

Introduction to Principles of Economics



Chapter 1

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Objectives

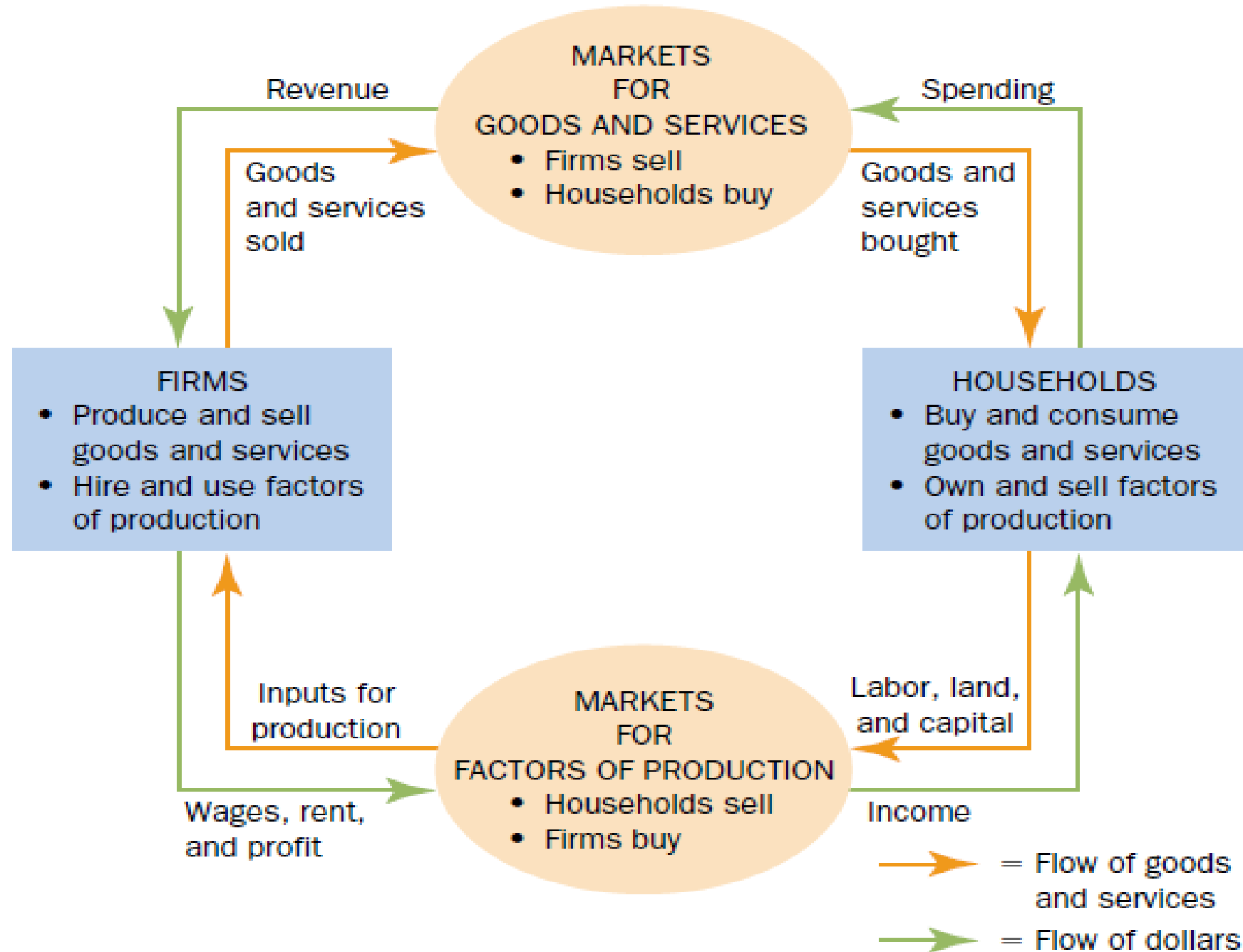
- Upon completing this chapter, you will be able to:
 - define common economic terms
 - explain demand, quantity demanded, and the law of demand
 - explain supply, quantity supply, and the law of supply
 - discuss market equilibrium and market failure
 - discuss healthcare and market failure

- The term Economics is derived from the Greek term “oikonomia”
 - meaning “the science of household or state management”
- Economics can be defined as the study of the way society makes **choices**/decisions about the use of **scarce** resources in an attempt to satisfy its **unlimited** needs and wants
 - how much to work
 - what to buy
 - how much to save
 - how to invest, etc.

