

ECONOMICS NOTE

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Introduction Chapter

1.What is Economics?

Definition of Economics: Economics is a social science that focuses on the production, distribution, and consumption of goods and services, and analyzes the choices that individuals, businesses, governments and nations make to allocate resources.

2. Explain subject matters and principles of Economics? (4) (2020)

Economics can be studied through a) traditional approach and (b) modern approach.

A) Traditional Approach:

Economics is studied under five major divisions namely consumption, production, exchange, distribution and public finance.

Consumption: The satisfaction of human wants through the use of goods and services is called consumption.

Production: Generally, production means to create something. But human being cannot create anything or destroy anything. Man can only change the shape of any natural goods and create the utility of these respective goods. For production, the resources like land, labor, capital and organization are needed.

"If consumption means extracting utility form, then production means putting utility into
"Fraser "Production is the transformation of inputs into outputs. The inputs are what a firm buy (productive resources) and output (goods and services produced) what it sells. Production as the creation of utility or the creation of wants satisfying goods and services."

Exchange: Goods are produced not only for self-consumption, but also for sales. They are sold to buyers in markets. The process of buying and selling constitutes exchange.

Distribution: The production of any agricultural commodity requires four factors, viz., land, labor, capital and organization. These four factors of production are to be rewarded for their services rendered in the process of production. The land owner gets rent, the laborer earns wage, the capitalist is given with interest and the entrepreneur is rewarded with profit. The process of determining rent, wage, interest and profit is called distribution.

Public finance: Government finance is that portion of the economy which is concern with economic activity of government.

This portion conduct with:

1. Level of government activities and expenditure
2. Means or mechanism by which the funds to carry out this activity arranged.
3. Effects of the expenditure and revenue measure upon the private sector of the economy and also overall economy directly or indirectly

B) Modern Approach

The study of economics is divided into: i) Microeconomics and ii) Macroeconomics.

1. **Microeconomics** analyses the economic behavior of any particular decision-making unit such as a household or a firm. Microeconomics studies the flow of economic

resources or factors of production from the households or resource owners to business firms and flow of goods and services from business firms to households. It studies the behavior of individual decision-making unit with regard to fixation of price and output and its reactions to the changes in demand and supply conditions. Hence, microeconomics is also called price theory.

2. Macroeconomics deals with the behavior of aggregates like total employment, gross national product (GNP), national income, general price level, etc. So, macroeconomics is also known as income theory.

Microeconomics cannot give an idea of the functioning of the economy as a whole. Similarly, macroeconomics ignores the individual's preference and welfare. What is true of a part or individual may not be true of the whole and what is true of the whole may not apply to the parts or individual decision - making units.

3. Distinguish between Microeconomics and Macroeconomics?

(4) (2020,2019)

Microeconomics	Macroeconomics
Meaning	
Microeconomics is the branch of Economics that is related to the study of individual, household and firm's behavior in decision making and allocation of the resources. It comprises markets of goods and services and deals with economic issues.	Macroeconomics is the branch of Economics that deals with the study of the behavior and performance of the economy in total. The most important factors studied in macroeconomics involve gross domestic product (GDP), unemployment, inflation and growth rate etc.
Area of study	
Microeconomics studies the particular market segment of the economy	Macroeconomics studies the whole economy, that covers several market segments
Deals with	
Microeconomics deals with various issues like demand, supply, factor pricing, product pricing, economic welfare, production, consumption, and more.	Macroeconomics deals with various issues like national income, distribution, employment, general price level, money, and more.
Business Application	
It is applied to internal issues.	It is applied to environmental and external issues.
Scope	
It covers several issues like demand, supply, factor pricing, product pricing, economic welfare, production, consumption, and more.	It covers several issues like distribution, national income, employment, money, general price level, and more.

Significance	
It is useful in regulating the prices of a product alongside the prices of factors of production (labor, land, entrepreneur, capital, and more) within the economy.	It perpetuates firmness in the broad price level, and solves the major issues of the economy like deflation, inflation, rising prices (reflation), unemployment, and poverty as a whole.
Limitations	
It is based on impractical presuppositions, i.e., in microeconomics, it is presumed that there is full employment in the community, which is not at all feasible.	It has been scrutinized that the misconception of composition' incorporates, which sometimes fails to prove accurate because it is feasible that what is true for aggregate (comprehensive) may not be true for individuals as well.

4. Explain different economic system regarding means of production

(6) (2020)

Meaning of Economic System

An economic system is a mechanism with the help of which the government plans and allocates accessible services, resources, and commodities across the country. Economic systems manage elements of production, combining wealth, labor, physical resources, and business people. An economic system incorporates many companies, agencies, objects, models, and deciding procedures.

Types of Economic Systems

There are several different economic systems that exist, each with its own approach to the means of production. The means of production refer to the resources and tools necessary for the creation of goods and services.

Here are some of the major economic systems and their approaches to the means of production:

1. **Capitalism:** Under capitalism, the means of production are privately owned and operated for profit. Capitalists use their own resources to invest in the means of production and hire workers to produce goods and services. Capitalism is characterized by competition, with the goal of maximizing profit.
2. **Socialism:** In a socialist economic system, the means of production are owned and controlled by the state or the workers themselves. The idea is that everyone should have equal access to the means of production and the resulting goods and services. Socialism is characterized by a focus on public ownership and control of resources.
3. **Communism:** Communism is an extreme form of socialism, in which the means of production are owned by the state and all economic activity is centrally planned. The goal is to eliminate the concept of private property and create a classless society. In practice, communist regimes have often resulted in authoritarianism and the suppression of individual freedoms.

4. **Mixed economy:** A mixed economy combines elements of capitalism and socialism. In a mixed economy, some resources are privately owned and operated for profit, while others are publicly owned and operated for the benefit of all. The government plays a significant role in regulating the economy and providing social services.
5. **Traditional economy:** In a traditional economy, the means of production are owned and operated by the community or family groups. The economy is based on traditional customs and practices, with limited technology and innovation. This type of economy is often found in rural areas and developing countries.

5. Explain the necessity of economics for Engineering. (4) (2020)

Economics plays a crucial role in the field of engineering, and here are some reasons why:

Cost Analysis:

Engineers are responsible for designing and developing products, systems, and processes that are efficient, effective, and affordable. To achieve this, they need to understand the economic costs and benefits associated with different engineering decisions. Economic analysis helps engineers to evaluate the feasibility of different design options, estimate production costs, and determine the optimal production quantities.

Project Management:

Economics provides engineers with the tools to manage complex engineering projects effectively. Engineers need to be able to estimate the costs and benefits of a project, identify and manage risks, and determine the most cost-effective way to allocate resources. Economic analysis helps engineers to make informed decisions about project planning, resource allocation, and risk management.

Business Strategy:

Engineers who work in the private sector need to have a good understanding of business strategy to be successful. They need to understand market trends, identify customer needs, and develop products that meet those needs. They also need to be able to evaluate the financial performance of their products and services. Economics provides engineers with the tools to analyze market trends, evaluate competition, and develop effective business strategies.

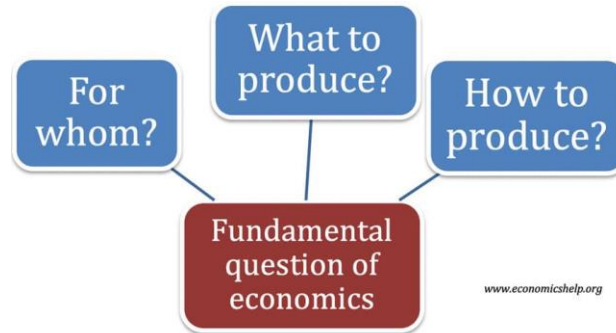
Policy Analysis:

Engineers are increasingly involved in shaping public policy, particularly in areas such as energy, transportation, and the environment. Economic analysis is essential for evaluating the costs and benefits of different policy options, determining the most cost-effective way to achieve policy goals, and assessing the impact of policy decisions on the economy and society.

6. Explain the basic economic problems.

(4) (2019)

Basic Economic Problem



Therefore because of scarcity, economics is concerned with:

- What to produce?
- How to produce?
- For whom?

The basic economic problem refers to the fundamental issue of scarcity, which exists because human wants and needs are unlimited, while the resources available to satisfy those wants and needs are limited. In other words, people have unlimited wants but limited resources to fulfill them. This creates three basic economic problems:

1. **What to produce:** This refers to the problem of choosing which goods and services should be produced with the limited resources available. Because resources are scarce, producers must decide which products and services will be most in demand, and therefore most profitable, and allocate their resources accordingly.
2. **How to produce:** This refers to the problem of determining the most efficient way to produce goods and services, given the limited resources available. Producers must decide which technologies, methods, and inputs will be most efficient in producing their chosen goods and services.
3. **For whom to produce:** This refers to the problem of determining who will benefit from the goods and services produced. Because resources are scarce, not everyone can have everything they want. Producers must decide who their target market is, and what price they are willing to pay for their goods and services.

These three economic problems are the foundation of all economic decision-making, and they are central to the study of economics. Economists work to understand how these problems are addressed and resolved by individuals, firms, and governments, and how economic systems can be designed to promote the most efficient and equitable allocation of resources.

7. Explain the correlation of economics and engineering.

(2) (2019)

Economics and engineering are two disciplines that are closely related to each other. Engineering deals with the design, development, and production of goods and services, while economics is concerned with the production, distribution, and consumption of those goods and services in society.

The two fields intersect in several ways, including:

1. **Resource Allocation:** One of the fundamental principles of economics is the efficient allocation of scarce resources. Engineers play a critical role in this process by designing efficient systems and processes that can make the best use of available resources.
2. **Cost-Benefit Analysis:** Engineers must consider the cost of production and the benefits of their products or services. This is similar to the cost-benefit analysis that economists use to evaluate the potential costs and benefits of policies, programs, and projects.
3. **Innovation and Technology:** Innovation and technological advancements are key drivers of economic growth. Engineers play a central role in developing new technologies and improving existing ones, which can have a significant impact on economic productivity and growth.
4. **Infrastructure:** Engineering plays a critical role in developing and maintaining the infrastructure that is essential for economic growth, such as transportation systems, power grids, and communication networks.
5. **Industrial Organization:** Engineering and economics both have a keen interest in industrial organization and market structure. Understanding how markets work and how firms compete is essential for engineers and economists alike.

Overall, economics and engineering are two fields that are closely intertwined and complementary to each other. The application of engineering principles to economic problems and vice versa can lead to innovative solutions and improved economic outcomes.

Demand & Supply

Define Demand and Supply. What are determinants of quantity demanded and supplied. (4) (2020)

Demand: In general sense demand means desire for any goods. Besides desire for any goods, willingness to pay and ability to purchase is also essential.

“By demand we mean the various quantities of a given commodity or service which consumers would buy in one market in a given period of time at various prices.: **F. Baber**

Elements of demand

- Willingness to have goods or service
- Ability to purchase the goods or services.
- Willingness to pay money for the goods and services.

Determinants of Demand

Now that we have broken down the definition of determinants of demand, we can take a look at the determinants of demand:

The determinants of demand are:

1. Consumer taste
2. Number of buyers in the market
3. Consumer income
4. Price of related goods
5. Consumer expectations

Determinants of Demands: Effects

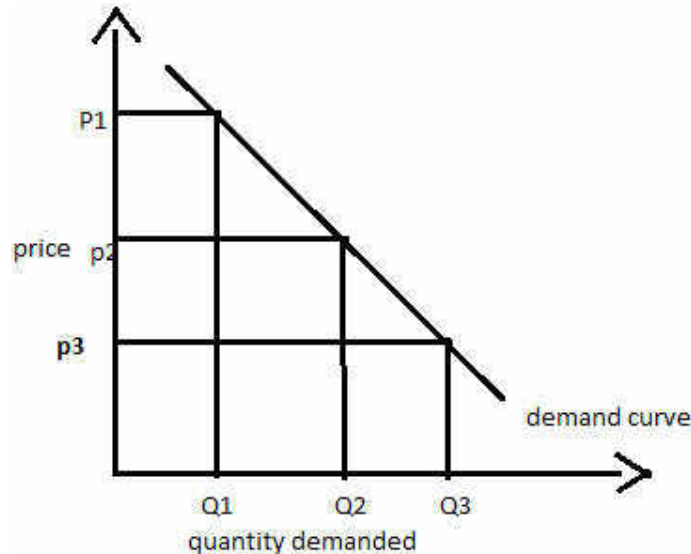
Let's go over the basic idea of each determinant of demand to further our understanding. First, we will look at how each determinant can **increase** the demand for a good or service.

- **Consumer taste:** if consumers like a particular good or service more than before, the demand curve will shift to the right.
- **The number of buyers in the market:** if the number of buyers in the market increase, the demand will increase.
- **Consumer income:** if consumers' income increases in the market, the demand will increase for normal goods.
- **Price of related goods:** an increase in the price of a **substitute good** will increase the demand for a good. A decrease in the price of a **complementary good** will also increase the demand for a good.
- **Consumer expectations:** consumers' expectations of higher prices in the future will increase demand today.

What is Law of Demand

Definition: The law of demand states that other factors being constant (ceteris paribus), price and quantity demand of any good and service are inversely related to each other. When the price of a product increases, the demand for the same product will fall.

Description: Law of demand explains consumer choice behavior when the price changes. In the market, assuming other factors affecting demand being constant, when the price of a good rises, it leads to a fall in the demand of that good. This is the natural consumer choice behavior. This happens because a consumer hesitates to spend more for the good with the fear of going out of cash.



The above diagram shows the demand curve which is downward sloping. Clearly when the price of the commodity increases from price p_3 to p_2 , then its quantity demand comes down from Q_3 to Q_2 and then to Q_1 and vice versa.

Preconditions of law of demand

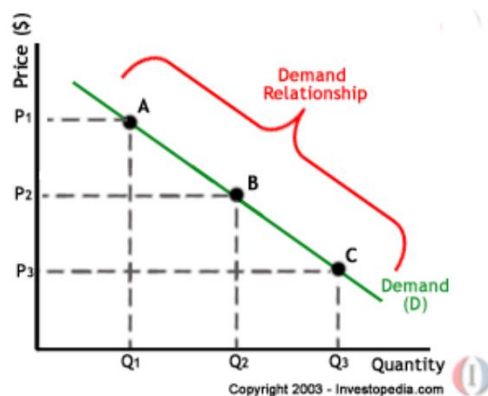
- Income of the buyer.
- Taste, habit and nature of the buyer.
- Prices of other related goods.
- Number of buyers

Demand schedule

A chart which shows the different prices of a certain goods and the quantity of demand at different prices is called demand schedule. The law of demand is shown by the demand schedule.

Price of goods	Total demand
5 Tk	5 Unit
4 Tk	10Unit
3 Tk	15 Unit
2 Tk	20 Unit

The geometrical expression of demand schedule is called the demand curb.

