Principles of Microeconomics: The Market Equilibrium

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Your roommate just bought an iPod for $200. She would have been willing to pay $500 for a machine that could store and replay that much music. How much consumer surplus does your roommate enjoy from the iPod?

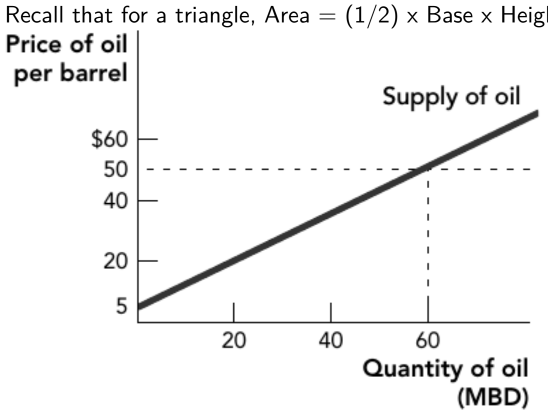
When the price of petroleum goes up, what probably happens to the demand for natural gas? To the demand for coal? To the demand for solar power?

If the price of cars falls, are carmakers likely to make more cars or fewer cars, according to the supply curve?

Suppose LightBright and Bulbs4You were the only two suppliers of 60-watt lightbulbs in Springfield. Draw the supply curve for the 60-watt lightbulb industry in Springfield from the following tables for the two companies.

Price	Bulbs Supplied by LightBright	Bulbs Supplied by Bulbs4You
$1	10	5
$5	15	7
$7	25	15
$10	35	20

Using the following diagram, identify and calculate total producer surplus if the price of oil is $50 per barrel.
Recall that for a triangle, Area = (1/2) x Base x Height



Cars and gasoline are complements. What will happen to the demand curve for gasoline if the price of cars decreases? Why?

Which country has more knowledge:
Utopia, where in the words of Karl Marx, each person knows just enough about hunting, fishing, and cattle raising to "hunt in the morning, fish in the afternoon, [and] rear cattle in the evening," or **Drudgia**, where one-third of the population learns only about hunting, one-third only about fishing, and one-third only about cattle raising?

Jules wants to purchase a Royale with cheese from Vincent. Vincent is willing to offer this tasty burger for $3. The most Jules is willing to pay for the tasty burger is $8 (after all, his girlfriend is a vegetarian, so he doesn't get many opportunities for tasty burgers).

- How large are the potential gains from trade if Jules and Vincent agree to make this trade? In other words, what is the sum of producer and consumer surplus if the trade happens?
- If the trade takes place at $4, how much producer surplus goes to Vincent? How much consumer surplus goes to Jules?
- If the trade takes place at $7, how much producer surplus goes to Vincent? How much consumer surplus goes to Jules?

What is a Market?

Market A geographically defined area where buyers and sellers interact to determine the price of a product or a range of product.

Buyers Consumers buy goods, Firms buy labor and inputs

Sellers Consumers sell workforce, Firms sell products

Market Price and Market Definition

- Transactions between buyers and sellers of goods take place at a certain price.
  - Some goods have only one price
  - other goods have several
- What buyers and sellers should be included in a particular market?
- The Reach of a Market defines the boundaries of a market, geographically or in terms of a range of products
  - Real Estate market in Bremen or in Berlin
  - Market for cameras or only for digital cameras

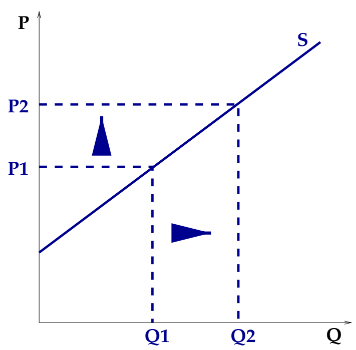
Market Definition

- In order to set prices or determine their budgets firms need to know their relevant market in terms of:
  - their competitors and
  - product characteristics and
  - geographical boundaries of the market
- Importance for the economic policy
  - Should the cartel agency allow the purchase of a business firm?