- it is the study of how people choose to use scarce resources to produce goods and services and how these goods and services should be distributed among the society

- Economy
 - the **process or system** by which goods and services are produced, sold, and bought in a country or region
 - it includes everything related to the production and consumption of goods and services
 - it involves numerous transactions that create **two circular flows** (money moves in one direction while goods and services move in the opposite direction)

The Circular Flow



The Circular Flow

- Decisions are made by households and firms
- Households and firms interact:
 - in the markets for goods and services (where households are buyers and firms are sellers) and
 - in the markets for the factors of production (where firms are buyers and households are sellers)
- The outer set of arrows (green) shows the flow of dollars, and the inner set of arrows (red) shows the corresponding flow of goods and services

- Goods and services

- goods are the concrete, physical products we produce/manufacture
- E.g. furniture, automobiles, drugs, medical equipments, etc..

- services are the activities we engage in and sell to others
- E.g. medical services such as physician consultation services, nursing care services

- clinical pharmacy services such as, diabetes mgt service, asthma mgt service, pharmacokinetic monitoring service, osteoporosis mgt clinic, and HIV/AIDS mgt clinic, etc.

- Economic goods
 - goods that are scarce and have economic values
- Free goods
 - goods that have no scarcity and exist in sufficient quantities to satisfy everyone's wants such as air, sunshine,...
 - in which goods are economists interested?

- Needs
 - are the basic requirements necessary to sustain life
E.g. food, clothing, and shelter, ...
- Wants
 - the desire for goods or services that are not essential to sustain life
 - are a step ahead of needs
E.g. electronics, jewelry, ...
- are healthcare services needs or wants?

- Resources/factors of production
 - are the **inputs** necessary for the production of goods and services to meet our needs and wants
 - categorized in to four groups:
 - labor/human resources
 - capital resources
 - land/natural resources and
 - entrepreneurial skill

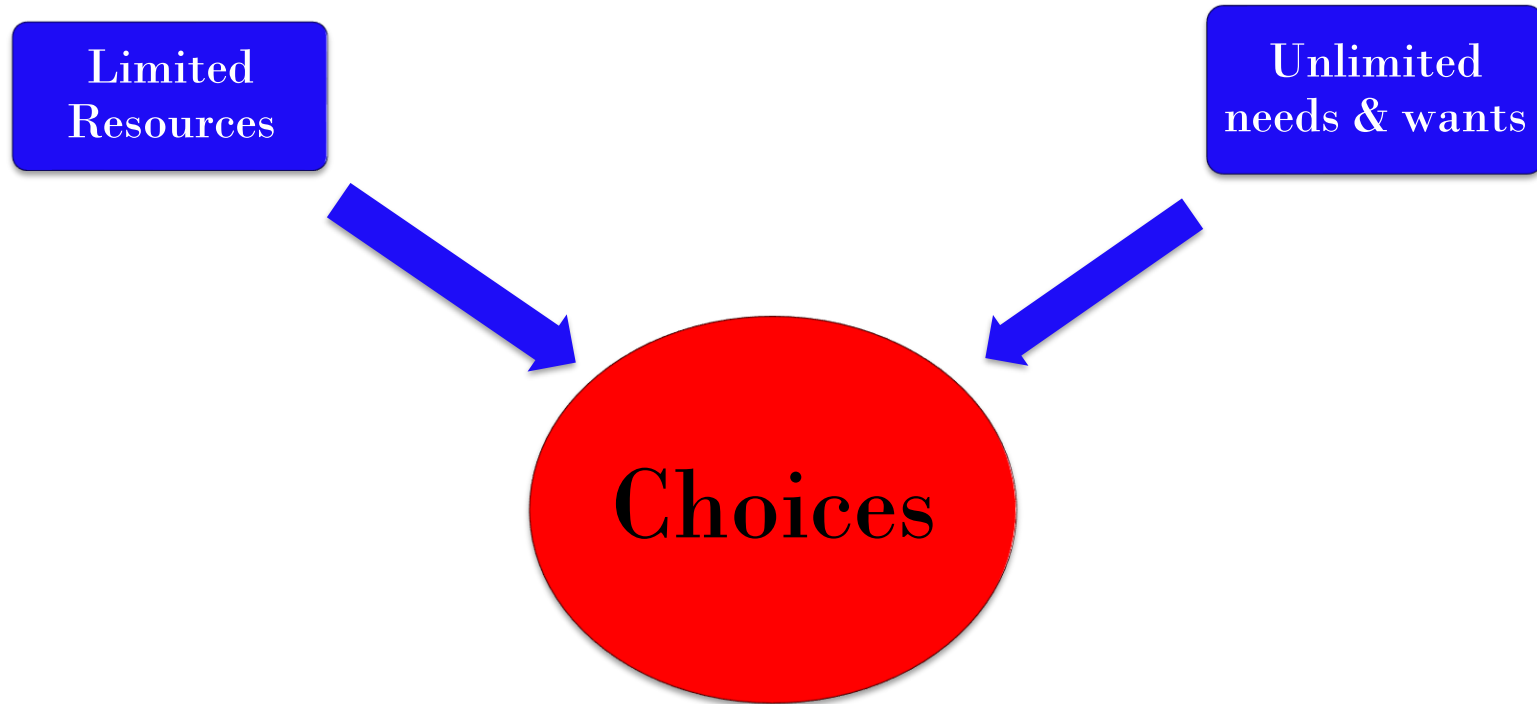
- Labor/human resource
 - time and effort that people devote to produce goods and services
 - skilled
 - unskilled
 - the return to labor - wages
- Capital resources
 - resources created by humans to aid the production of goods & services
 - E.g. machinery, factories, tools, building, road, schools, hospitals,...
 - the return to capital - interest

