

AAE101: Intro to Ag. & Applied Econ.

Discussion Section 2

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Today's goal

- Understand the fundamental concepts of supply and demand, including shifts and movements along the curves.
- Apply these concepts to real-world scenarios and practice solving related problems.

Markets

A market is a place or situation where a buyer and seller interact, whenever an exchange takes place. We are focusing on markets with identical products.

In a competitive market, there are three main agents: consumers, firms, and the government.

- **Consumers:** spend their limited income on the mixture of goods and services that maximize their *utility*.
- **Firms:** Maximize their profits.
- **Government:** Tries to maximize public welfare.

*This handout is based on the corresponding handouts from previous years by Felipe Parra Escobar, Matt McKetty & Talita Silva. Modifications and additions in this version by Erick.

Demand

Demand curve: It shows the amounts of a product that consumers are *willing and able* to purchase at a series of possible *prices* at a particular time.

Caeteris paribus assumption: other-things-equal, meaning that we assume that the other aspects of the world are not changing. For example, time, other prices, consumer preferences, etc.

Individual vs. market demand: The market demand is the sum of individuals' demand.

Law of demand: *Caeteris paribus*, as price falls, the quantity demanded rises, and as price rises quantity demanded falls. Why?

1. Price is an obstacle/impediment to buyers.
2. **Law of Diminishing Marginal Utility:** We get less and less utility from each additional unit of a good consumed, so there is less and less incentive to consume more after each unit of consumption.
3. We buy more at lower costs and less at higher prices.
4. **Income Effect:** When the price of a good decreases, we can buy more with the same income. This is similar to an increase in income with no change in prices.
5. **Substitution Effect:** If the price of one good decreases, we may choose to buy less of a more expensive good, and more of a cheaper good.

Changes in Quantity Demanded and Changes in Demand

Movements along the demand curve are a response to **changes in price of a good**. This means, that whenever the price of a good changes, *caeteris paribus*, there is a **change in the quantity demanded** of that good.

Shifts in the demand curve happen when underlying determinants of demand change. We refer to shifts of the demand curve as a **change in demand**.

Determinants of demand: Changes in consumer tastes and preferences, the number of buyers, income, the price of related goods, and consumer expectations induce a shift in the demand.

We can label goods according to what happens to their demand when income and/or prices of related goods change.

Goods according to changes in income:

- **Normal Goods:** A good for which quantity demanded increases when a person's income increases. For example: restaurant meals.
- **Inferior Good:** A good for which quantity demanded decreases when a person's income increases. For example: canned goods, pizza.

Goods according to changes in price of related goods:

- **Complementary Good:** A good that experiences joint demand with another good. Demand for a complementary good is linked with demand for another. For example, paint and paint brushes.
- **Substitute Good:** A good that can be used in place of another good. Consumers view the two as comparable. Therefore, demand for a substitute good, lowers demand for the good for which it is a substitute. For example, Coke and Pepsi.

Supply

Supply curve: It shows the amounts of a product that producers are *willing and able* to produce at a series of possible *prices* at a particular time.

Individual vs. market supply: The market supply is the sum of firms' supply.

Law of supply: *Caeteris paribus*, as price rises, the quantity supplied rises, and as price falls, quantity supplied falls. Why?

1. Price acts as an *incentive* to producers. Costs will eventually rise.

Changes in Quantity Supplied and Changes in Supply

Movements along the supply curve are a response to **changes in price of a good**. This means, that whenever the price of a good changes, *caeteris paribus*, there is a **change in the quantity supplied** of that good.

Shifts in the supply curve happen when underlying determinants of supply change. We refer to shifts of the supply curve as a **change in supply**.

Determinants of supply: Changes in resource/input prices (for example, the price of oil and airlines), technology, the number of sellers, in taxes and subsidies, in the prices of other goods, and in producer expectations.

Practice Questions

1. Chapter 3, Problems, 1: Suppose there are three buyers of candy in a market: Tex, Dex, and Rex. The market demand and the individual demands of Tex, Dex, and Rex are shown in the following table.

Price per Candy	Individual Quantities Demanded						Total Quantity Demanded
	Tex		Dex		Rex		
8	3	+	1	+	0	=	
7	8	+	2	+		=	12
6		+	3	+	4	=	19
5	17	+		+	6	=	27
4	23	+	5	+	8	=	

- (a) Fill in the missing values.
- (b) Which buyer demands the least at a price of \$5? The most at a price of \$7?
- (c) Which buyer's quantity demanded increases the most when the price decreases from \$7 to \$6?
- (d) In which direction would the market demand curve shift if Tex withdrew from the market? What would happen to the market demand curve if Dex doubled his purchases at each possible price?
2. Chapter 3, Review Question, 4: What effect will each of the following have on the supply of auto tires?
- (a) A technological advance in the methods of producing tires.
- (b) A decline in the number of firms in the tire industry.
- (c) An increase in the price of rubber used in the production of tires.
- (d) The expectation that the equilibrium price of auto tires will be lower in the future than it is now.
- (e) A decline in the price of the large tires used for semi trucks and earth-hauling rigs (with no change in the price of auto tires).
- (f) The levying of a per-unit tax on each auto tire sold.
- (g) The Granting of a 50-cent-per-unit subsidy for each auto tire produced.

3. Chapter 3, Review Questions, 8: Label each of the following scenarios with the symbols that best indicates the price change and quantity change that occur in each scenario. In some scenarios, it may not be possible from the information given to determine the direction of a particular price change or a particular quantity change. We will symbolize those cases as, respectively, "P?" and "Q?" The four possible combinations of price and quantity changes are:

$P \downarrow Q?$, $P \uparrow Q?$, $P? Q \downarrow$, $P? Q \uparrow$

- (a) On a hot day, both the demand for lemonade and the supply of lemonade increase.
 - (b) On a cold day, both the demand for ice cream and the supply of ice cream decrease.
 - (c) When Hawaii's Mt. Kilauea erupts violently, tourists' demand for sightseeing flights increases, but the supply of pilots willing to provide these dangerous flights decreases.
 - (d) In a hot area of Arizona where a lot of electricity is generated with wind turbines, the demand for electricity falls on windy days as people switch off their air conditioners and enjoy the breeze. But at the same time, the amount of electricity supplied increases as the wind turbines spin faster.
4. Consumer and producer surplus: Suppose the demand and supply equations for a good in a competitive market are given by:

$$Q_d = 50 - 2P$$

$$Q_s = 10 + 3P$$

- (a) Find the equilibrium price and quantity by solving the system of equations.
- (b) Calculate the Consumer Surplus (CS): Use the demand equation to find the highest price consumers are willing to pay for the first unit. Then, use the triangle formula to compute CS.
- (c) Calculate the Producer Surplus (PS): Use the supply equation to find the lowest price at which producers are willing to sell. Then, use the triangle formula to compute PS.
- (d) Interpret the results: Explain in simple terms what the consumer and producer surplus represent in this market.