Types of Markets

- Perfect Competition
  - Due to the large number of buyers and sellers, no single one of them can affect the final price.
- Markets with restricted competition, or without any
  - Markets where individual producers can affect the price.
  - Cartels - group of producers who make arrangements and close deals.
  - Monopoly – only one provider
  - Monopsony – only one buyer

The Supply Curve



- shows the quantity of a good that producers are willing to sell at a given price,
- We can write this relationship as an equation:

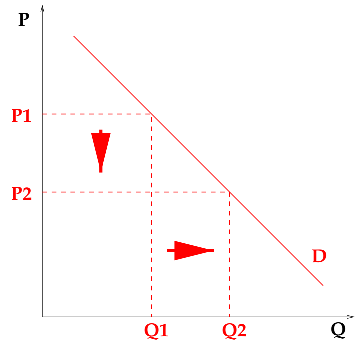
$$Q_s = Q_s(P)$$

- is upward sloping.
- the higher the price, the more the firm is willing to produce.

The Supply Curve

- Changes in a quantity supplied caused by an (endogenous variable) are be represented by movements along the supply curve
- The location of the supply curve is determined by exogenous variables, as for example the costs for labor, capital and materials.
- Changes in exogenous variables generate change in supply, represented by a shift of the supply curve.

The Demand Curve



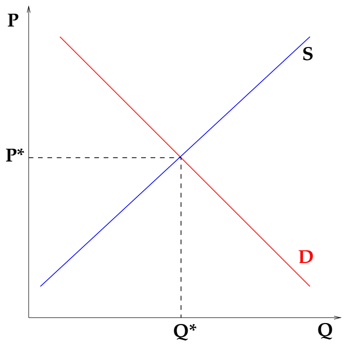
- The demand curve illustrates the relationship between the quantity of a good that consumers are willing to buy and the price of the good, given other (exogenous) factors constant.
- We can write this relationship between quantity demanded and price as an equation:

$$Q_D = Q_D(P)$$

- slopes downward.
- consumers are usually ready to buy more if the price is lower

The Market Mechanism

Tendency in a free market for the price to change until the market clears.



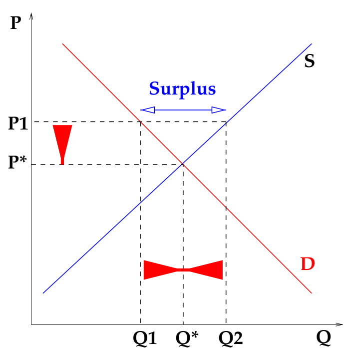
- The market is in equilibrium when the quantity supplied is equal to the quantity demanded.
- The market is in equilibrium at the market-clearing price.
- The curves intersect at the equilibrium / market-clearing price. In P^* the quantity offered Q^* equals the quantity demanded.

Class Room Trading Experiment: Prediction

Unit Number	Cost for Producer	Value to Buyer
1	5	20
2	5	20
3	6	18
4	6	18
5	7	16
6	7	16
7	8	14
8	8	14
9	9	12
10	9	12
11	11	10
12	12	10
13	13	8
14	14	8

If the price in a market is above the equilibrium price, does this create a surplus or a shortage?

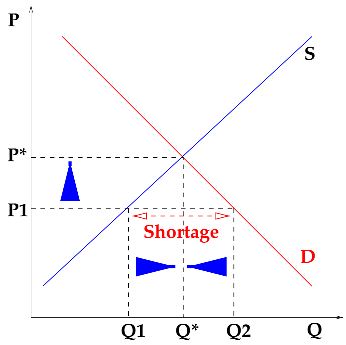
The Market Mechanism: Surplus



- The market is at a higher price than the equilibrium P^*
- there is a surplus of supply: $Q_S : Q_2 > Q_D : Q_1$
- Producers begin to lower prices.
- The quantity demanded increases, and the quantity offered decreases.
- The equilibrium is reached.

Jon is on eBay, bidding for a first edition of the influential Frank Miller graphic novel Batman: The Dark Knight Returns. In this market, who is Jon competing with:
the seller of the graphic novel or the other bidders?

The Market Mechanism: Shortage



- Let's assume the market price lies below the equilibrium price:
  1. The quantity demanded exceeds the quantity supplied: $Q_D : Q_2 > Q_S : Q_1$
  2. The surplus of demand is $Q_2 - Q_1$.
  3. Producers increase the price.
  4. The quantity demanded falls, and the quantity supplied increases.
  5. The equilibrium is reached at $P^{\star}, Q^{\star}$.