- Land/natural resources
 - all the resources in nature that have value in the production of goods and services
 - include almost everything else that does not fall under labor, capital or enterprise
 - E.g. minerals, trees, fresh water, land
 - the return to land – rent

- Entrepreneurial skill
 - the human resource of organizing the 3 factors to produce goods and services
 - the return to entrepreneurial skill is ...
- are all the four categories of resources applied in the production of health care goods and services?

- mention some factors of production/resources used for provision of healthcare goods and services.
 - technically skilled and unskilled staff
 - infrastructure: electric energy, water supply, ...
 - buildings: offices, ward rooms, ...
 - diagnostic equipments: CT scans, computers, MRI, ...
 - stretchers, ambulance, ...
 - drugs and consumables (syringes and needles, gloves...)
 - land ---?
 - entrepreneurial skill---?

- Scarcity
 - shortage of resources (land, labor, capital, & entrepreneurship) that are needed to produce goods and services required to satisfy unlimited human wants
 - scarcity has two wings - limited resources and unlimited needs and wants
 - choices have to be made on how to use these limited resources



- Because of scarcity of resources, all human needs and wants can't be satisfied at once
- Therefore a decision has to be made so as to determine which wants should be satisfied first and which ones later
- Health care resources available for medical procedures, including pharmaceuticals, are scarce and require **choices** to be made regarding the allocation of these resources to satisfy the healthcare needs of the society
- How does economics helps us to decide which is the best choice?
 - tools of economic evaluation (chapters 4-7)

- Efficiency
 - is the measure of **output** obtained with a given set of resources,
i.e. least amount of wastage
 - two types: technical efficiency and allocative efficiency

- Technical efficiency
 - producing a set amount of output using the **fewest** resources
 - E.g. If the most that can be provided by one physician and two nurses is 20 t/ts each day, then it is technically inefficient to provide 19 t/ts with that number of staff
 - what if 20 t/ts are provided with more staff?
- Allocative efficiency
 - producing the **pattern** of output that best satisfies the pattern of “**consumer needs and wants**”
 - technical efficiency is necessary for allocative efficiency to be achieved
 - a hospital which is technically efficient may not be allocatively efficient

- Equity
 - fair distribution of outputs among the society
 - is of two type: horizontal equity and vertical equity
- Horizontal equity
 - the provision of equal treatments for equal needs
- Vertical equity
 - provision of unequal treatments for unequal needs
- giving equal access to health care to those who have equal levels of health need?
- giving more t/t for those with serious conditions than for those with minor complaints?