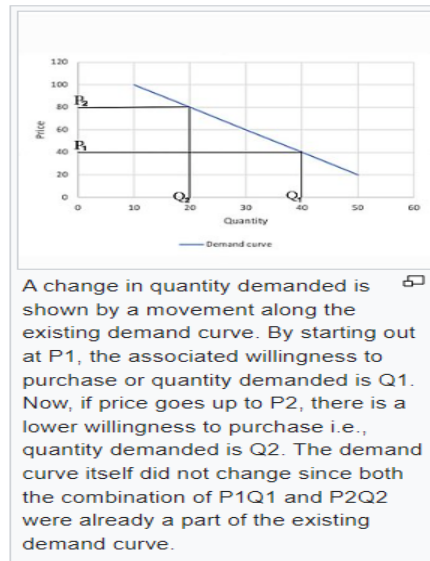


A, B and C are points on the demand curve. Each point on the curve reflects a direct correlation between quantity demanded (Q) and price (P). So, at point A, the quantity demanded will be Q1 and the price will be P1, and so on. The demand relationship curve illustrates the negative relationship between price and quantity demanded. The higher the price of a good the lower the quantity demanded (A), and the lower the price, the more the good will be in demand (C).

Demand versus quantity demanded

It is very important to apprehend the difference between demand and quantity demanded as they are used to mean different things in the economic jargon.

On the one hand, demand refers to the demand curve. Changes in demand are depicted graphically by a shift in the demand curve to the left or right. Changes in the demand curve are usually caused by 5 major factors, namely: number of buyers, consumer income, tastes or preferences, price of related goods and future expectations.



On the other hand, quantity demanded refers to a specific point located on the demand curve which corresponds to a specific price. Therefore, quantity demanded represents the exact quantity of a good or service demanded by a consumer at a particular price, conditional on the other determinants. A change in quantity demanded can be indicated by a movement along the existing demand curve that is caused only by a change in price.

For instance, let's take the example of a housing market. An increase or decrease in price of housing will not shift the demand curve rather it will cause a movement along the demand curve for housing i.e. change in quantity demanded. But if we look at mortgage rates (a factor other than price), even if housing prices remain unchanged, an increased mortgage rate leads to a lower willingness to buy at all prices, shifting the demand curve to the left. Consumers will buy less, even though the price is the same. On the other hand, lower mortgage rate leads to a higher willingness to buy at all prices, and eventually shifting the demand curve to the right. Consumers will now buy more, even though the price has not changed at all. Such variation in demand can be explained by demand elasticity.

Supply:

Supply means the amount offer for sale at a given prices. Supply as a schedule of the amount of a good that would be offered for sale at all possible prices at any one instant of time, or during any period of time.

Supply and production

- A small quantity of production is kept as stock for sale in future at high price. In this situation supply will be less than production.
- Some quantity of production is kept for the future use of producer, in this situation supply will be also less than production.

- For perishable commodities like fish, milk, vegetables, supply will be less than production because some of the perishable commodities go on perish before supply.

Supply and stock

- Stock is the total volume of commodity which can be brought into the market for sale at a short notice and supply means the quantity which is actually brought into the market.

Determinants of Supply

The determinants of supply are:

- **Resource price**
- **Number of sellers in the market**
- **Technology**
- **Taxes and subsidies**
- **Prices of other goods**
- **Producer expectations**

Determinants of Supply: Effects

Let's go over the basic idea of each determinant of supply to further our understanding. First, we will look at how each determinant can affect the aggregate supply of a good or service.

- **Resource price**: if the price of resources used for the production of a good decreases, the supply will increase.
- **Technology**: if technology improves, supply will increase.
- **Subsidies and taxes**: if the government subsidizes the good more heavily, supply will **increase**. If the government increases taxation, supply will **decrease**.
- **Price of other goods**: imagine that a firm produces laptops, but also produces alternative goods like cell phones and televisions. If the prices of cell phones and televisions go up, then the firm will increase the supply of the other goods and decrease the supply of laptops. This will occur since the firm will want to take advantage of the higher prices of cell phones and televisions to increase its profit.
- **Producers' expectations**: usually in the case of **manufacturing**, if producers expect the price of a good to increase in the future, producers will increase their supply today.
- **The number of sellers in the market**: if there are more sellers in the market, there will be an increase in supply.

Law of supply

Supply has functional relationship with price.

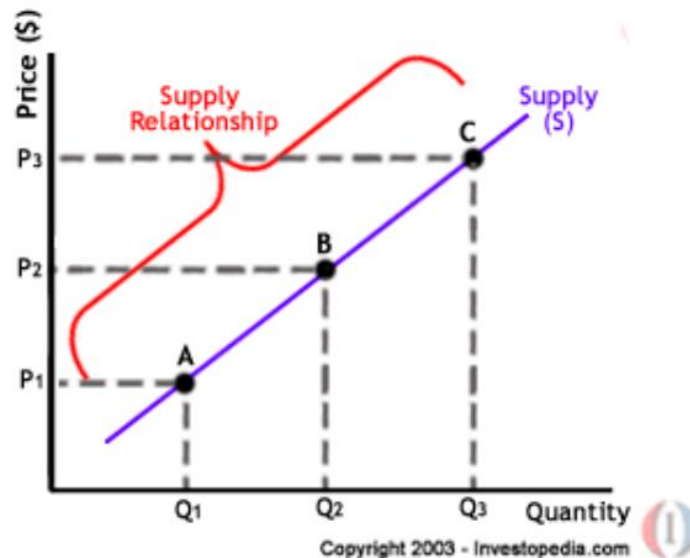
“Other things remaining the same, as the price of a commodity rises its supply extended, and as the price falls its supply is contracted “. This means that the higher the price, the higher the quantity supplied. Producers supply more at a higher price because selling a higher quantity at a higher price increases revenue.

Supply schedule

Supply schedule presents the relation between prices and commodities that people are willing to produce and sell.

Price (per dozen)	Quantity supplied (per dozen)
7	43
6	40
5	36
4	31
3	25
2	18

Supply curve



A, B and C are points on the supply curve. Each point on the curve reflects a direct correlation between quantity supplied (Q) and price (P). At point B, the quantity supplied will be Q2 and the price will be P2, and so on.

Equilibrium of demand and supply

- Market equilibrium is reached by bringing together demand for and supply of a commodity. Market is arranged which buyers and sellers contact each other to do transaction.

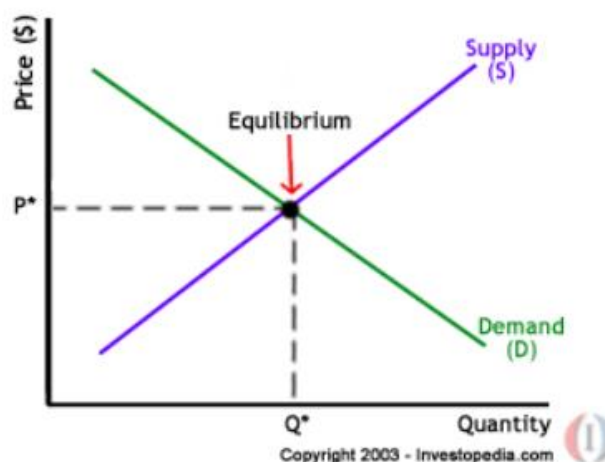
- Consumers bring demand to the market for buying goods to satisfy their wants. Producers and sellers bring supply of their goods to the market to sell them and earn profit.
- The market demand and supply determine prices of goods the quantities exchange between the buyers and sellers.
- Market equilibrium is reached when market demand for and supply of a good are in balance and as a result equilibrium prices and quantities are determined.

Price equilibrium

Price of commodity	Demand	Supply
5 Tk	2000 unit	800 unit
6 Tk	1800 unit	1000 unit
7 Tk	1600 unit	1200 unit
8 Tk	1400 unit	1400 unit
9 Tk	1200 unit	1600 unit

Equilibrium

When supply and demand are equal (i.e. when the supply function and demand function intersect) the economy is said to be at equilibrium. At this point, the allocation of goods is at its most efficient because the amount of goods being supplied is exactly the same as the amount of goods being demanded. Thus, everyone (individuals, firms, or countries) is satisfied with the current economic condition. At the given price, suppliers are selling all the goods that they have produced and consumers are getting all the goods that they are demanding.



As you can see on the chart, equilibrium occurs at the intersection of the demand and supply curve, which indicates no allocative inefficiency. At this point, the price of the goods will be P^* and the quantity will be Q^* . These figures are referred to as equilibrium price and quantity.

In the real market place equilibrium can only ever be reached in theory, so the prices of goods and services are constantly changing in relation to fluctuations in demand and supply.

Define elasticity. What do you mean by price, income, and cross elasticity of demand. (2019,2020))(6.4)

Elasticity

Elasticity of supply and demand is a measure that represents how responsive or sensitive each of the functions is to changes in various economic factors, such as price, income, expectations, and others.

Demand elasticity

The elasticity of demand refers to the sensitivity of a goods demand as compared to the fluctuation of other economic factors, such as price, income, etc. The law of demand explains that the relationship between Demand and Price is directly inverse. However, the demand for some goods are more receptive to a change in price than others. There are four major elasticities of demand, these being the price elasticity of demand, income elasticity of demand, cross elasticity of demand, and advertising elasticity of demand.

Price elasticity of demand

The variation in demand **with regards to a change in price** is known as the price elasticity of demand. The formula to solve for the coefficient of price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in Price.

$$E_{(p)} = \frac{\Delta Q/Q}{\Delta P/P}$$

An elastic demand is one in which the elasticity is greater than one, and thus a change in price has substantial effect on the demand of that good. A good is inelastic if the change in price does not directly cause a fluctuation in demand, and therefore an inelastic demand is one in which elasticity is less than one. A good is unitary elastic if the elasticity is equal to one.

Cross elasticity of demand

The cross elasticity of demand is an economic concept that measures the relative change in demand of a goods when another goods varies in price. The formula to solve for the coefficient of cross elasticity of demand is calculated by dividing **the percentage change in quantity demanded of good A by the percentage change in price of good B.**

$$\text{Cross-price Elasticity Of Demand} = \frac{\% \text{ change in quantity demanded of good A}}{\% \text{ change in price of good B}}$$

The Cross elasticity of demand, also commonly referred to as the Cross-price elasticity of demand, allows companies to establish competitive prices against substitute goods and complementary goods. The metric figure produced by the equation thus determines the strength of both the relationship and competition between the two goods.

Income elasticity of demand

Income elasticity of demand is an economic measurement tool developed to measure the sensitivity of a goods quantity demanded when there is a change in the real income of a consumer. To calculate the income elasticity of demand, the percentage change in quantity demanded is divided by the percentage change in the consumers income.

$$\epsilon_d = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$

The Income elasticity of demand allows businesses to analyze and further predict the impact of business cycles on total sales. The Income elasticity of demand thus allows goods to be broadly categorized as Normal goods and Inferior goods. A positive measurement suggests that the good is a normal good, and a negative measurement suggests an inferior good. The Income elasticity of demand effectively represents a consumer's idea as to whether a good is a luxury or a necessity.

Discuss different concept of price elasticity graphically.

Discuss the calculation methods of different price elasticity graphically.

(2019, 2020) (6) (4)

The precise definition of price elasticity is the percentage change in quantity demanded divided by the percentage change in price. We use the symbol E_D to represent price elasticity, and for convenience we drop the minus signs, so elasticities are all positive. We can calculate the coefficient of price elasticity numerically according to the following formula:

$$\begin{aligned} \text{Price elasticity of demand} &= E_D \\ &= \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}} \end{aligned}$$

Types of price elasticity of demand

There are three types of demand based on how much the quantity demanded of a good change when its price changes.

These are:

- Unitary price elastic demand
- Price inelastic demand
- Price elastic demand

Unitary price elastic demand

Demand is unitary elastic (absolute value of elasticity equal to 1) if a change in the own price of a good leads to a proportionate change in the quantity demanded.

Example: -Larry enjoys having a full English breakfast and consumes bacon every morning. Due to supply issues, the price of bacon has gone up by 100% and Larry decides to not consume bacon anymore. He reduces his bacon consumption by 100% (the same percentage as the price increase) as his demand has unitary price elasticity. Calculation: $100\% / 100\% = 1$.

Price inelastic demand

Demand is price inelastic (elasticity is less than 1 in absolute value) if a change in the own price of a good leads to a less than proportionate change in the quantity demanded.

Example: -John is a fan of Apple products. Whenever a new iPhone comes out he is the first one to pre-order it. If the price of Apple iPhones increases by 20%, John will still buy the same number of iPhones. His demand would decrease, according to the law of demand, but by only 2% compared to the price change. This is because his demand for iPhones is price inelastic. Calculation: $2\% / 20\% = 0.1$.

Consider an increase in the price from P1 to P2 as shown in Figure 2 across the three figures. In the case of price inelastic demand, shown in the second diagram, the price increase would reduce quantity demanded by less compared to demand with unitary elasticity.

Price elastic demand

Demand is price elastic (elasticity is greater than 1 in absolute value) if a change in the own price of a good leads to a more than proportionate change in the quantity demanded.

Example: -Kayla likes wearing jewelry. Due to an oversupply in the market, the price of jewelry decreases by 20%. Kayla rushes to buy more jewelry, increasing her demand by 60%. Her quantity demand increases by more compared to the price change. This is because her demand for jewelry is price elastic. Calculation: $60\% / 20\% = 3$.

Price Elasticity in Diagrams

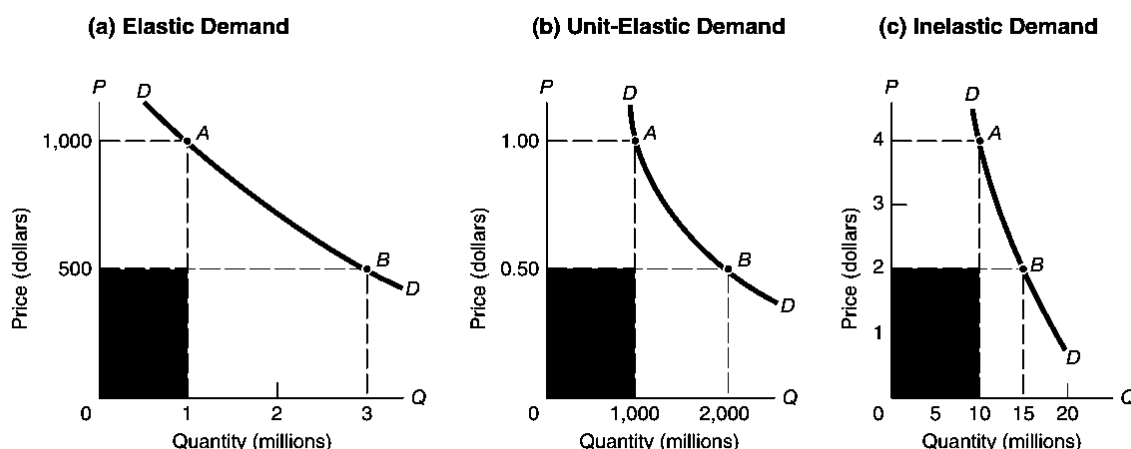


FIGURE 4-2. Price Elasticity of Demand Falls into Three Categories

It's possible to determine price elasticities in diagrams as well. Figure 4 -2 illustrates the three cases of elasticities. In each case, price is cut in half and consumers change their quantity demanded from A to B.

In Figure 4 -2 (a), a halving of price has tripled quantity demanded. In Figure 4 -2 (c), cutting price in half led to only a 50 percent increase in quantity demanded, so this is the case of price-inelastic demand. The borderline case of unit-elastic demand is shown in Figure 4 -2 (b); in this example, the doubling of quantity demanded exactly matches the halving of price.

