buyers
 - These goods would be underproduced by the market system
 - Government often provides them to avoid underallocation of resources
- *Reallocation Process*
 - If the resources of an economy were fully employed, government must free up resources from the production of private goods and make them available for producing public and quasi-public goods
 - Does so by: reducing private demand for them
 - Does that by: levying taxes on households and businesses = taking some of their income out of the circular flow
 - With lower income and less purchasing power; households and businesses must curtail their consumption and investment
 - Private demand for goods drops → private demand for resources drop
 - By diverting purchasing power from private spenders to government, taxes remove resources from private use
 - Government spends tax to provide public and quasi-public goods and services
 - Taxation releases resources from the production of private consumer goods

Externalities

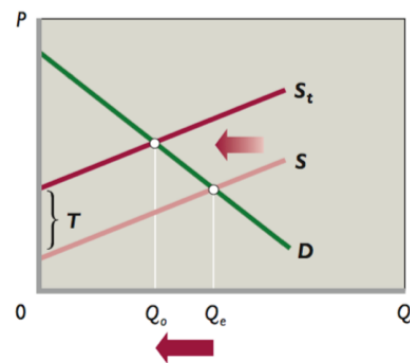
- Externalities cause market failures
- **Externalities:** occurs when some of the costs or the benefits of a good or service are passed onto someone other than the immediate buyer or seller
- benefits or costs are received by a third party that is external to market transaction
- there are positive and negative externalities
- *Negative Externalities*
 - Cause supply-side market failures
 - Happen because producers do not take into account the costs that their negative externalities impose on others
 - Failure to account for all production costs causes firms' supply curve to shift to the right of where they would be if firm properly accounted for all costs
 - Example: coal-burning factory
 - Firms do not take account of costs of breathing polluted air for third parties living downwind of the factories
 - They oversupply the products they make
 - When producers shift some of their costs onto the community as external cost, the producers' marginal costs are lower than they would be if they had to pay for those costs
- *Positive Externalities*
 - Cause demand-side market failures
 - Fail to include willingness to pay of the third parties who receive the external benefits



- Causes market demand curves to shift to the left
- Demand curves fail to take into account all benefits when there are positive externalities, markets fail to produce all units = underproduce
- Example: vaccinations
- *Government Intervention*
 - Government action is called upon to achieve economic efficiency when externalities affect large numbers of people
 - Negative externalities: use direct controls and taxes
 - Positive externalities: provide subsidies or public goods
 - *Direct Controls*
 - Direct way to reduce negative externalities pass legislation limiting that activity
 - Direct controls raise the marginal cost of production = corrects failure to take into account all costs = corrects initial overallocation of resources
 - Example:
 - clean-water legislation limits the amount of heavy metals, detergents, and other pollutants discharged into the rivers
 - toxic-waste laws dictate special procedures for disposing contaminated soil and solvents
 - violating these laws means fines/imprisonment
 - *Specific Taxes*
 - Levy taxes or charges specifically on the related goods
 - Taxes raise the marginal cost of production shifting the private supply curve leftward
 - Equilibrium price rises = taxes eliminate the initial overallocation of resources and efficiency loss
 - Example:
 - Place manufacturing excise tax on CFCs
 - Facing such an excise tax, manufacturers decide whether to pay the tax or develop substitute products



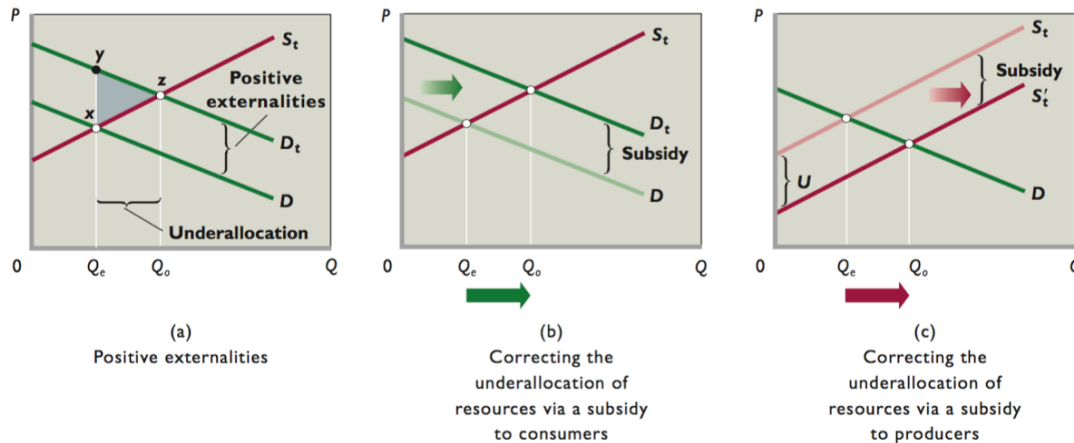
(a)
Negative externalities



(b)
Correcting the overallocation
of resources via direct controls
or via a tax

- *Subsidies and Government Provision*
 - 3 options for correcting the underallocation of resources
 - Subsidies to buyers
 - Discount coupons
 - Coupons would reduce price and shift the demand curve from too-low to appropriate
 - Subsidies to producers

- Tax in reverse
- **Subsidies:** payments from the government to decrease producers' costs
- Reduce marginal costs and shift supply curve to the right
- Government provision
 - When positive externalities are extremely large, government may provide the product for free to everyone



Problem	Resource Allocation Outcome	Ways to Correct
Negative externalities (spillover costs)	Overproduction of output and therefore overallocation of resources	1. Private bargaining 2. Liability rules and lawsuits 3. Tax on producers 4. Direct controls 5. Market for externality rights
Positive externalities (spillover benefits)	Underproduction of output and therefore underallocation of resources	1. Private bargaining 2. Subsidy to consumers 3. Subsidy to producers 4. Government provision

- *Society's Optimal Amount of Externality Reduction*
 - Reducing pollution and negative externalities = not free
 - Government has to weigh the cost and benefit of these interventions and decide to what extent to pursue these plans
 - High costs may mean that totally eliminating pollution might not be desirable
 - *MC, MB, and Equilibrium Quantity*
 - **Optimal reduction of an externality:** occurs when society's marginal cost and marginal benefit of reducing that externality are equal
 - *Shifts in Locations of the Curves*
 - Locations of MC and MB aren't fixed, they shift over time
 - Example: society decides that it wants cleaner air and water because of new information about health effects of pollution
 - MB curve will shift right

Government's Role in the Economy

- Market failures can be justified by government interventions in the economy
- Correcting market failure = not an easy task
 - Must correctly identify the existence and cause of given market failure (this itself is difficult, time consuming, and costly)
 - Government may fail to take appropriate action due to political influence
- Inefficiency can easily creep into government activities because of the lack of profit incentive
- Economic role of government isn't always perfectly carried out