- Equity Vs Equality, any difference?
- assume persons A, B and C have needs of 50, 10 and 15 units of an item, respectively. There are 75 units of the item to be distributed among persons A, B and C.
 - if you provide 25 units for each person, this is equality
 - if you allocate 50 units for person A, 10 units for person B and 15 units for person C, this is equity

- Utility
 - the capacity of a thing to serve for the **satisfaction of human needs**
 - it is level of satisfaction or sense of well being that consumers derive from the consumption of goods and services
 - the usefulness of an item
 - individuals will consume the goods and services that maximize their level of utility

- Utility has the following features:
 - It is subjective concept= differs from person to person
 - It is relative concept = differs from place to place/or time to time
 - Different from pleasure
 - Depends on needs and wants

- Utility is subjective:
 - utility varies from individual to individual
 - a cigarette has no utility for a non-smoker
- Utility is relative:
 - even for the same individual, a commodity may possess different utilities at different times or in different places
 - a warm suit has greater utility in winter than in summer
 - a raincoat has greater utility in the hills during the rainy season
 - it all depends on a man's circumstances

- Utility is not synonymous with pleasure:
 - a good which possesses utility may not give pleasure when consumed, e.g., quinine. But, in spite of its bitter taste, quinine is purchased and consumed, for it **does fulfill a need**. Hence utility is not the same thing as pleasure
 - a thing which possesses utility may be tasteful and pleasurable or it may be bitter and distasteful and as such may not give any pleasure

Forms of utility:

- the three main forms of utility are:
 - a. form utility: by changing the form of an item, we can give it greater utility
 - e.g., the transformation of a **log of wood** into a **piece of furniture**
 - b. place utility: utility can also be increased by transporting a good from one place to another
 - when timber is brought to the market, it comes to have much greater utility than it had in the forest. This is place utility
 - c. time utility: by storing a commodity and selling it at a **time of scarcity** we can give it greater utility. This is time utility

Health utility

- the concept of utility is applied in health care to mean the **individual's valuation of their state of well-being** derived from the use of health care interventions
- health utility is a measure of the preference for, or desirability of, a specific level of health status or specific health outcome
- utility is a numerical indicator of a person's preferences in which higher levels of utility indicate a greater preference

- health utility ranges from 0 to 1
 - 0= dead
 - 1 = perfect health (state of complete physical, social and mental well being, not merely the absence of disease)

- Value
 - is the goods or services that we can get in return for it
 - it is purchasing power in terms of other goods and services; it is its power of commanding other things in exchange for itself
 - refers to the goods that can be obtained in exchange for it
- Paradox of value: the things we have the most of, we tend to value least
 - Reason of the paradox of value: scarcity of resources
 - Diamond Vs water- we give higher monetary value to diamonds because there is less of them laying around. We give water less value because there is more abundance of it
 - Scarcity is required for value, but scarcity alone is not enough to create value

Attributes of value

- in order to have value in the market a commodity must **not be a free good**, for nobody will give anything in exchange for a free good
 - one can have as much of it as one likes without paying anything for it
- only economic goods can have **value in the economic sense**
- three qualifications are thus essential for a good to have value:
 - a. it must possess **utility**
 - b. it must be **scarce** and
 - c. it must be **transferable or marketable**

- all these three qualities are required **together** for an item to have value in the economic sense
- in the absence of any one of these qualities, a good will have **no value at all**
 - nobody will be prepared to give anything in exchange for a good which is not scarce or which does not possess any utility or which is not **transferable**
- For example:
 - the fresh air possesses utility, but it is not scarce
 - rotten eggs may be scarce: but since they possess no utility
 - a book has utility; it is also scarce and transferable. It has, therefore, value in the economic sense

- we cannot exchange fresh air for anything; its value in economic sense is, therefore, zero even though it is otherwise so valuable - and also, indispensable A pencil, on the other hand, has value because it can be exchanged for something

- Wealth

- a tangible sum of economic products
- is the accumulation of those products that are **tangible, scarce, useful and transferable** from one person to another
- goods are counted as wealth but services are not because they are not tangible
- goods or services?

Attributes on wealth:

- as in the case of value, for a commodity to be called wealth, it must possess utility, scarcity and transferability
- if it lacks even one quality, it cannot be termed as wealth
- if you want to find out whether a good is wealth or not, ask yourself these three questions:
 1. can it satisfy a human want? or does it possess utility?
 2. is it scarce?
 3. is it transferable?