Explain the usage of elasticity in policy making with example. (2019,2020)

Elasticity is a concept in economics that measures the responsiveness of one economic variable to changes in another variable. It is commonly used in policy making as a tool to analyze the likely effects of a policy change on the behavior of individuals and firms, and to estimate the likely impact of the policy on economic outcomes.

For example, consider the policy of increasing the tax on cigarettes. The demand for cigarettes is likely to be elastic, meaning that consumers are likely to be very responsive to changes in the price of cigarettes. If the price of cigarettes goes up, consumers are likely to reduce their consumption of cigarettes significantly, and if the price of cigarettes goes down, they are likely to increase their consumption.

Knowing the elasticity of demand for cigarettes, policymakers can estimate how much the consumption of cigarettes will fall in response to an increase in the tax. This information can be used to determine the likely impact of the policy on the smoking habits of the population, the health consequences of smoking, and the revenue generated by the tax.

Similarly, policymakers can use elasticity to analyze the impact of other policies, such as minimum wage laws, subsidies for renewable energy, or tariffs on imported goods. By understanding the likely effects of these policies on the behavior of individuals and firms, policymakers can make more informed decisions about the best way to achieve their policy goals.

“The market equilibrium comes at the price and quantity where forces of supply and demand are in balance” --- Explain. (2020) (4)

Market equilibrium is a state in which the quantity of a good or service demanded by consumers is equal to the quantity supplied by producers at a specific price. In other words, it is the point where the forces of supply and demand are in balance.

The law of supply and demand states that the price of a good or service will adjust until the quantity demanded is equal to the quantity supplied. This means that if the price of a good or service is too high, there will be a surplus of supply and not enough demand. Producers will then need to lower the price to stimulate demand and sell their goods. On

the other hand, if the price is too low, there will be excess demand and not enough supply, causing producers to increase their prices.

In a free market, consumers and producers interact to determine the equilibrium price and quantity. The demand curve shows the quantity of a good or service that consumers are willing to purchase at various prices, while the supply curve shows the quantity that producers are willing to supply at various prices. The point where these two curves intersect is the market equilibrium, where the quantity supplied equals the quantity demanded.

At this point, the market is in balance, and there is no incentive for producers to change the price because the quantity supplied and demanded are already matched. Any deviation from the equilibrium price and quantity will result in an excess supply or excess demand, causing producers and consumers to adjust their behavior until the market returns to equilibrium.

Overall, market equilibrium is an essential concept in economics, as it helps to explain how prices and quantities are determined in a free market and how changes in supply and demand affect the market.

Math & Examples:

DEMAND FUNCTION AND SUPPLY FUNCTIONS

Demand Function

In the economics the relationship between price per unit and quantity demanded is known as demand function. Generally, when the price per unit increases, quantity demanded decreases. Therefore, if we take quantity demanded along x axis and the price per unit along the y axis then the graph will be a curve sloping downwards from left to right as shown in figure.

The demand function is generally denoted as $q = f(p)$.

The following observations can be made from the graph.

1. The slope of the demand curve is negative.
2. Only the first quadrant part of the demand function is shown, since the price p and the quantity demanded q are positive.

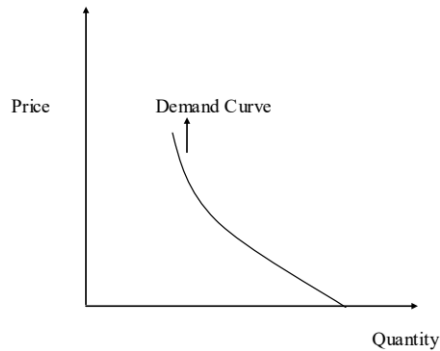


Figure : Demand

Supply Function

In economics the relationship between price per unit and the quantity supplied by the manufacturer is called supply function. Generally, when the price per unit increases, the quantity supplied also increases. Therefore, if we take the quantity supplied along the x axis and price per unit along the y axis then the graph will be a curve sloping upwards from left to right as shown in following figure.

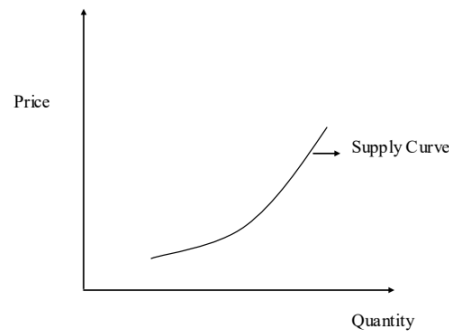


Figure: Supply Curve

Following observations can be made from supply curve.

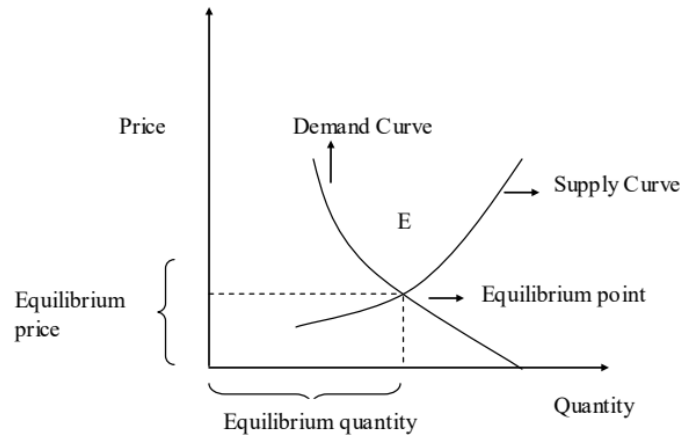
1. The slope of the supply curve is positive.
2. Only the first quadrant part of the supply function is shown, since the price p and the quantity supplied are non-negative.

Equilibrium price

The price at which quantity demanded is equal to the quantity supplied is called equilibrium price.

Equilibrium quantity

The quantity obtained by substituting the equilibrium price in any one of the given demands and supply function are called equilibrium quantity. In the figure, the point E is the equilibrium point in which, the x coordinate of the point E is Equilibrium quantity and they coordinate of the point E is Equilibrium price.



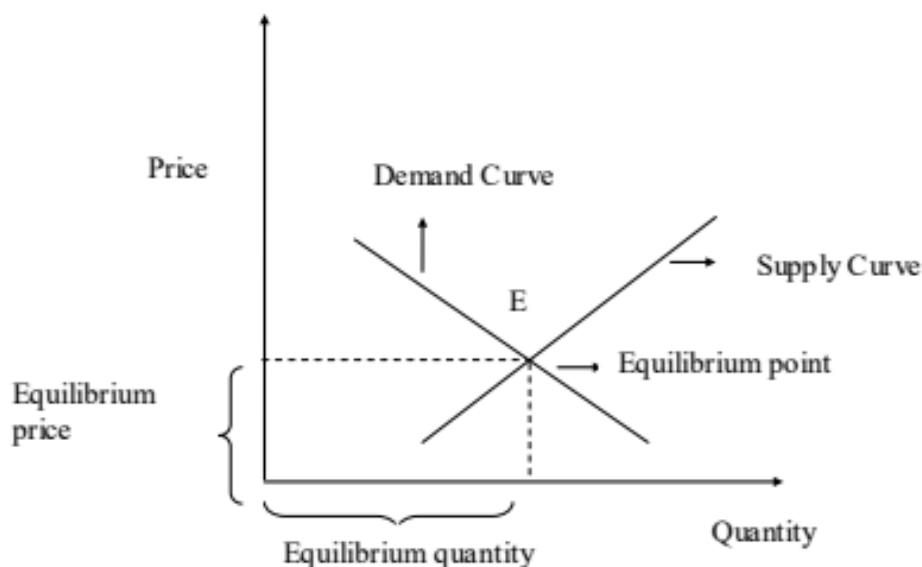
Example 1: As a simple example let us assume that both the demand and supply functions are linear. Let us assume that the demand function is given by

$$q = a + bp$$

Since the demand function slopes downwards, b is negative. Also let us assume that the supply function is given by

$$q = c + dp$$

where d is positive. The graphs of these functions are shown in the following figure:



At the equilibrium point both the demand and supply are equal.

$$\therefore a + bp = c + dp$$

$$\text{i.e. } p(d-b) = a-c$$

\therefore

$$p = \frac{a-c}{d-b}$$

This is the equilibrium price.

Example 2: Let the demand function be $q = 10 - 0.4p$ and supply function be $q = -5 + 0.6p$

then the equilibrium price is given by

$$10 - 0.4p = -5 + 0.6p$$

$$\text{i.e. } p = 15$$

which is the equilibrium price and the equilibrium quantity is obtained by substitution this value of p either in the demand or in the supply function

$$\therefore \text{equilibrium quantity} = 10 - 0.4 \times 15$$

$$= 4$$

Examples 3: The supply and demand curves for a commodity are known to be $q_s = p-1$ and q_d

$$= \frac{12}{p} \quad (q_s = \text{quantity supplied; } q_d = \text{quantity demanded}). \text{ Find the equilibrium price.}$$

Solution

Equilibrium price is $q_s = q_d$

$$\therefore p-1 = \frac{12}{p}$$

or, $p^2 - p - 12 = 0$

or, $(p+3)(p-4) = 0$

$\therefore p = 4$ or -3

Hence, equilibrium price is 4 units.

Production and Cost

Define “Production” and discuss the importance of various factor of production.(6) (2019)

Production: Generally, production means to create something. But human being cannot create anything or destroy anything. Man can only change the shape of any natural goods and create the utility of these respective goods.

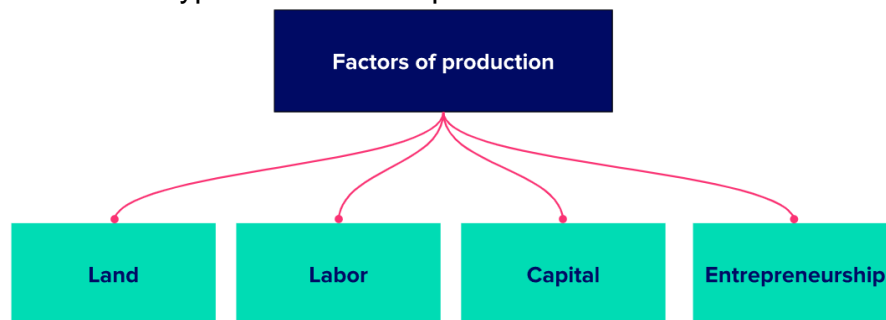
- “If consumption means extracting utility form, than production means putting utility into “Fraser
- “Production is the transformation of inputs into outputs. The inputs are what a firm buy (productive resources) and output (goods and services produced) what it sells. Production as the creation of utility or the creation of wants satisfying goods and services.”

Production is best defined as the creation or addition of value or of wealth it may consist not only of goods but also of the services such as of doctors, teachers, etc. Production, in short, does not mean creator of all utilities, but only such utilities as have value-in-exchange.

Factors of Production:

Factors of production are economic resources used to create goods and services.

There are four different types of factors of production in economics: land and natural resources, human capital, physical capital, and entrepreneurship. Figure 1 below summarizes all the four types of factors of production.



Land & Natural Resources

The land is the foundation of many economic activities, and as a factor of production, land can be in the form of commercial real estate or agricultural property. The other valuable benefit that is extracted from land is natural resources. Natural resources such as oil, minerals, precious metals, and water are resources that are factors of production and fall under the category of land.

Example: -

Company X wants to build a new factory for its operations. The first factor of production they need to start their business is land. Company X works towards acquiring land by contacting business realtors and viewing listings for commercial property.

Physical Capital

Physical capital is resources that are manufactured and are man-made and used in the production of goods and services. Some examples of capital include tools, equipment, and machinery.

Example: -

Company X has acquired the required land to build its factory. The next step is for the company to purchase physical capital such as machines and equipment needed to manufacture its goods. Company X looks for distributors that will have the best quality machines and equipment, as the company does not want to compromise on the quality of its goods.

Human Capital

Human capital which is also known as labor, is an accumulation of education, training, skills, and intellect that are used in combination to produce goods and services. It also refers to the general availability of the workforce.

Example: -

Now that company X has both land and physical capital, they're eager to kick-start production. However, to start production, they need human capital or labor to produce the company's goods alongside managing the factory's business operations. The company has put out job listings for production and factory workers' roles, alongside listings for production supervisors and managers. The company will be providing competitive pay and benefits to attract the desired talent and number of workers needed for production.

Entrepreneurship

Entrepreneurship is the ideas, the ability to take the risk, and the combination of the other factors of production to produce goods and services.

Example: -

Company X has been successfully able to start production after recruiting skilled workers to operate their machines and equipment, alongside operational management staff as well. The company is eager to grow its business and is working on developing strategies to increase revenue through innovative ideas.

Short-Run Production

Based on the name alone, you may assume that short-run production is simply a shorter production cycle than its long counterpart. However, short-run production actually has a different meaning. The term “short-run production” refers to a production cycle in which at least one factor is fixed.

Most companies have multiple factors that they use to produce goods or services. Also known as input factors, they can consist of labor, materials, equipment, capital and real property. Some of these factors may remain fixed, meaning they won't change throughout the course of production. Other factors may fluctuate. In short-term production, at least one of these factors remains fixed.

Long-Run Production

Long-run production, on the other hand, occurs when all factors of production fluctuate. Regardless of which factors a company uses to produce its goods or services, they are considered variable factors in long-run production. Companies can't accurately predict how many units of each input factor they'll consume. Long-run production involves the exclusive use of variable factors that can fluctuate.

In many cases, short-term production cycles have a shorter length than long-run production cycle. Many companies perform short-run production in a period of six months or less. In comparison, long-run production may extend anywhere from six months to one year.

It's important to note that short-run and long-run aren't the only types of production cycles. There's also very long-run production. Very long-run production occurs when both the internal and external factors of production fluctuate. It doesn't just consider a company's internal factors. It looks at external factors as well. Regulatory changes, for instance, are considered an external factor. In long-run production, a change of regulation is something that's outside of a company's control.

The Boundary between the Two:

The boundary between the short run and the long run is not defined by reference to any calendar time such as a year, or a month or a quarter. It varies from industry to industry and from time to time within the same industry.

In most plantation industries the long run is 15-20 years. For example, rubber trees require a very long time to grow. On the other hand, in a barber's shop it may be just a week. A barber may require only a few days to make all types of changes in his small shop.

In fact, the boundary between the two runs is defined only in terms of the fixity of one factor of production. The length of the short run is influenced by two sets of considerations: technological (such as how quickly equipment can be manufactured or installed) and economic (such as the price the firm is willing to pay for equipment).

We may now turn to a consideration of how output varies in response to input changes in the short run as also in the long run. It may be noted, at the outset that short-run output changes reflect changes in the proportions in which factors are combined.

On the other hand, long-run changes in output reflect changes in the entire scale of operation. In other words, in short-run we study the returns to a variable factor (such as labour) and in the long run we study the return to scale.

Explain the law of variable proportion. (6)(3) (2020,2019)

Law of Variable Proportion

Law of Variable Proportion is regarded as an important theory in Economics. It is referred to as the law which states that when the quantity of one factor of production is increased, while keeping all other factors constant, it will result in the decline of the marginal product of that factor.

Law of variable proportion is also known as the Law of Proportionality. When the variable factor becomes more, it can lead to negative value of the marginal product.

The law of variable proportion can be understood in the following way.

When variable factor is increased while keeping all other factors constant, the total product will increase initially at an increasing rate, next it will be increasing at a diminishing rate and eventually there will be decline in the rate of production.