The Market Mechanism

- Properties of the equilibrium- or market-clearing price:
  - $Q_D = Q_S$
  - No surplus of demand.
  - No surplus of supply.
  - No pressure for the price to change.

Given the following demand and supply functions what is the market equilibrium price and quantity? What is the producer surplus, consumer surplus and total welfare generated in that market?

- Supply: $Q_s = 0.5P - 10$
- Demand: $Q_d = 110 - P$

How do your answers change if the price is set at either 50 or at 90?

The Market Mechanism, Efficiency, and Total Surplus

- According to the invisible hand theory, a market economy, through the price mechanism, will allocate resources efficiently
  - Prices fall when quantity supplied is greater than quantity demanded
  - Prices rise when the quantity demanded is greater than the quantity supplied
- Equilibrium in a free market yields two important results:
  1. Goods must be produced at the lowest possible cost (Technical Efficiency).
  2. Goods must satisfy the highest valued demands (Allocative Efficiency).
- Therefore, total surplus (both consumer and producer surplus) is maximized in free markets.
- Pareto Efficiency means it is not possible to improve one person's position without harming someone else.

Economists often say that prices are a "rationing mechanism." If the supply of a good falls, how do prices "ration" these now-scarce goods in a competitive market?

Markets may have shortcomings

- People with low productivity may not be able to achieve the subsistence level on their own
- Goods without prices (e.g. the environment) may get wasted
- Firms try to avoid competition and may form cartels or try to get monopoly power

Market Failure

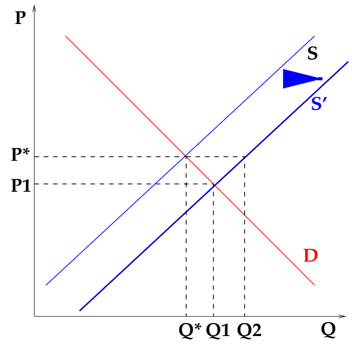
If the market does not lead to an efficient allocate the state may want to intervene

- Regulatory policy: setting of rules (anti-trust laws)
- Direct interventions: Setting of interest rate by the central bank; setting of minimum wages

A major challenge is to find the right balance

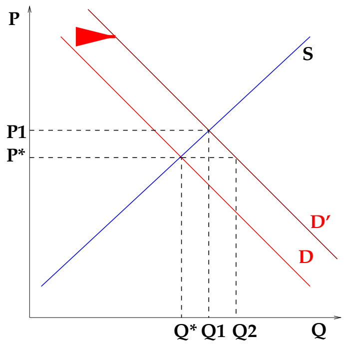
- Too much intervention may reduce the willingness to perform
- Insufficient intervention / "laws without teeth" may lead to environmental pollution, market power, severe social inequality

Changes in Market Equilibrium
A decrease in the price of raw materials



- S shifted to S'
- surplus in P^* of $Q_2 - Q^*$
- new equilibrium in P_1, Q_1

Changes in Market Equilibrium
An increase in income

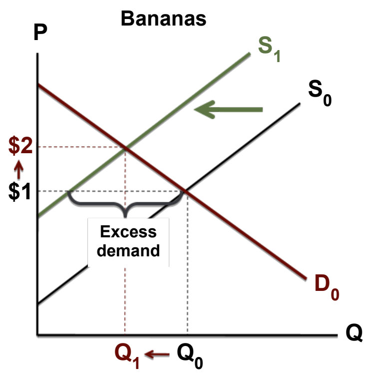


- Rightward shift in the demand to D'
- Shortage in P^* of $Q_2 - Q^*$
- new equilibrium in P_1, Q_1

Application: Bananas in Australia

What happens to the bananas market in Australia if a cyclone destroys a large share of the crop?