- applying the tests for wealth, which of the following are wealth?
 - money, land, buildings, furniture, machinery, clothes, gold, silver
 - fresh air, water and sunshine
 - personal qualities like honesty, skill, ability and intelligence
 - human beings
 - health

- In Economics the term ‘Wealth’ is synonymous with economic goods
- Economic goods are scarce and command a price in the market
- But scarcity alone does not make a ‘good’ wealth
- If it is a useless thing (e.g., a rotten egg.), nobody will pay anything for nobody would like to have it; and **will not be wealth**
- A good is wealth only if man needs it and uses it

The Concepts of Demand and Supply

- **Demand**

- refers to the **quantity of a good or service** that consumers are willing and able to buy at a given price
- demand is not simply a quantity consumers wish to purchase
 - individuals must be **willing**, **able**, and **ready** to pay for a commodity if they are to be counted as demanding an item
- price is the major factor that affect demand of an item

- Factors other than price that affect the demand for an item:
 - **Income:** an increase in income will increase the demand for a normal good
 - **Prices of substitute goods:** an increase in the price of a substitute will increase demand for an item
 - **Prices of complement goods:** a decrease in the price of a complement will increase the demand for an item
 - **Individual tastes:** an increase in tastes for a product will increase the demand for an item
 - **Number of buyers:** an increase in the number of buyers in a market will increase the demand for an item
- Do consumers of healthcare goods & services respond to these factors in the same manner?

- substitute goods - other goods which satisfy the same wants, or provide same characteristics
- complement goods - two or more goods which are consumed together
- would you mention substitute goods in the healthcare market?
- would you mention complement goods in the healthcare market?

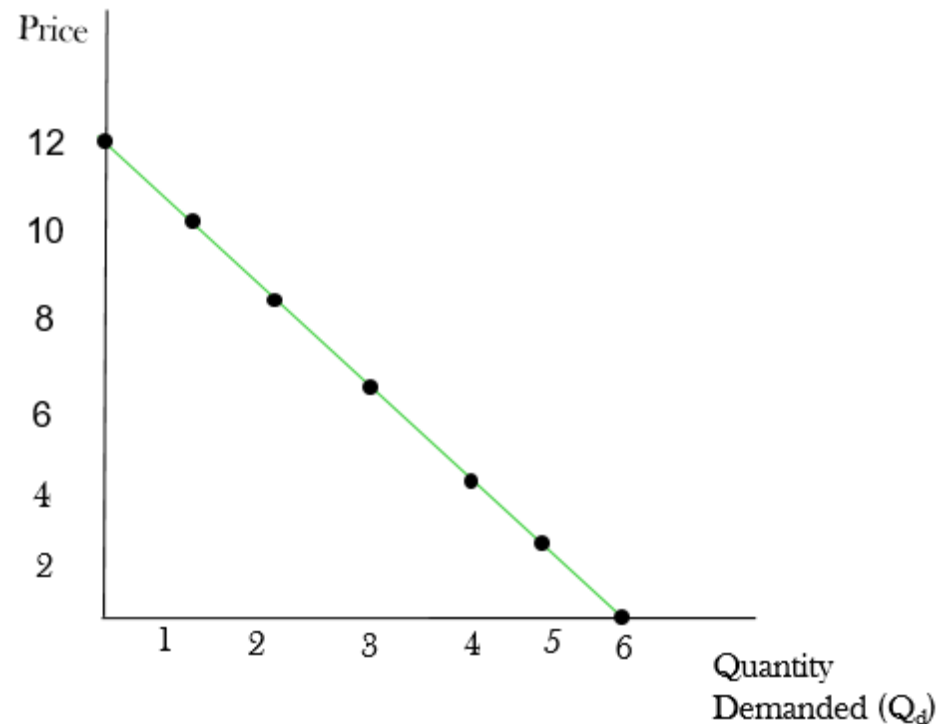
The Law of Demand

- the law of demand states that, other things remaining the same, the quantity demanded for goods and services **rises as the price falls** and vice versa
 - the quantity demanded and price are inversely related
- demand curves are drawn as 'downward sloping' due to this inverse relationship between price and quantity demanded (Q_d)

Demand Curve

Demand curve is the standard representation of the relationship between the **quantity** of a good or service consumers will purchase and its **price**

Example: draw the demand curve for the demand function, $Q_d = 6 - 1/2P$



- Supply
 - is the quantity of goods or services that sellers are willing and able to sell at a given price
 - price is the major factor that affect quantity supplied