Why is it called the Law of Variable Proportions?

As one input varies and all others remain constant, the factor ratio or the factor proportion varies. Let's look at an example to understand this better:

Let's say that you have 10 acres of land and 1 unit of labour for production. Therefore, the land-labour ratio is 10:1. Now, if you keep the land constant but increase the units of labour to 2, the land-labour ratio becomes 5:1.

Therefore, as you can see, the law analyses the effects of a change in the factor ratio on the amount of output and hence called the Law of Variable Proportions.

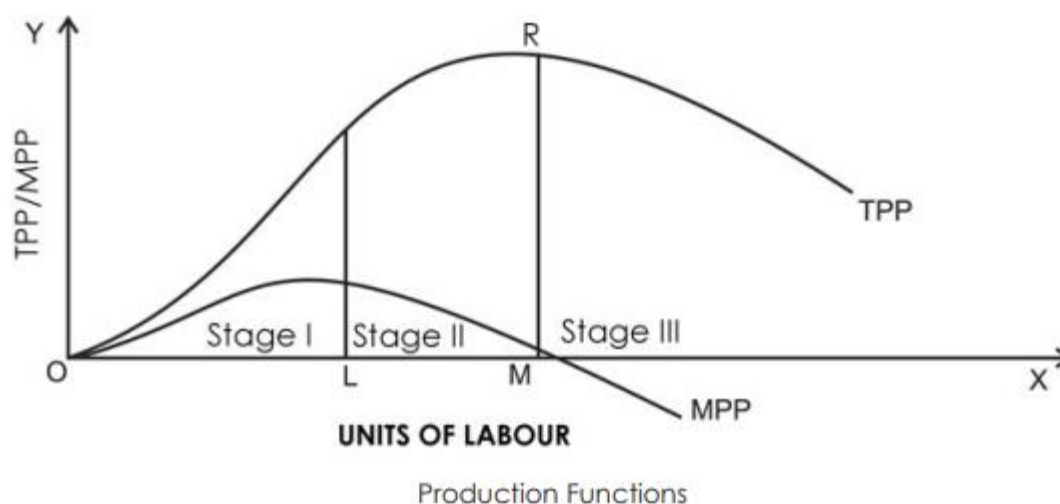
Law of Variable Proportions Explained

Let's understand this law with the help of another example:

Fixed Factor : Land (Acres)	Variable Factor: Land (Units)	TPP (Total Physical Product) (Quantity)	MPP (Marginal Physical Product) (Quantity)	
1	0	0	-	
1	1	2	2	
1	2	6	4	
1	3	12	6	Stage I
1	4	16	4	
1	5	18	2	Stage II
1	6	18	0	
1	7	14	-4	Stage III
1	8	8	-6	

In this example, the land is the fixed factor and labor is the variable factor. The table shows the different amounts of output when you apply different units of labor to one acre of land which needs fixing.

The following diagram explains the law of variable proportions. In order to make a simple presentation, we draw a Total Physical Product (TPP) curve and a Marginal Physical Product (MPP) curve as smooth curves against the variable input (labor).



Three Stages of the Law

The law has three stages as explained below:

1. **Stage I** – The TPP increases at an increasing rate and the MPP increases too. The MPP increases with an increase in the units of the variable factor. Therefore,

it is also called the stage of increasing returns. In this example, the Stage I of the law runs up to three units of labour (between the points O and L).

2. **Stage II** – The TPP continues to increase but at a diminishing rate. However, the increase is positive. Further, the MPP decreases with an increase in the number of units of the variable factor. Hence, it is called the stage of diminishing returns. In this example, Stage II runs between four to six units of labour (between the points L and M). This stage reaches a point where TPP is maximum (18 in the above example) and MPP becomes zero (point R).
3. **Stage III** – Now, the TPP starts declining, MPP decreases and becomes negative. Therefore, it is called the stage of negative returns. In this example, Stage III runs between seven to eight units of labour (from the point M onwards).

Define Utility, Production, indifference and Iso-quant. (4) (2019,2020)

Utility

In economics, utility is a measure of the satisfaction or happiness that a consumer derives from consuming a particular good or service. Utility is a subjective concept that varies from person to person and can depend on factors such as personal preferences, income, and cultural norms.

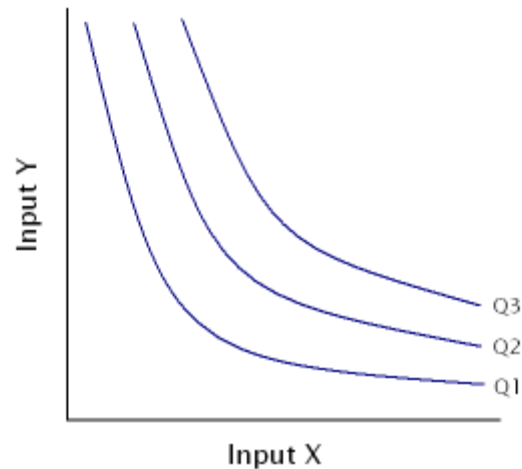
Economists use the concept of utility to explain consumer behavior, including how consumers allocate their limited resources (such as money and time) among different goods and services. According to the law of diminishing marginal utility, as a consumer consumes more and more units of a particular good or service, the additional utility or satisfaction they derive from each additional unit will eventually diminish.

Production:

Generally, production means to create something. But human being cannot create anything or destroy anything. Man can only change the shape of any natural goods and create the utility of these respective goods.

Isoquant:

In economics, an isoquant (short for "equal quantity") is a curve that shows all the combinations of inputs (such as labor and capital) that can be used to produce a certain level of output. Isoquants are used in production analysis to help businesses determine the most efficient combination of inputs needed to produce a given level of output.



An isoquant map where production output $Q3 > Q2 > Q1$. Typically inputs X and Y would refer to labor and capital respectively. More of input X, input Y, or both is required to move from isoquant Q1 to Q2, or from Q2 to Q3.

Isoquants are typically drawn on a two-dimensional graph, with one input (e.g. labor) plotted on the x-axis and the other input (e.g. capital) plotted on the y-axis. Each isoquant represents a different level of output, and the slope of the isoquant at any point represents the marginal rate of technical substitution (MRTS), which is the rate at which one input can be substituted for another while holding output constant.

Indifference curve

In economics, an indifference curve is a graphical representation of a consumer's preferences for different combinations of two goods. Each point on an indifference curve represents a combination of the two goods that gives the consumer the same level of utility or satisfaction. The consumer is indifferent between these combinations because they provide the same level of satisfaction.

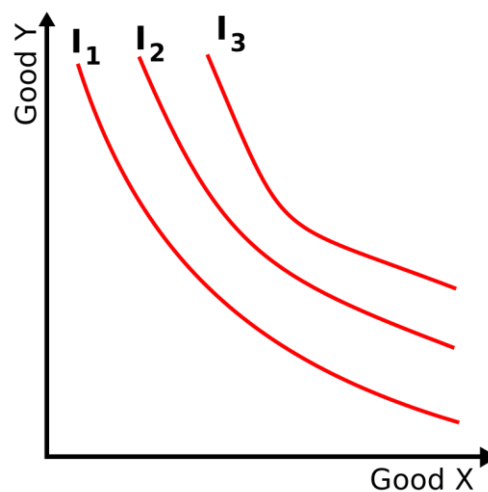


Fig: An example of an indifference map with three indifference curves represented

Indifference curves are typically drawn on a two-dimensional graph, with one good (e.g. food) plotted on the x-axis and the other good (e.g. clothing) plotted on the y-axis. The slope of an indifference curve at any point represents the marginal rate of substitution (MRS), which is the rate at which a consumer is willing to trade one good for another while remaining indifferent or equally satisfied.

Total Product, Average Product and Marginal Product

What is a total product?

Suppose we differentiate an input and keep all the other inputs unchanged, then for different degrees of that input we get different degrees of output. This association between the variable input and output, keeping all the other inputs unchanged is often referred to as total product (TP) of the variable input. This is also sometimes termed as the total return or total physical product of the variable input. It will be helpful to elucidate the concepts of average product (AP) and marginal product (MP). They are useful in order to explain the contribution of the variable inputs to the production procedure.

What is an average product?

Average product is explained as the output per unit of the variable input. We can calculate it as follows:

$$APL = TPL/L$$

What is a marginal product?

Marginal product of an input is explained as the change in the output per unit of change in the input when all the other inputs are held unchanged. When the capital is held unchanged, the marginal product of labour is as follows:

MPL = Change in output/Change in input

$$\Delta TPL/\Delta L$$

Since the inputs cannot take the negative values, the marginal product is unexplained at zero degree of the employment of input. For any degree of an input, the sum of marginal products of every foregoing unit of that input gives the total product. So, the total product is the sum of marginal products.

Total Product, Marginal Product, and Average Product

Labour	TP	MPL	APL
0	0	–	–
1	10	10	10
2	24	14	12
3	40	16	13.33
4	50	10	12.5
5	56	6	11.2
6	57	1	9.5

An average product of an input at any degree of employment is the aggregate of all the marginal products up to that degree. According to the variable inputs, the average and marginal products are often mentioned as the average and marginal returns.

Relationship between Marginal Product and Total Product

The **law of variable proportions** is used to explain the relationship between Total Product and Marginal Product. It states that when only one variable factor input is allowed to increase and all other inputs are kept constant, the following can be observed:

- When the Marginal Product (MP) increases, the Total Product is also increasing at an increasing rate. This gives the Total product curve a convex [shape](#) in the beginning as variable factor inputs increase. This continues to the point where the MP curve reaches its maximum.
- When the MP declines but remains positive, the Total Product is increasing but at a decreasing rate. This gives the Total product curve a concave shape after the **point of inflexion**. This continues until the Total product curve reaches its maximum.
- When the MP is declining and negative, the Total Product declines.
- When the MP becomes zero, Total Product reaches its maximum.

Relationship between Average Product and Marginal Product

There exists an interesting relationship between Average Product and Marginal Product. We can summarize it as under:

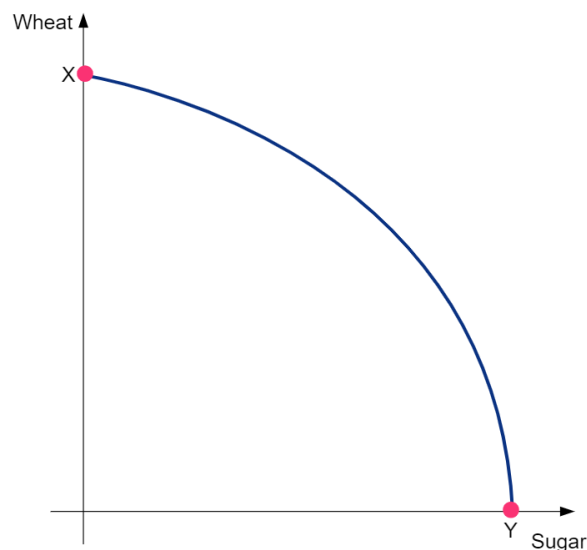
- When Average Product is rising, Marginal Product lies above Average Product.
- When Average Product is declining, Marginal Product lies below Average Product.
- At the maximum of Average Product, Marginal and Average Product equal each other.

What is the production possibility curve?

The Production Possibility Curve is also known as the Production Possibility Frontier (PPF) or Transformation Curve.

In economics, the **Production Possibility Curve (PPC)** depicts the **maximum output combinations** of two goods that are produced in the economy when all **resources are employed fully and efficiently**.

This curve helps economists to illustrate different features such as scarcity, opportunity costs, and economic growth. The PPC shows the **maximum production capacity**. **Maximum production** capacity is the largest output a country can produce. While plotting the PPC, it is assumed that the country has a **fixed quantity of resources and a constant state of technology**. Figure 1 shows an example of a basic production possibility curve:



Production possibility diagrams

In Figure 2, **point X** shows maximum wheat production and zero sugar production. **Point Y** sho

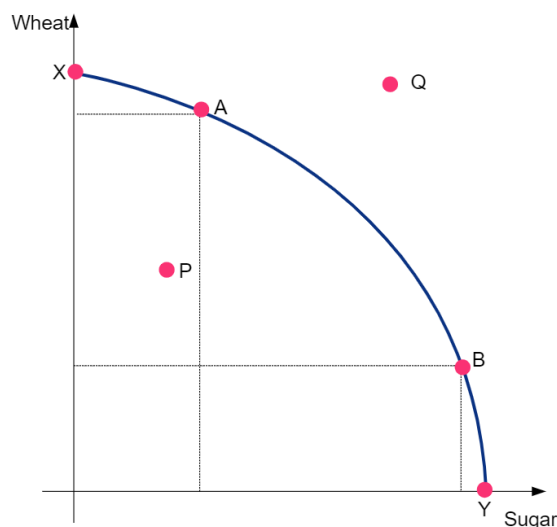


Fig. 2 - Points along the production possibility curve

Points such as A and B on the curve show maximum production that can be achieved by the economy. Any point on the curve also shows maximum production of products. It is important to remember that the production of one product cannot be increased without the decrease in the production of another product.

The points that fall **under the curve**, such as point P, mean that the **resources are either inefficiently employed** or are not fully employed. The points **above the PPC**, such as point Q, are **output combinations that are unsustainable** at the given time. To attain these levels the country will have to **increase their resources, improve its technology, and productivity**.

Define return to scale with its various forms. (4)(2020,2019)

Returns to scale

Returns to scale in microeconomics describe a production situation that occurs in the long run when the scale of production increases when all inputs used are variable, which affects the output level. A proportionate change in output results from a proportionate change in input. Returns to scale explain what happens to total output when all production inputs increase, assuming that technology is constant and the market is perfectly competitive.

Definition: Returns to scale is a term in economics that refers to a rate at which a change in output leads to a change in input. It is a long-run theory of production.

Example: In the short run, the firm cannot build a new factory to increase its returns to scale because it takes time and money to build one. It can, however, hire additional

workers to increase its short-run returns, but only up to a certain point due to the law of diminishing marginal returns. However, after the factory is built, the firm can hire more workers. These changes in the firm's inputs (labour, land, etc.) can help increase the firm's output, known as returns to scale.

Types of Returns to Scale

An increase in a firm's input can lead to various changes in output. These changes are called types of returns to scale. There are three types of returns to scale (Figure 1):

1. Increasing returns to scale
2. Constant returns to scale
3. Diminishing returns to scale

Increasing Returns to Scale

Increasing returns to scale are the rate at which output increases when the factors of production are increased. If an increase in production labour and capital factors leads to a disproportionate increase in output, then a firm experience increasing returns to scale. Increasing returns to scale occur in the long run.

Suppose a company increases its input by 10%, leading to a change in output of more than 10%, then it is said to have increasing returns to scale. A proportional change in production factors leads to a larger proportional change in output.