Application: Bananas in Australia



Cyclone Larry destroyed 80% of the banana crop

The cyclone damage caused the supply curve to shift left

Price rose from $1 to $2 where quantity demanded = quantity supplied

Application: Sales of SUVs in the US

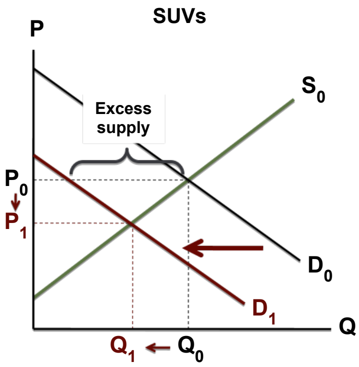
What happens to the market for SUVs if the gasoline price goes up?

Application: Sales of SUVs in the US

Gasoline in the U.S. is increasingly expensive

Increasing gas costs causes the demand curve to shift left

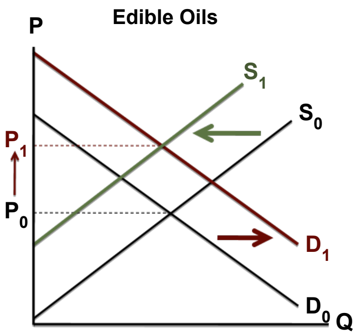
Price for SUVs fell from P_0 to P_1 where Q demanded = Q supplied



Application: Edible Oils in the World

What happens to the world edible oils market if the Asian middle class acquires a(n even stronger) taste for it and US farmers grow more corn for the production of bio-ethanol?

Application: Edible Oils in the World



Growing middle class in Asia has increased demand for oils

At the same time, U.S. farmers are growing more corn and less soy (less soy oil)

The result is increased prices for edible oils

Changes in Supply and Demand

Supply and demand curves shift over time as market conditions change. The equilibrium price and quantity resulting of this interaction will depend on:

- the relatives size and direction of the changes
- the shape of each curve

The Price of a Foreign Currency

- The market for foreign currencies is called the foreign exchange (forex) market
- The exchange rate is the price of one currency in terms of another one
- People demand foreign currencies to buy those countries' goods and assets
- Exchange rates are determined by supply and demand

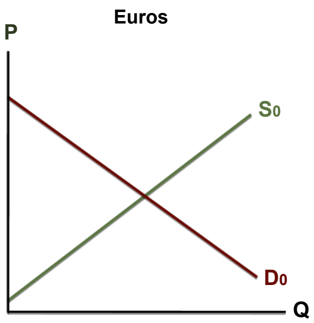
Application: The Market for Euros

- The 19 members of the European Economic and Monetary Union use a common currency, the euro
- Euro-Zone: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.
  Plus: Monaco, San Marino, Vatican City, Andorra (having a bi-lateral contract; are allowed to issue their own coins), and Kosovo and Montenegro (without such a contract)
- The value of a euro was \$ 0.85 in 2001
- During Spring 2008 the euro had risen to above \$ 1.50 because:
  1. U.S. interest rates decreased and Europeans bought fewer U.S. financial assets, so the supply of euros decreased
  2. Americans increased their demand for euros in order to buy European financial assets
- Today the euro costs about \$ 1.08

Application: The Market for Euros

The price is in terms of dollars, how many dollars it takes to buy or sell one euro

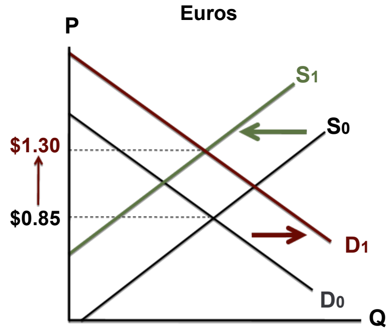
The quantity of euros is on the horizontal axis



The supply of euros represents people who want to sell euros and buy dollars

The demand for euros represents people who want to buy euros and sell dollars

Application: The Market for Euros



Europeans buy fewer U.S. financial assets and supply decreases

Americans buy more European financial assets and demand increases

The price of euros increases to $1.30

A Review of Changes in Supply and Demand

	No change in Supply	Supply shifts out	Supply shifts in
No change in Demand	No Change	Price falls, Quantity rises	Price rises, Quantity falls
Demand shifts out	Price rises, Quantity rises	Quantity rises, Price could rise or fall	Price rises, Quantity could rise or fall
Demand shifts in	Price falls, Quantity falls	Price falls, Quantity could rise or fall	Quantity falls, Price could rise or fall