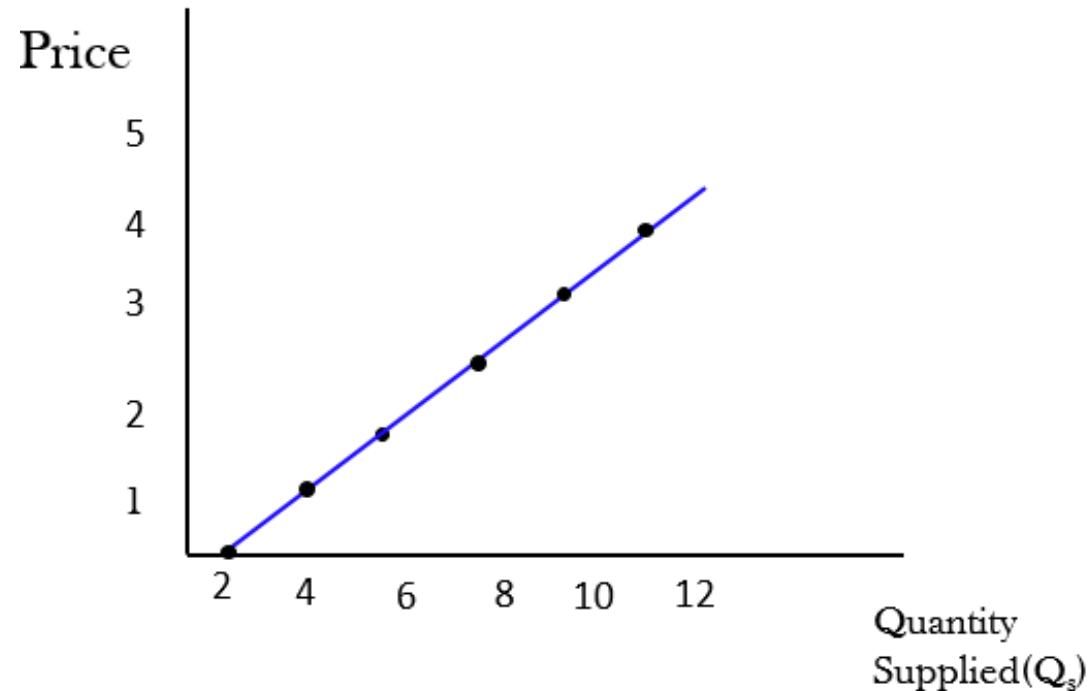
- Factors other than price that affect the supply of an item:
 - **Input prices:** an **increase** in input prices will **decrease** the quantity supplied of an item and vice versa
 - **Technology:** an **increase** in technology will **increase** the quantity supplied of an item and vice versa
 - **Expectations:** a change in expectations may increase or decrease the quantity supplied
 - **Number of sellers:** an **increase** in the number of sellers in a market will **increase** the quantity supplied of an item and vice versa
- Do suppliers of healthcare goods and services respond to these factors in the same manner?

The Law of Supply

- the law of supply states that, other things remaining constant, the quantity supplied for a good or service **rises as the price rises**
 - the quantity supplied and the price are **positively** related
- supply curves are drawn as 'upward sloping' due to this positive relationship between price and quantity supplied