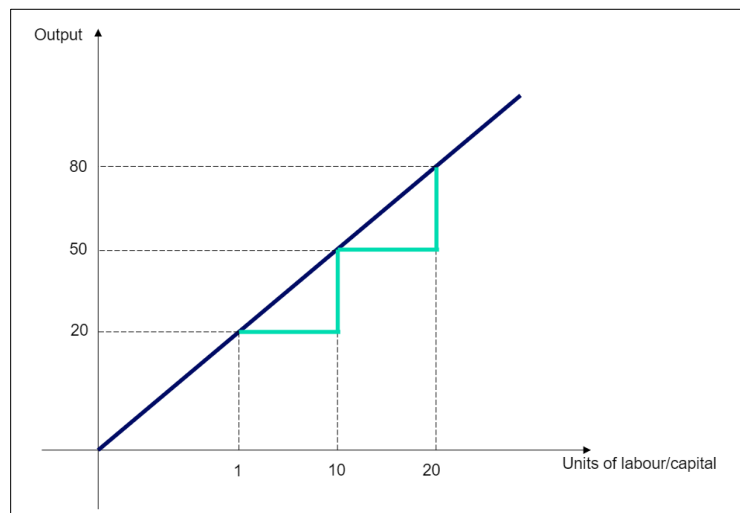


Figure 2. Increasing returns to scale

Example: From Figure 2 above, if capital and labour are 1, the output level is 20, 1 unit of labour and 1 unit of capital can produce 20 units. When inputs are 10, the output level is 50, and so on. Although output increases by 30 units each time, the increase in output is still greater than the increase in input.

Therefore, we can conclude that when labour and capital in this enterprise increase, output also increases by a larger proportion.

Constant returns to scale

When a proportionate change in output equals the proportionate change in input, we speak of constant returns to scale. A production function with constant returns to scale is linear or considered homogeneous. Constant returns to scale can occur for a firm over the long run.

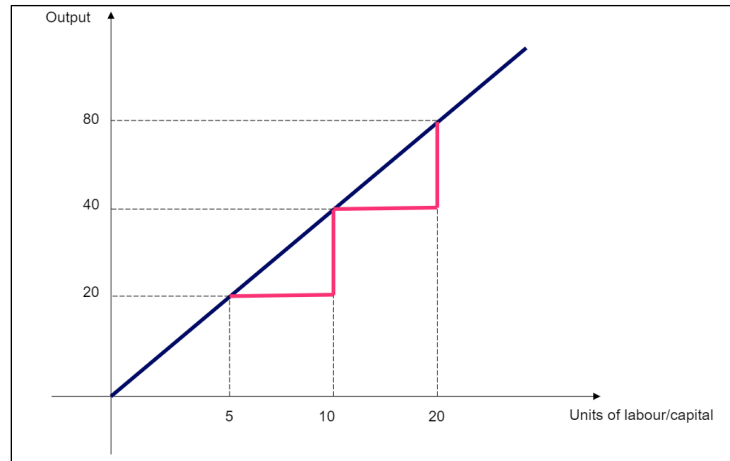


Figure 3. Constant Returns to Scale

Example: From Figure 3 above, 1 unit of labour and 1 unit of capital can produce 20 units of output. 10 units of inputs produce 40 units of output. With each increase, both inputs and outputs double, so they can increase by the same percentage, 100%. From this, we can conclude that if the company increases inputs, outputs will also increase by the same percentage.

Decreasing returns to scale

Decreasing returns to scale is the rate at which output changes less than the proportionate change in input – a proportionate change in input is greater than the proportionate change in output. Diminishing or decreasing returns to scale occur when a firm's production function becomes less efficient as its size increases. An example of this is when a firm expands beyond its ability to be effectively managed.

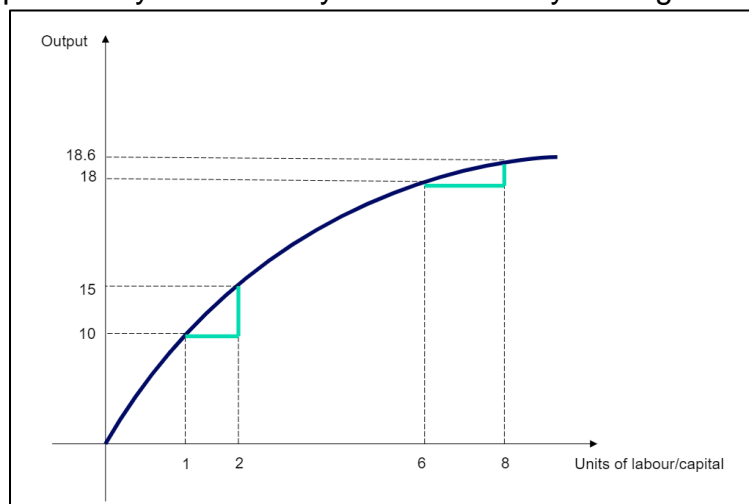


Figure 4. Decreasing returns to scale

Example: Figure 4 shows that the output of firm A is 10 when the inputs of labour and capital are 1. Increasing inputs by 1 additional unit increases output from 10 to 15. However, if inputs increase from 6 to 8 by 2 additional units, output increases from 18 to 18.6, less than the proportionate increase in inputs. So, it is not an increase or a doubling, and it does not remain constant, but the increase in inputs results in a lower output.

Economies of scale

What are economies of scale?

Economies of scale are the decrease in average production cost per unit as a business's output quantity increases.

Economies of scale occur at large companies that produce a high quantity of goods or services. Increasing their output, their unit costs of production fall. It means that by producing more goods or services, they cut costs of production of each unit. The higher the output, the lower the unit costs of production. This is because costs are spread over a larger number of goods and services.

The **cost of a unit** or **unit cost** is calculated by dividing total production costs by total output. The formula for calculating the cost of a unit is following:

$$\text{Cost of unit} = \frac{\text{Total production costs}}{\text{Total output}}$$

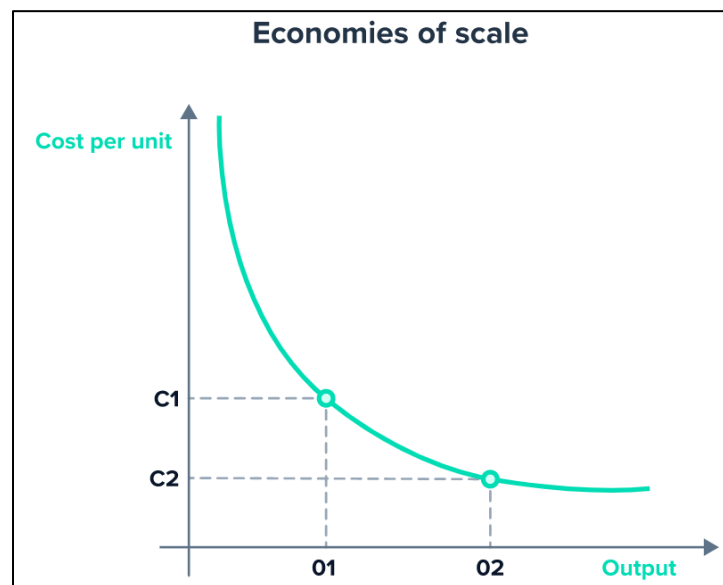


Fig. 1 - Economies of scale

Figure 1. is a graph illustrating how cost per unit changes in relation to the output? At lower output levels (O1), the cost per unit is higher (C1). However, if output increases (O2), cost per unit decreases (C2).

Example:

Imagine Business A produces light bulbs. All light bulbs are produced in one factory. The business has to pay £2,500 a month for renting the factory. Materials used to produce one light bulb cost £1. Now, let's see what happens when there are 5,000 light bulbs produced in a month, and compare it to when 10,000 light bulbs are produced in a month.

Output	Fixed costs	Variable costs
5,000	£2,500	£1 per unit
10,000	£2,500	£1 per unit

If there are 5,000 light bulbs produced, the business will have to pay £2,500 for renting the factory and £1 for materials for each light bulb.

£2,500 (rent)

$£1 \times 5,000 = £5,000$ (cost of materials)

$£5,000 + £2,500 = £7,500$ (total costs)

$£7,500 / 5,000 = £1.50$ (unit cost of production)

This means that at the output level of 5,000, the business has to pay £1.50 to produce one light bulb.

If there are 10,000 light bulbs produced, the business will still have to pay £2,500 for renting the factory and £1 for materials for each light bulb.

£2,500 (rent)

$£1 \times 10,000 = £10,000$ (cost of materials)

$£10,000 + £2,500 = £12,500$ (total costs)

$£12,500 / 10,000 = £1.25$ (unit cost of production)

This means that at the output level of 10,000, the business has to pay £1.25 to produce one light bulb.

Output	Fixed costs	Variable costs	Total costs	Costs per unit
5,000	£2,500	£5,000	£7,500	£1.50
10,000	£2,500	£10,000	£12,500	£1.25

As you can see, with an output of 5,000 units, the unit cost of production is £1.50. However, at an output of 10,000 units, the unit cost of production is £1.25. When the output increases, unit costs of production decrease. This is known as an economy of scale.

Types of economies of scale

Economies of scale can be internal or external.

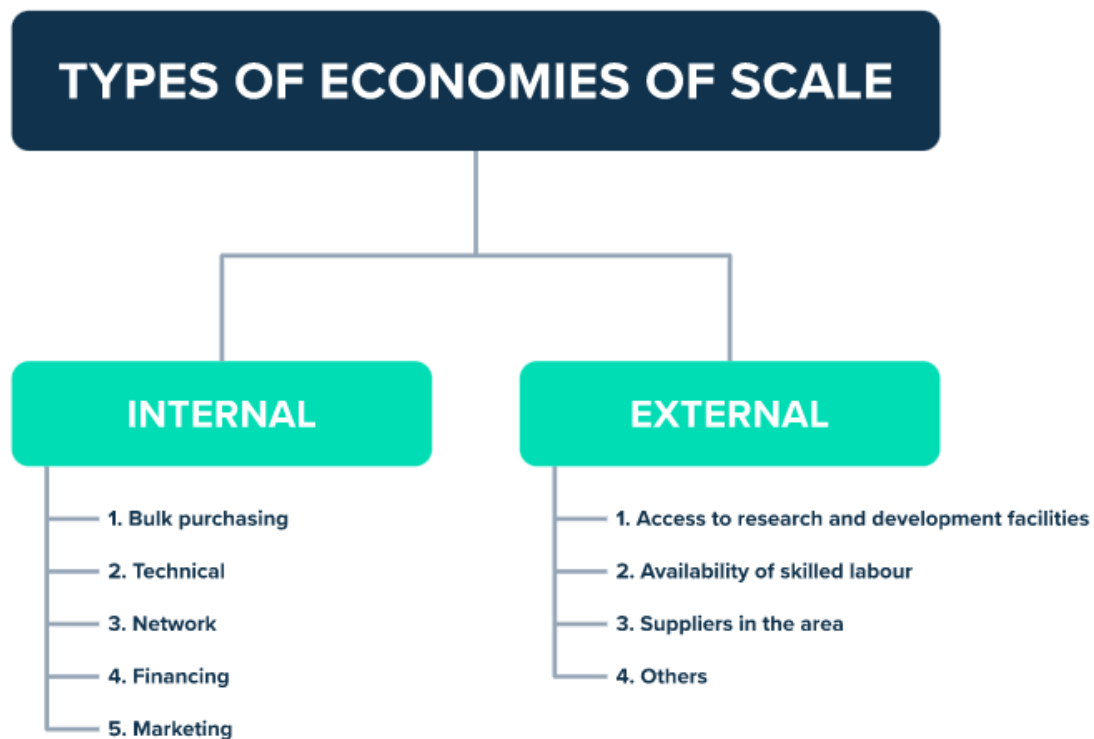


Fig. 2 - Types of economies of scale

Internal

Internal economies of scale refer to the increased output of the business itself. This happens when a firm's efficiency improves.

Internal economies of scale can be created by:

- **Bulk purchasing** - buying in greater quantities (which is typically cheaper).
- **Technical** - the introduction of new technology such as equipment and machinery (which can improve productivity).
- **Network** - gaining extra customers in an established network
- **Financing** - larger businesses can access more and cheaper financing.
- **Marketing** - fixed marketing over a greater range of products, markets, and regions.

External

External economies of scale refer to the growth of the whole industry. It is when all companies in an industry benefit.

External economies of scale typically occur in certain geographical areas. These can be created by:

- Access to research and development facilities
- Availability of skilled labour
- Suppliers in the area
- Others

Diseconomies of scale

Diseconomies of scale point out the relationship between the average costs of a firm and its total output.

Definition: Diseconomies of scale occur when a firm experiences an increase in its average costs as its total output increases. Diseconomies of scale usually occur when a firm does no longer experiences economies of scale. Diseconomies of scale can be very harmful to a firm. There are many reasons why a firm might experience diseconomies of scale.

The diseconomies of scale graph

We can depict diseconomies of scale through a diagram, which we can see in figure 1 below.

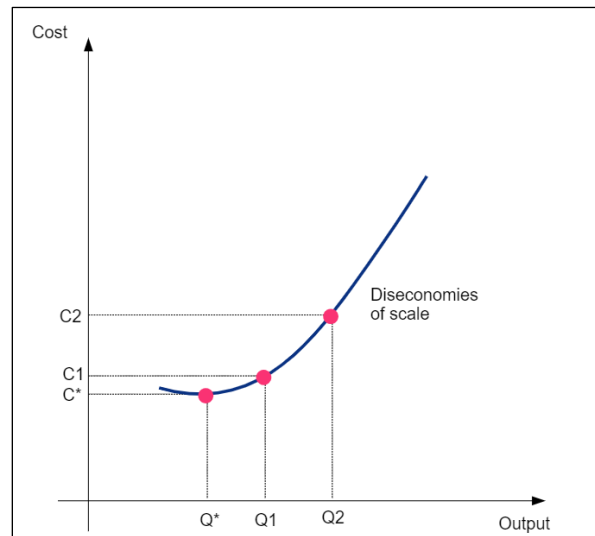


Fig. 1 - Diseconomies of Scale

In figure 1, at point C^* the firm can produce Q^* level of output at the lowest cost possible. After this point, the firm's cost per additional output produced increases. When the firm moves from producing Q^* level of output to Q_1 , the cost per input increases from C^* to C_1 . When the firm increases its production from Q_1 to Q_2 , the cost per input increases even more, from C_1 to C_2 .

Reasons for diseconomies of scale

There are many factors at play when a firm experiences diseconomy of scale. We will look at three of these reasons:

1. Managerial diseconomies of scale.
2. Communication failure.
3. Motivational diseconomies of scale.

Internal diseconomies of scale

Internal diseconomies of scale are types of diseconomies of scale caused by factors in the firm. There are two main reasons for internal diseconomies of scale (Figure 4): **organizational** or **technical**.

Internal diseconomies of scale

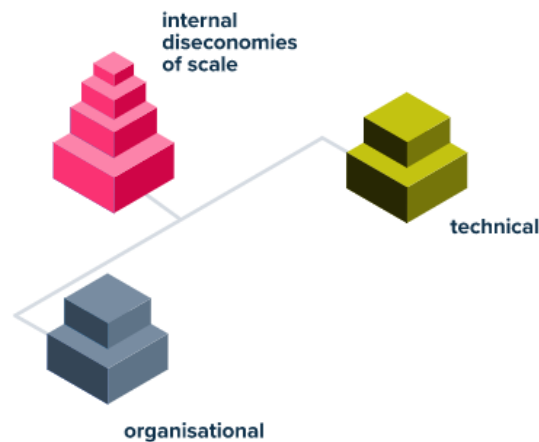


Fig. 5 - Internal diseconomies of scale

Internal diseconomies of scale arising from **organizational issues** are common because it becomes inefficient to manage a large number of workers. The communication between management and workers becomes more challenging, resulting in workers not receiving the proper instructions.

This contributes to an increase in the diseconomies of scale. Another reason why a firm might face organizational diseconomies of scale could be due to lack of motivation of workers as, usually, in large businesses, ordinary workers feel more isolated.

Technical issues also contribute to a firm's internal diseconomies of scale. This involves the amount of machinery a firm chooses to include in the production process. If a firm chooses to add 20 more pieces of machinery in the factory, it might increase the cost per input as the production process becomes inefficient.

External diseconomies of scale

External diseconomies of scale occur due to **external factors** independent of a firm's production process (Figure 5). The environment and the industry in which a firm operates significantly influence the cost per input a firm faces. The reason for that is that the industry in which the firm is provides an additional constraint in the firm's production process. Therefore, the firm has limited resources to operate and produce. Some industries might face the cost per input going up because there is a shortage in raw materials.

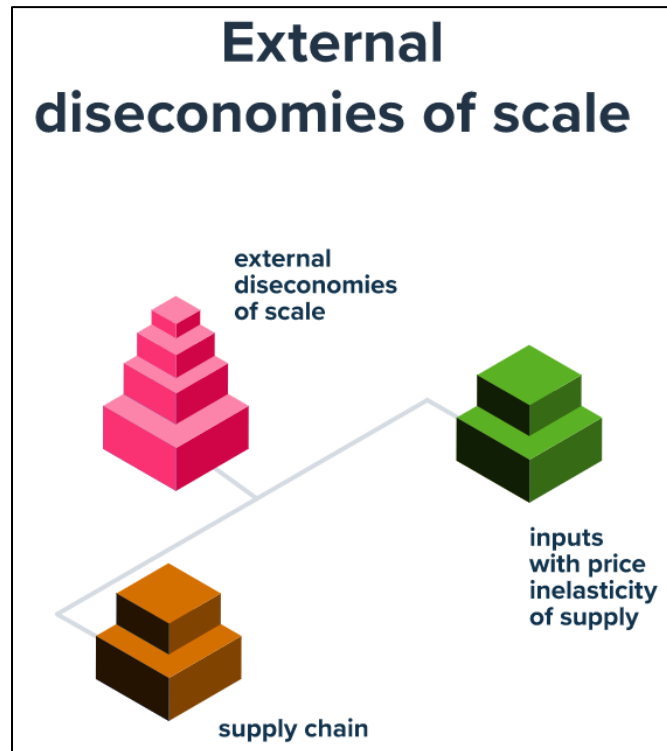


Fig. 6 - External diseconomies of scale

The **supply chain** is one of the causes of external diseconomies of scale. The reason for that is that the firm is dependent on other factors to move its goods around. One of those aspects is traffic. If the routes that a company uses to deliver or their goods are always congested, that might cause delays, especially when dealing with distant markets.

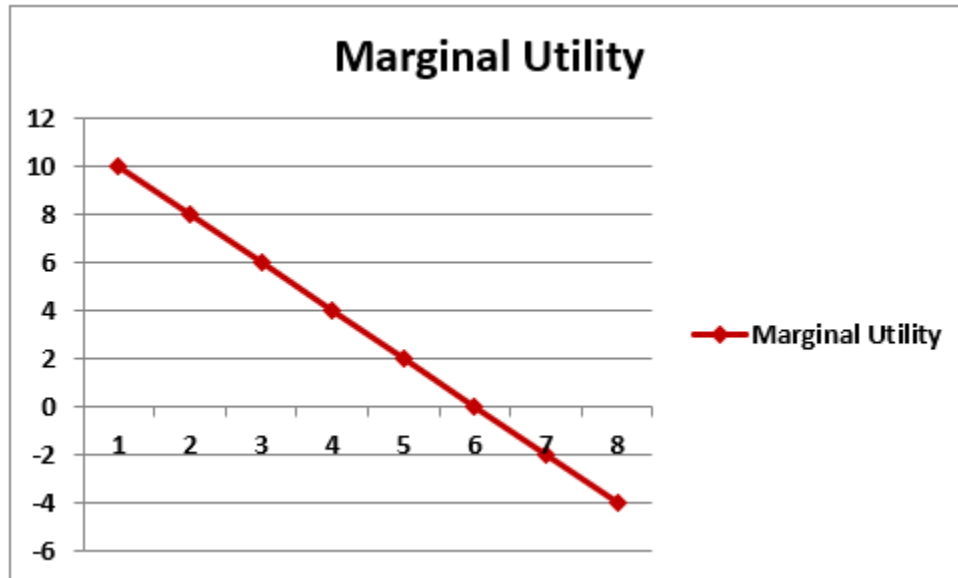
Inputs with **price inelasticity of supply** are also a reason for external diseconomies of scale. Imagine a firm experiences significant growth in demand, and as a result, it needs to produce more output. However, those supplying the input for the firm can't increase the total output by as much as the price increases. This means that the firm will be paying more but not getting as many inputs, which then causes diseconomies of scale.

Explain the law of Diminishing Marginal Utility? (4)(2019)

The law of diminishing marginal utility states that the amount of satisfaction provided by the consumption of every additional unit of good decreases as we increase that good's consumption. Marginal utility is the change in the utility derived from consuming another unit of a good.

Law of Diminishing Marginal Utility Graph

If we were to represent the law of diminishing marginal utility using a graph, it would look like the figure below. In this figure, the X-axis represents the number of units of a good consumed, and the Y-axis represents the marginal utility of that good. Notice that as we increase the number of units, the **marginal utility** of every additional unit falls. It keeps falling until it becomes zero and then further sinks to negative. After a certain point, consuming that good may cause dissatisfaction to the consumer.



For example, imagine you are hungry and you eat your first slice of pizza. You might enjoy it very much and feel quite satisfied. However, as you continue to eat more slices of pizza, the pleasure you derive from each additional slice will decrease until you eventually reach a point where you feel full and additional slices no longer provide any additional satisfaction.

The law of diminishing marginal utility has important implications for how individuals and businesses make consumption and production decisions, as well as for how governments regulate markets and allocate resources.

What is the Total cost, Average Cost, and Marginal cost. (3) (2019)

Total Costs

Definition

Total Cost (TC) describes the total economic cost of production. It is composed of variable, and fixed, and opportunity costs.

- Fixed costs
 1. The accounting costs which **do not** change based on your level of output
 2. Always determined to be fixed in the short term; if you could not change it on short notice it is fixed
 3. **EXAMPLE** building costs, insurance, property taxes
- Variable costs

1. The accounting costs that **do** change based on your output level
 2. Always determined in the short run (all factors are variable in the long run); if you could change it on short notice it is variable
 3. **EXAMPLE** number of widgets produced, number of low skilled employees, packaging costs
- Opportunity Costs
 1. All of the other things that you could be doing with your money if you were not doing what you are doing
 2. Not normally accounted for in accounting costs
 3. **EXAMPLE** amount of interest you would earn on an investment, salary you could earn being employed elsewhere

Formula,,,,,,,,,,,,,,,,,,,,,

- Total Cost = Total Fixed Cost + Total Variable Cost + Opportunity Cost
- $TC = TFC + TVC$

Average Costs

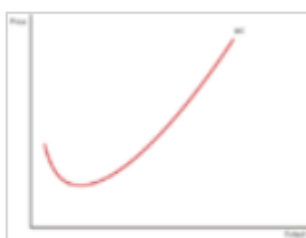
Definition: Average cost is equal to total cost divided by the number of goods produced (the output quantity, Q). It is also equal to the sum of average variable costs (total variable cost divided by Q) plus average fixed costs (total fixed costs divided by Q). Average costs may be dependent on the time period considered (increasing production may be expensive or impossible in the short term, for example). Average costs affect the supply curve and are a fundamental component of supply and demand.

- Here is a a standard formulaic expression representing Average Costs:
 - $AC = TC / Q$

Marginal Costs

Definition: Marginal cost is the change in total costs that arises when the quantity produced changes by one unit. That is, it is the cost of producing one more unit of a good. Mathematically, the marginal cost (MC) function is expressed as the first derivative of the total costs (TC) function with respect to quantity (Q). The marginal cost may change with volume, and so at each level of production, the marginal cost is the cost of the next unit produced.

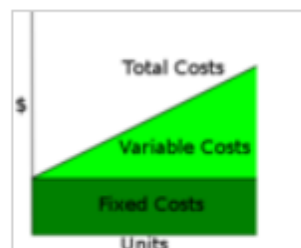
- Here is a a standard formulaic expression representing Total Cost:
 - $MC = dTC / dQ$



Marginal Cost



Average Total Costs



Total, Variable, Fixed costs

Explain the Relation between average cost and marginal cost with the help of a table and diagram. (5) (2019)

Basically, we are focusing on two relationships: 1. Relation between Average Cost and Marginal Cost, and 2. Relation between Total Cost and Marginal Cost.

Details are as under:

1. Relation between Average Cost and Marginal Cost:

Relation between average cost and marginal cost is explained through Table 8 and Fig. 9.

Table 8. Relation between Average Cost and Marginal Cost

Output (Units)	Total Cost (₹)	Average Cost $AC = \frac{TC}{Q}$ (₹)	Marginal Cost $MC = TC_n - TC_{n-1}$ (₹)
0	10	∞	—
1	20	20	10
2	28	14	8
3	34	11.3	6
4	38	9.5	4
5	42	8.4	4
6	48	8	6
7	56	8	8
8	72	9	16

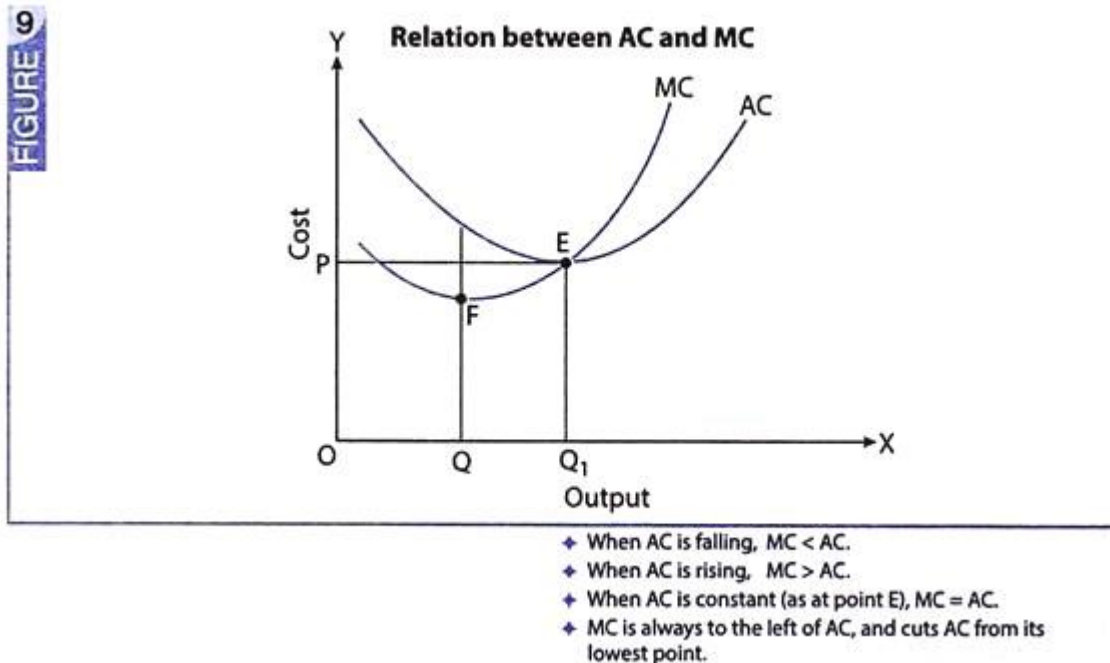


Table 8 and Fig. 9 offer the following observations with regard to the relation between average cost and marginal cost:

(1) When AC Falls, MC is Lower than AC:

When average cost falls, marginal cost is less than AC. In Table 8, AC is falling till it becomes Rs.8, and MC remains less than Rs.8. In Fig. 9, AC is falling till point E, and MC continues to be lower than AC. In this case, marginal cost falls more rapidly than the average cost. That is why when marginal cost (MC) curve is falling, it is below the average cost (AC) curve. It is shown in Fig. 9.

(2) When AC Rises, MC is Greater than AC:

When average cost starts rising, marginal cost is greater than average cost. In Table 8, when AC rises from Rs.8 to Rs.9, MC rises from Rs.8 to Rs.16. In Fig. 9, AC starts rising from point E. And, beyond E, MC is higher than AC.

(3) When AC does not Change, MC is Equal to AC:

When average cost does not change, then $MC = AC$. It happens when falling AC reaches its lowest point. In Table 8, at the 7th unit, average cost does not change. It sticks to its minimum level of Rs.8. Here, marginal cost is also Rs.8. Thus, Fig. 9 shows that MC curve is intersecting AC curve at its minimum point E.

Theory of the Firm

Definition of plant, firm and industry in economics

In economics, the definitions of plant, firm, and industry are similar to their general definitions, but they often have additional connotations and implications.

A plant is defined as a physical location where production takes place. In economics, a plant is often seen as a production function or a process of transforming inputs into outputs. **The size, technology, and location of the plant are important determinants of its efficiency and cost structure.**

A firm is an economic entity that organizes resources, such as capital, labor, and land, to produce goods or services. In economics, a firm is often seen as a profit-maximizing agent that operates in a competitive environment. The behavior and performance of firms are influenced by factors such as market structure, technology, and government regulations.

An industry is a **group of firms** that produce similar or related products or services. In economics, an industry is often seen as a market structure that determines the level of competition and the allocation of resources among firms. The structure and dynamics of an industry depend on factors such as market size, barriers to entry, and product differentiation. The performance of an industry is often measured by indicators such as market share, profitability, and productivity.

Market:

Basically, when we hear the word market, we think of a place where goods are being bought and sold.

In economics, market is a place where buyers and sellers are exchanging goods and services with the following considerations such as:

- Types of goods and services being traded
- The number and size of buyers and sellers in the market
- The degree to which information can flow freely

Market types based on competition

Based on competition, the market structure has been classified into two broad categories like Perfectly competitive and Imperfectly competitive. **Perfect Competition** is not found in the real-world market because it is based on many assumptions. But an **Imperfect Competition** is associated with a practical approach.

The type of market structure decides the market share of a firm in the market. If there exists a single firm, it will serve the entire market, and the demand of the customers are satisfied with that firm only. But if we increase the number of firms to two, the market will also be shared by the two. Similarly, if there are about 100 small firms in the market, the market is shared by all of them in proportion.

Therefore, it is the market structure, which affects the market. So here we are going to describe the differences between perfect competition and imperfect competition, in economics.

Discuss the characteristics of a perfectly competitive market. (5)(2020)

Definition of Perfect Competition

Perfect Competition is an economic structure where the degree of competition between the firm is at its peak. Given are the **salient features** of the perfect competition:

- Many buyers and sellers.
- Product offered is identical in all respects.
- Any firm can come and go, as per its own discretion.
- Both the parties to the transaction are having complete knowledge about the product, quantity, price, market and market conditions as well.
- Transportation and Advertising cost is nil.
- Free from government interference.
- The price for a product is uniform across the market. It decided by the demand and supply forces; no firm can affect the prices, that's why the firms are price takers.
- Each firm earns a normal profit.