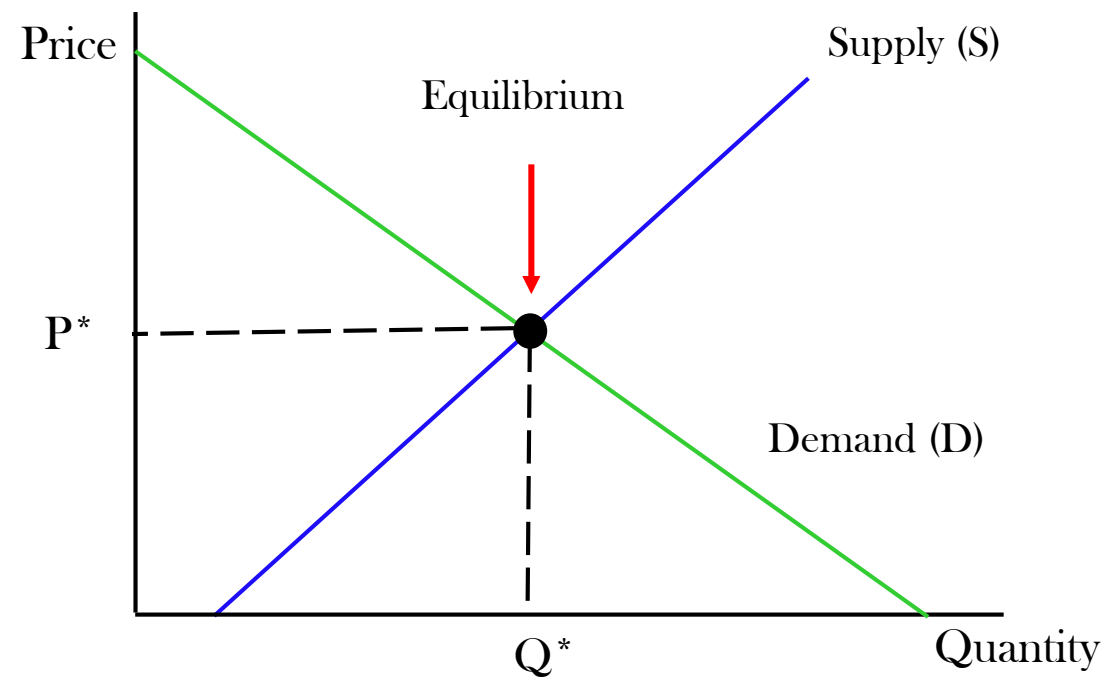
The supply curve

- Example: Draw the supply curve for the function, $Q_s = 2 + 2p$



Market Equilibrium

- is a situation where quantity demanded and quantity supplied are equal
 - point of intersection
- at market equilibrium, the allocation of goods and services is at its most efficient
 - Quantity demanded (Q_d) = Quantity supplied (Q_s)



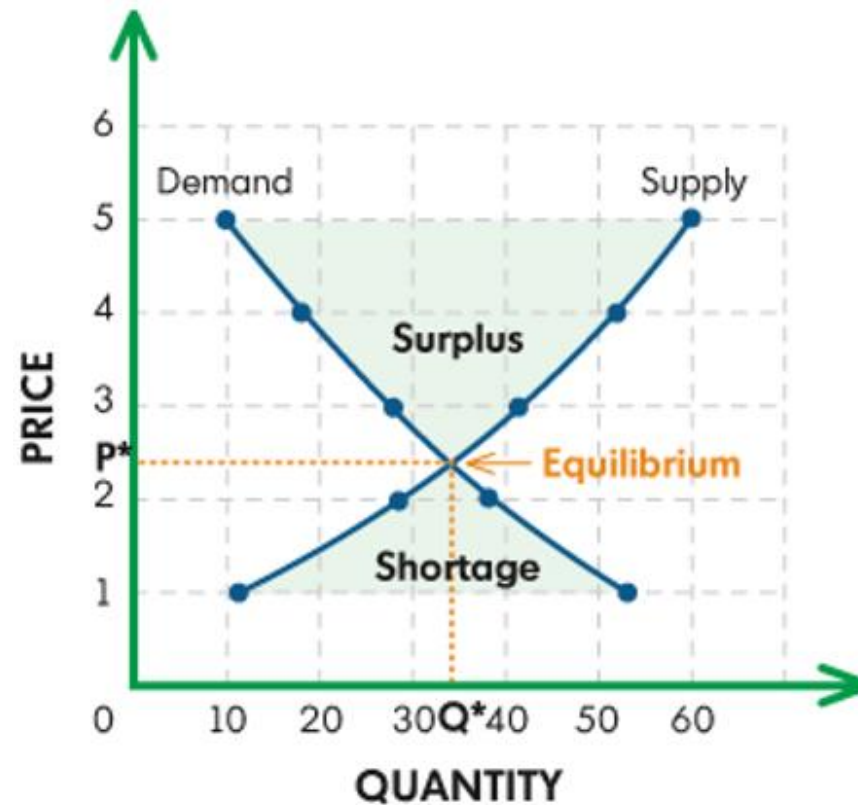
Where, P^* = equilibrium price
 Q^* = equilibrium quantity

- there is only one price at which the quantity of goods or services people want to buy (Q_d) is the same as the quantity suppliers want to sell (Q_s)
 - this is called the equilibrium price - P^*
- at any other price either buyers or sellers are dissatisfied and act to change the quantity demanded or supplied
- the corresponding quantity is the equilibrium quantity - Q^*

- at market equilibrium:
 - the amount that buyers wish to buy is just equal to the amount that sellers wish supply
 - there is no shortage
 - there is no surplus
- equilibrium is a state of rest where there is no pressure for change
- is it possible to attain market equilibrium in health care market?