Example: Suppose you go to a vegetable market to buy tomatoes. There are many tomato vendors and buyers. You go to a vendor and inquire about the cost of 1 kg tomatoes, the vendor replies, it will cost Rs. 10. Then you go ahead and inquire some more vendors. The prices of all the vendors are same for the demanded quantity. This is an example of perfect competition.

Explain the concept of market with the different forms of imperfect market. (5) (2019, 2020)

Imperfect Competition of Market

The competition, which does not satisfy one or the other condition, attached to the perfect competition is imperfect competition. Under this type of competition, the firms can easily influence the price of a product in the market and reap surplus profits.

In the real world, it is hard to find perfect competition in any industry, but there are so many industries like telecommunications, automobiles, soaps, cosmetics, detergents,

cold drinks and technology, where you can find imperfect competition. By the virtue of this, imperfect competition is also considered as real-world competition.

There are various forms of imperfect competition, described below:

1. **Monopoly:** In a monopoly market, there is **only one firm** that sells a particular product or service. This firm has complete control over the market price, and can charge a price that is higher than the price that would exist in a competitive market.
2. **Duopoly:** In a duopoly market, there are **two firms** that dominate the market. These firms have significant control over the market price, and often engage in price wars or collusion.
3. **Oligopoly:** In an oligopoly market, there **are a small number of large firms** that dominate the market. These firms have significant control over the market price, and often engage in non-price competition (e.g., advertising, product differentiation).
4. **Monopsony:** In a monopsony market, there is only **one buyer** for a particular product or service. This buyer has complete control over the price that it pays for the product or service.
5. **Monopolistic competition:** In a monopolistic competition market, there are **many small firms that sell differentiated products or services**. Each firm has some control over the market price, and can differentiate its product or service from that of its competitors.

Explain the short run and long run cost functions regarding fixed and variable costs. (5) (2020)

In economics, short run and long run cost functions are **used to analyze the relationship between inputs (or factors of production) and costs of production**. Fixed costs are costs that do not vary with the level of production, while variable costs are costs that do vary with the level of production.

In the **short run**, at least one input is fixed, meaning that it cannot be varied in the short term. The short run cost function is used to analyze the cost of producing a given level of output when some inputs are fixed and others are variable. The short run cost function includes both fixed costs and variable costs. For example, in the short run, a factory may have a fixed amount of capital equipment, but it can vary the amount of labor it employs to produce different levels of output.

In the **long run**, all inputs can be varied, meaning that the firm can adjust its capital equipment and labor to any level of output. The long run cost function is used to analyze the cost of producing a given level of output when all inputs are variable. In the long run, fixed costs become variable costs, as the firm can adjust its capital equipment to any level of output.

To summarize, the short run cost function includes both fixed and variable costs, while the long run cost function includes only variable costs as fixed costs become variable costs in the long run.

How can you determine the equilibrium level of output in short run of a perfectly competitive firm? Explain (5) (2020)

In a perfectly competitive market, the equilibrium level of output for a firm in the short run is determined by **the intersection of the firm's marginal cost (MC) curve and the market price (P) of the product.** The equilibrium output level occurs at the point where the marginal cost curve intersects the marginal revenue (MR) curve, which is equal to the market price.

To determine the equilibrium level of output for a perfectly competitive firm in the short run, the following steps can be taken:

1. **Determine the market price:** In a perfectly competitive market, the market price is determined by the intersection of the market demand and supply curves.
2. **Determine the marginal revenue (MR):** The marginal revenue for a perfectly competitive firm is equal to the market price, since the firm is a price taker and cannot influence the market price.
3. **Determine the marginal cost (MC):** The marginal cost curve for the firm represents the additional cost incurred by the firm for producing an additional unit of output.
4. **Determine the profit-maximizing level of output:** The profit-maximizing level of output occurs at the point where marginal cost equals marginal revenue ($MC = MR$). This is because at this point, the firm is producing the level of output where the additional revenue from producing an extra unit of output (marginal revenue) is equal to the additional cost of producing that unit of output (marginal cost).
5. **Check if the firm is earning profits or losses:** If the market price is above the average variable cost (AVC) of production, the firm is earning profits. If the market price is below the AVC, the firm is incurring losses. If the market price is equal to the AVC, the firm is breaking even.
6. **Determine the shut-down point:** If the market price is below the average variable cost, the firm will shut down production in the short run, as it will not be able to cover its variable costs.

Therefore, the equilibrium level of output for a perfectly competitive firm in the short run is determined by the intersection of the firm's marginal cost curve and the market price, and the profit-maximizing level of output occurs at the point where $MC = MR$.

Is there any welfare cost of monopoly market? Briefly Discuss. (4) (2020)

Yes, there are welfare costs of monopoly market. A monopoly market is characterized by a single seller who has complete control over the supply of a particular good or service, and can therefore set prices at a level higher than the competitive market price. This creates several welfare costs that can negatively affect both consumers and society as a whole.

1. **Deadweight loss:** One of the main welfare costs of a monopoly market is the deadweight loss, which occurs when the market output level is lower than the socially optimal level. This is because a monopoly firm produces at a point where the marginal cost is less than the marginal revenue, which results in a lower output level than would be produced in a competitive market. As a result, consumers are left worse off, and society misses out on the benefits that could have been generated by the production and consumption of additional units of the good.
2. **Higher prices:** A monopoly market can lead to higher prices for consumers. Since the monopolist has market power, they can set prices at a level higher than the competitive market price, resulting in consumers paying more for the good than they would in a competitive market.
3. **Reduced consumer surplus:** Consumer surplus is the difference between the value that consumers place on a good and the price they pay for it. In a monopoly market, the higher price charged by the monopolist reduces the consumer surplus, leaving consumers worse off.
4. **Reduced innovation:** In a monopoly market, there is less incentive for the monopolist to innovate and improve their product or service. This is because the monopolist has a captive market and does not face competition, reducing the need to invest in research and development.
5. **Income redistribution:** A monopoly market can result in income redistribution from consumers to the monopolist. This is because the monopolist charges a higher price, which generates greater profits, leading to a transfer of income from consumers to the monopolist.

In summary, a monopoly market can result in several welfare costs, including deadweight loss, higher prices, reduced consumer surplus, reduced innovation, and income redistribution. These welfare costs can lead to a reduction in social welfare and economic efficiency.

Explain normal profit and abnormal profit in the short run equilibrium of a firm under perfectly competitive market. (5) (2019)

In the short run equilibrium of a firm under a perfectly competitive market, the firm will earn either normal profit or abnormal profit, depending on its cost structure.

Normal profit is the minimum level of profit necessary to keep a firm in business, and it represents the opportunity cost of using resources in a particular business rather than in an alternative venture. In a perfectly competitive market, normal profit is earned when the price of the product is equal to the average total cost (ATC) of production. This occurs at the point where the firm's marginal cost (MC) curve intersects the average total cost (ATC) curve.

Abnormal profit, also known as economic profit or supernormal profit, is any profit earned by a firm that exceeds the normal profit level. In a perfectly competitive market, abnormal profit is earned when the price of the product is higher than the average total cost (ATC) of production. This occurs at the point where the firm's marginal revenue (MR) curve intersects the marginal cost (MC) curve, and the price is higher than the average total cost (ATC) curve.

In the short run equilibrium of a perfectly competitive market, a firm will produce at the level of output where the marginal cost (MC) is equal to the marginal revenue (MR), and where the price is equal to the marginal cost (MC) and the average total cost (ATC) curves. If the price is equal to the average total cost (ATC), the firm will earn normal profit, which represents a return to its opportunity cost of doing business. If the price is higher than the average total cost (ATC), the firm will earn abnormal profit, which represents a return above and beyond the opportunity cost of doing business.

If the price is lower than the average total cost (ATC), the firm will incur losses, which represents a return below the opportunity cost of doing business. In the short run, a firm may continue to operate and incur losses if it expects the market price to rise in the future. However, in the long run, the firm will exit the market if it continues to incur losses, which will eventually drive the market price up to the level of the average total cost (ATC) curve, allowing the remaining firms to earn normal profit.

Basic Concepts of Macroeconomics:

Objectives of macroeconomics

Macroeconomics is a branch of economics that deals with the behavior of the economy as a whole rather than individual markets or consumers. The main objectives of macroeconomics are:

Economic growth: Macroeconomics aims to achieve sustained and long-term economic growth by studying the factors that contribute to it, such as investment, technological progress, and human capital development.

Price stability: Macroeconomics also focuses on maintaining price stability, which means keeping inflation low and stable over time. This helps to promote confidence in the economy, encourage investment, and protect the purchasing power of consumers.

Low unemployment: Another important objective of macroeconomics is to reduce unemployment and ensure full employment. This involves analyzing factors that affect employment, such as labor market policies, education and training, and business investment.

Stable exchange rates: Macroeconomics also studies exchange rates and aims to maintain a stable exchange rate system that promotes international trade and investment.

Balanced economic development: Macroeconomics also aims to promote balanced economic development, which means ensuring that economic growth is sustainable, inclusive, and benefits all segments of society. This involves analyzing factors such as income distribution, regional disparities, and environmental sustainability.

Overall, the objective of macroeconomics is to analyze and understand the functioning of the economy as a whole and to provide policy recommendations that promote sustainable economic growth, stable prices, low unemployment, and balanced economic development.

What do you mean by Economic growth and Development. (4) (2019)

Economic growth refers to an **increase in the production of goods and services** within an economy over time, typically measured by the gross domestic product (GDP). It often involves an increase in the quantity of goods and services produced, improvements in productivity, and technological advancements. Economic growth is usually accompanied by a rise in living standards, higher incomes, and an increase in employment opportunities.

Economic development, on the other hand, refers to a broader concept that encompasses economic growth along with social and institutional changes that improve the well-being of a society. Economic development is concerned with the creation of an environment that promotes economic growth while also fostering social progress, such as the provision of better education and healthcare services, reduction of poverty, and promotion of

economic equality. It involves promoting sustainable and equitable economic growth, reducing inequality, and enhancing the overall quality of life for individuals in a society.

Unemployment:

Unemployment is a state in which individuals are willing and able to work, but are unable to find employment. It is an economic condition that is measured by the unemployment rate, which is the percentage of the labor force that is unemployed.

There are several types of unemployment:

Frictional Unemployment: This type of unemployment occurs when individuals are between jobs or searching for their first job. It is a natural part of the job search process and can be reduced through training programs and job matching services.

Structural Unemployment: This type of unemployment occurs when there is a mismatch between the skills of workers and the needs of employers. It can result from changes in technology, globalization, or shifts in the economy.

Cyclical Unemployment: This type of unemployment occurs when there is a decline in economic activity, such as during a recession or depression. It can be caused by a decrease in demand for goods and services, which leads to job loss.

Seasonal Unemployment: This type of unemployment occurs when employment is only available during certain seasons, such as agriculture or tourism.

Hidden Unemployment: This type of unemployment refers to individuals who are not counted as part of the labor force, such as those who have given up looking for work or are underemployed.

Each type of unemployment has different causes and solutions. Policymakers often implement measures such as job training programs, unemployment benefits, and fiscal and monetary policies to address unemployment and its impacts.

Inflation

What is Inflation and How it Works?

Inflation is an economic indicator that indicates the rate of rising prices of goods and services in the economy. Ultimately it shows the decrease in the buying power of the rupee. It is measured as a percentage.

These quantitative economic measures the rate of change in prices of selected goods and services over a period of time. Inflation indicates how much the average price has

changed for the selected basket of goods and services. It is expressed as a percentage. Increase in inflation indicates a decrease in the purchasing power of the economy. This percentage indicates the increase or decrease from the previous period. Inflation can be a cause of concern as the value of money keeps decreasing as inflation rises.

$$\text{Inflation} = \frac{\text{Price}_{\text{Year 2}} - \text{Price}_{\text{Year 1}}}{\text{Price}_{\text{Year 1}}} \times 100$$

The Three Different Measures of Inflation

The rate of inflation is measured in many different ways in different countries. The three most commonly used methods to measure the inflation rate are described below:

RPI: The Retail Price Index of Inflation

The RPI is now an old method of inflation calculation. **The RPI is calculated using the arithmetic mean.** It includes housing costs, mortgage interests, council taxes, and rent. The RPI method is based on two surveys to collect the data.

1. The first survey is the survey of households, which is called the living cost and the food cost. This survey helps to understand the people's spending on day-to-day costs like vegetables, fruits, gas, transport, etc. Each item is given relative weightage as per the spending.
2. The second survey is based on the prices of the most commonly used goods and services, which are also called the 'Baskets of goods.' The items in the basket may change over time.

The RPI is calculated by measuring the changes in the prices of items in the baskets of goods.

CPI: The Consumer Price Index of Inflation

The most commonly used method of inflation calculation across the globe is the CPI. The CPI is calculated using a geometric mean. CPI measures the percentage change in the prices of a basket of goods and services of household goods.

It considers the prices of primary consumer goods that include transportation, medical care, and food. The CPI is calculated in a similar way to the RPI. However, it has a few differences:

- It does not include council tax and mortgage interest.
- It surveys a larger population compared to the RPI.

Producer Price Index (PPI):

This measures the average change in the selling prices received by domestic producers for their goods and services over time. It provides insights into the cost of production for businesses, which can ultimately affect consumer prices.

WPI: The Wholesale Price Index of Inflation

The WPI considers the wholesale prices of the goods and services. This method calculates the goods' rate of inflation at the wholesale stage and before they reach

retail. The goods considered here are sold in bulk and are between business to business.

The WPI usually considers commodity prices. It is also calculated as the percentage change in the prices of goods and services compared to the base year.

Deflation

Deflation is the opposite of inflation. It means that the prices of goods and services in an economy are falling.

Deflation is a general fall in the price level in the economy.

Deflation usually occurs due to the following reasons: there may be a fall in aggregate demand, which would cause the general price level to decrease. Alternatively, the short-run aggregate supply could shift to the right due to decreased costs of production, causing the general price levels in the economy to fall.

What causes deflation?

Several factors can cause deflation. They are:

- shortages or falling of the money supply
- decrease in the velocity of money circulation
- fall in aggregate demand
- increase in productivity.

Phillips Curve

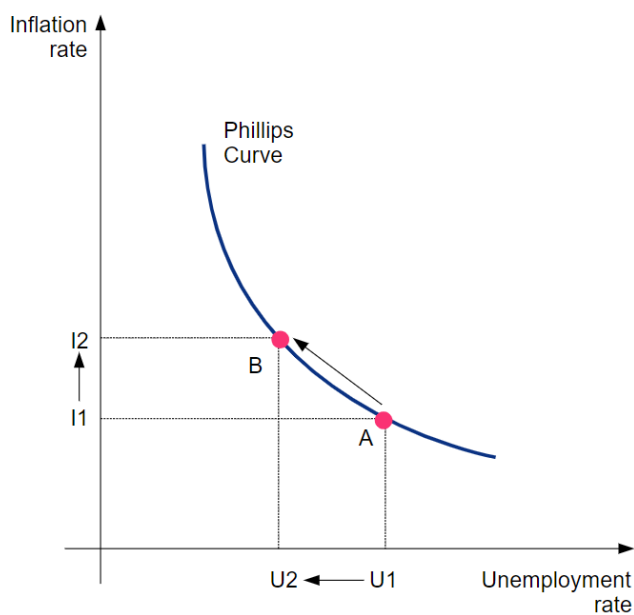
What Is the Phillips Curve?