- Market Failure

- a situation where quantity demanded \neq quantity supplied
- healthcare and market failure??



Calculating Economic Equilibrium

Example 1: Given the following demand and supply functions, calculate equilibrium price (P^*) and equilibrium quantity (Q^*).

a. $Q_d = 26 - 2P$

b. $Q_s = 8P - 4$

Ans. At market equilibrium $Q_d = Q_s$

$$\begin{aligned} 1. \quad 26 - 2P^* &= 8P^* - 4 \\ 10P^* &= 30 \\ P^* &= 3 \end{aligned}$$

$$\begin{aligned} 2. \quad Q^* &= 26 - 2P^* \\ &= 26 - 2(3) \\ Q^* &= 20 \end{aligned}$$

Example 2: Determine P^* and Q^* for the following demand and supply schedules

- Demand Schedule

| P | Q _d |
|------|----------------|
| \$10 | 200 units |
| \$15 | 160 units |
| \$20 | 145 units |
| \$25 | 110 units |
| \$30 | 100 units |

- Supply Schedule

| P | Q _s |
|------|----------------|
| \$10 | 80 units |
| \$15 | 100 units |
| \$20 | 145 units |
| \$30 | 180 units |
| \$40 | 200 units |

At a price of \$20, consumers wish to purchase 145 units and sellers wish to provide 145 units. Thus quantity supplied = quantity demanded and we have an equilibrium of (\$20, 145 units). Thus $P^* = \$20$ and $Q^* = 145$

Example 3: If the demand and supply functions for a given pharmaceutical service are:

a. $Q_d = 100 - 6P$

b. $Q_s = 28 + 3P$

- what is the quantity of pharmaceutical services bought and sold at equilibrium?

Example 4: The following table shows a hypothetical demand schedule for clinical pharmacy services in Dessie town.

| Price of clinical pharmacists consultations (Eth. birr) | Quantity of clinical pharmacists consultations demanded per month |
|---------------------------------------------------------|-------------------------------------------------------------------|
| 0 | 600 |
| 50 | 400 |
| 100 | 150 |
| 150 | 100 |
| 200 | 90 |

- a. Draw a demand curve for clinical pharmacy services using this information.
- b. If the price of a consultation is 50 birr, what is the total amount of money that people will spend on consultations?
- c. If the price of a consultation rose from 100 birr to 200, what would happen to the quantity demanded?

Example 5: The following table shows a hypothetical supply schedule for clinical pharmacy services in Dessie town.

| Price of clinical pharmacists consultations (Eth. birr) | Quantity of clinical pharmacists are prepared to supply per month |
|---------------------------------------------------------|-------------------------------------------------------------------|
| 0 | 0 |
| 50 | 40 |
| 100 | 80 |
| 150 | 100 |
| 200 | 150 |

- a. Draw a supply curve for clinical pharmacy services using this information.
- b. If the price of consultations rose from 50 birr to 150 birr, what would happen to the quantity of consultations clinical pharmacists are prepared to supply?
- c. What is the equilibrium price and quantity for clinical pharmacy services in Dessie town?
- d. How much income are clinical pharmacists receiving when the market is at equilibrium?

Group Assignment

- Overview of market models
 - free command and mixed markets.
 - does a free market operate effectively in health care? Discuss.
- The Demand for Health Care
 - the role of health care as an input to the production of health
 - the responsiveness of demand for health care with respect to time, price, and income
 - the relation of income and the demand for health care
 - health care: a normal, superior, or inferior good?

- The Supply for Healthcare
 - the nature of the production of healthcare
 - the nature of the supply of healthcare
 - factors that affect the supply of healthcare
 - the healthcare workforce market
- The Healthcare market
 - the role of suppliers and consumers in the market
 - the optimal amount of goods or services in a market, at a given price schedule
 - healthcare and market failure
 - discuss the causes of market failure in healthcare