The Phillips curve is an economic theory that inflation and unemployment have a stable and inverse relationship. Developed by William Phillips, it claims that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment.

Diagram for the Phillips curve relationship

As we said, the Phillips curve is an inverse relationship between the inflation rate and the unemployment rate. It is drawn as a downward sloping smooth curve with inflation rate on the x axis and unemployment rate on the y axis. As the rate of unemployment decreases, the inflation rate increases and vice versa.

Figure 1 below shows a standard Phillips curve:



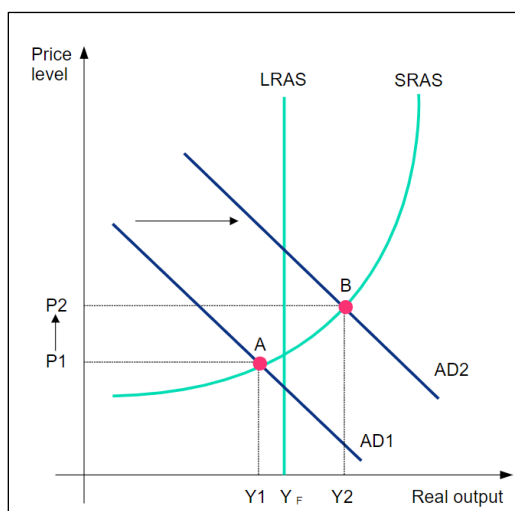
If the unemployment rate decreases from U_1 to U_2 , the inflation rate will increase from I_1 to I_2 . This leads to a movement along the Phillips curve from point A to point B as you can see in Figure 1 above.

Inflation theories that the Phillips curve relationship explains

The Phillips curve explains two inflation theories: **demand-pull inflation** and **cost-push inflation**.

Demand-pull inflation

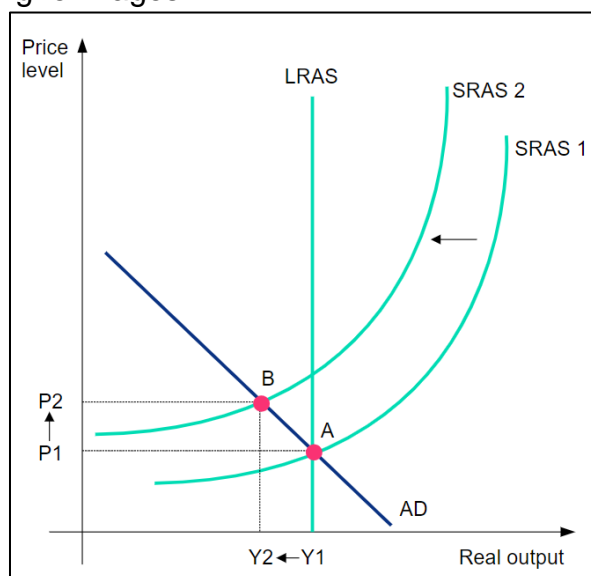
Imagine that the government implements an expansionary demand-side policy. Its objective is to obtain full employment as illustrated in Figure 2. If the economy is nearly operating at **full capacity** - Y_F (at point A), then this policy causes the aggregate demand curve to shift from AD_1 to AD_2 . The price level increases from P_1 to P_2 causing **demand-pull inflation**. The equilibrium in the economy moves along the short-run aggregate supply (SRAS) curve from point A to point B, leading to an increase in real output from Y_1 to Y_2 in the economy.



Cost-push inflation

Cost-push inflation arises due to issues in the supply side of the economy. In the labor market, workers demand higher wages from their employers through trade unions. Consider Figure 3 below. When employment is at **full employment** (at point A), the trade unions' power becomes close to monopoly power.

The trade unions use their power to bargain for higher wages on behalf of the employees. This shifts the short-run aggregate supply curve to the left from SRAS1 to SRAS2 as the cost of production rises. There is a movement along the aggregate demand (AD) curve from point A to point B. This puts upwards pressure on prices at the general price level causing rises from P_1 to P_2 , **cost-push inflation**. Real output falls from Y_1 to Y_2 due to companies producing less in light of the increased costs of production due to the higher wages.



Business cycles

Business cycles refer to short-term fluctuations in the level of economic activity in a given economy.

Business Cycle Stages

Here, we will look at the business cycle stages. There are **four stages** of a business cycle. These include the **peak, recession, trough, and expansion**. Let's look at each of these.

The peak refers to the period where economic activity has reached a momentary maximum. At a peak, the economy has achieved or almost achieved full employment, and its actual output is near or equal to its potential output. The economy typically experiences an increase in price level during a peak.

A recession follows a peak. During a recession, there is a rapid **decline in the national output, income, and employment**. Here, there is a contraction of economic activity. In other words, economic activity shrinks, and certain sectors reduce in size. Recessions are characterized by high levels of unemployment as businesses shrink and cut down their number of employees.

After a recession is a trough, which is when economic activity **has reached its lowest**. This means that there can only be a rise in economic activity after a trough. If the economic activity goes further down, then it was not a trough, to begin with. Here, national output, income, and employment are at their lowest for the cycle.

An expansion is the next movement of economic activity after the trough. It is a **rise in economic activity** as the national output, income, and employment all begin to rise towards full employment. In this phase, spending may increase rapidly and outpace the production in the economy. This results in a rapid increase in the price level, which is referred to as **inflation**.

Read our article on Inflation for more on this.

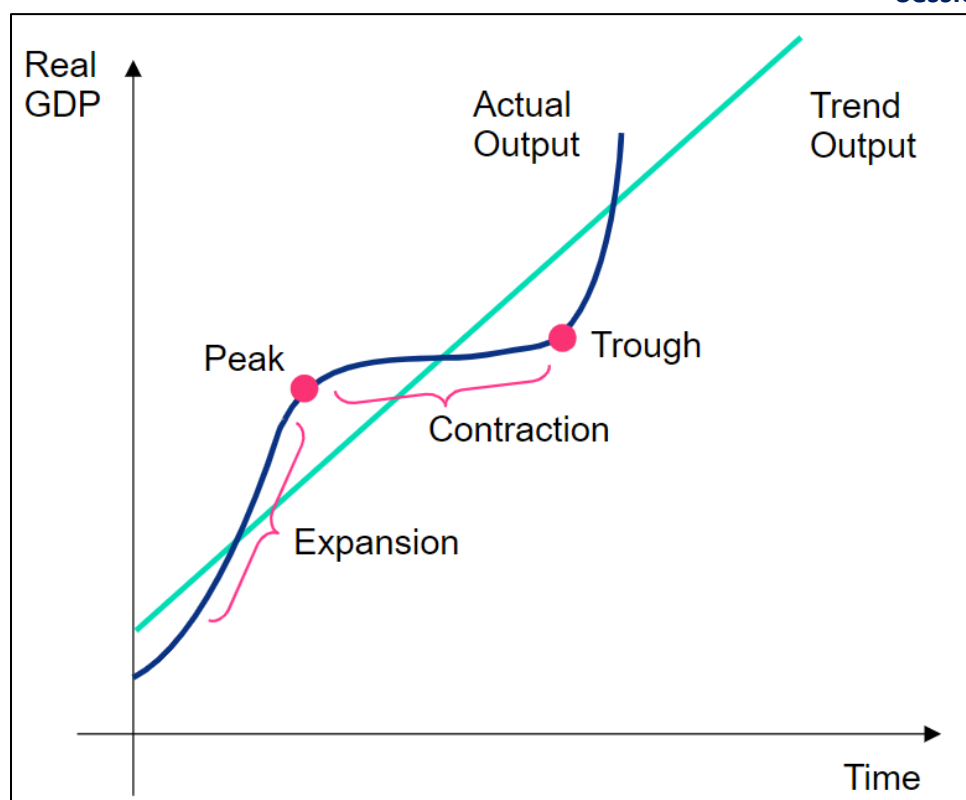


Fig. 1 - Phases of the business cycle

Circular Flow of Income:

The circular flow of income is an economic model that reflects how money or income flows through the different sectors of the economy. A simple economy assumes that there exist only two sectors, i.e., **Households** and **Firms**. Households are consumers of goods and services and the owners of the factors of production (land labour, capital, and enterprise). However, the firm sector produces goods and services and sells them to households.

In the circular flow of income (two-sector economy), there is an exchange of goods and services between the two players i.e., the firms and households, which leads to a certain flow of money in the economy. Households provide the firms with the factors of production, namely **Land (Natural Resources), Labor, Capital, and Enterprise** that generates goods and services, and consumers spend their income on the consumption of these goods and services. The firms then make factor payments to households in the form of rent, wages, interest, and profit. This flow of goods and services and factors payments between firms and households reflects the circular flow of money in an economy.

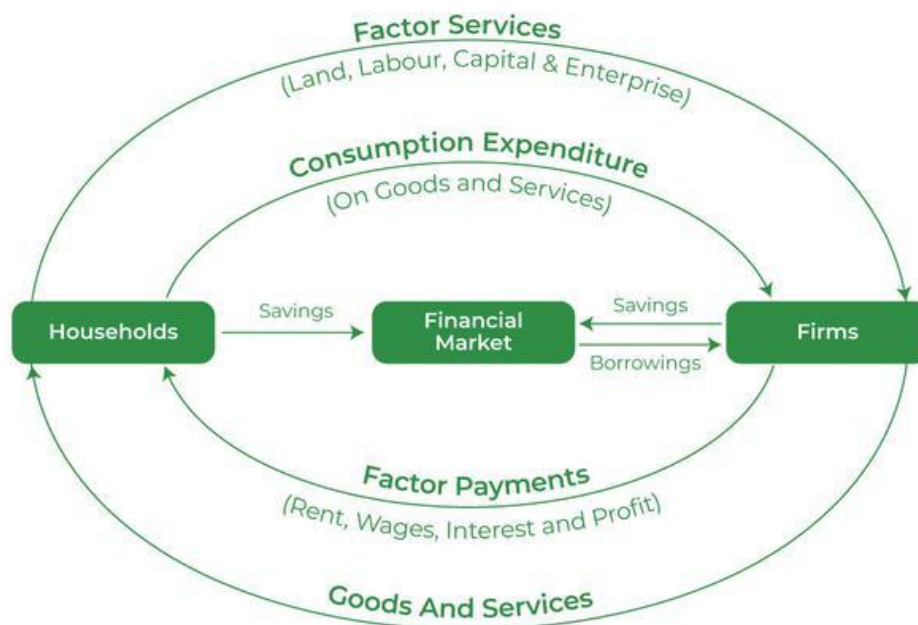
Circular Flow in a Two-sector Economy (with Financial Market)

In the circular flow of an economy in a two-sector model without the financial market, it is assumed that no savings are made in the economy. It means that the households spend their entire income on the purchase of goods and services and every firm spends all the receipts from the sale of goods and services to make factor payments.

However, it does not happen in the actual world, i.e., households do not spend their entire income on the consumption of goods and services. Instead, they save a part of their income for the future. In the same way, the firms save some part of their receipts for the expansion of business or various other reasons. Besides, the firms also borrow money from outside to finance their expansion plans. All of these savings and borrowings happening in the economy are channelized through the financial market. Therefore, in a two-sector economy, the savings made by households accumulated in the financial market are used by the firms for investment purposes.

Financial Market refers to those institutions like insurance companies, banks, etc., which transacts loanable funds in the economy.

This concept can be better understood with the help of the following diagram:



Circular Flow in a Three-sector Economy

The government also plays a crucial role in the economic development of a country. Therefore, the circular flow of income in a three-sector economy includes households, firms, and the government sector. The government of a country acts as both a firm and a consumer. As a firm or producer, the government produces goods and services for the economy. However, as a consumer, it spends money on the consumption of goods and

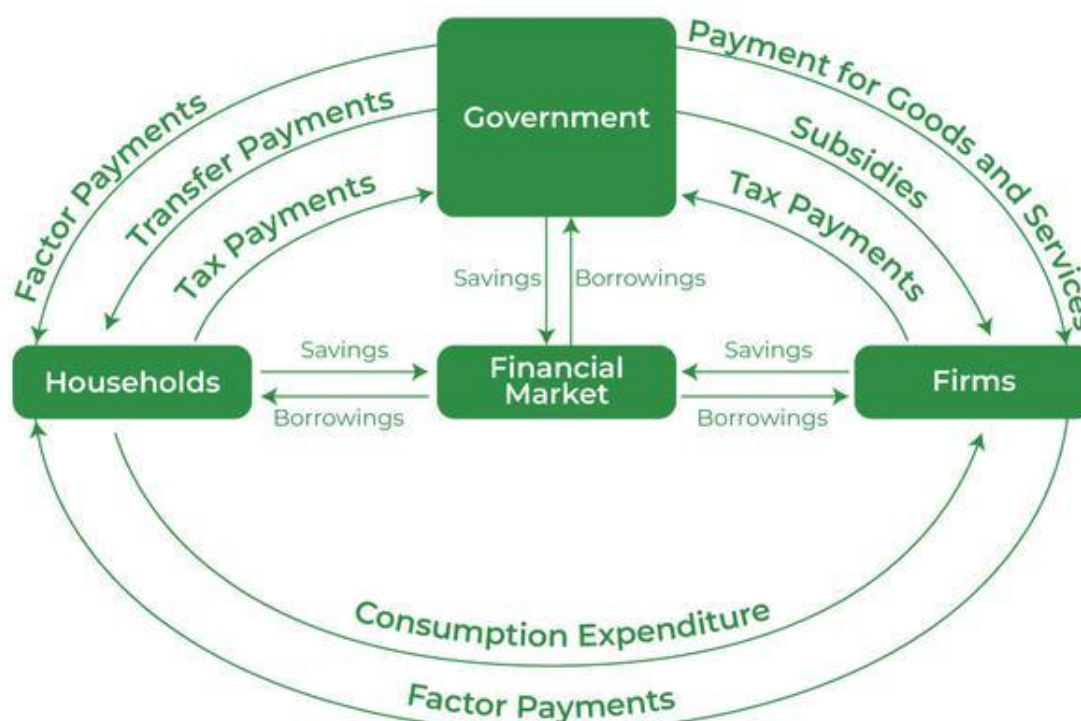
services produced by the firms. Besides the flows of circular income in the two-sector economy with a financial market, the additional flows due to the inclusion of the Government are:

1. Between Households and Government: The money from the government to households flows in an economy in two forms. First, in the form of **transfer payments**, such as old age pensions, scholarships, etc. Second, in the form of **factor payments** for hiring factor services of the households. This money flows back from households to the government in the form of direct taxes, such as interest tax, income tax, etc.

2. Between Firms and Government: The money from firms to the government flows in an economy in the form of direct and indirect taxes. However, the money from the government to the firms flows into an economy in the form of subsidies. In this case, the government grants subsidies to the firms and makes payments to the firms for the purchase of goods and services produced by them.

The financial market also plays an important role in a three-sector economy, as the government saves a part of their earned income and deposits the same in the financial market. Besides, the government also borrows money from the financial market so it can meet its expenditures.

This concept can be better understood with the help of the following diagram:



The Government Sector of an economy performs the following activities:

1. It collects taxes from the households and firms.
2. It makes the payment for the purchase of goods and services from the firms.
3. It also makes transfer payments to the households and provides the firms with subsidies.
4. Lastly, Government saves and borrows money by taking help from the financial market.

Circular Flow in a Four-sector Economy

Besides households, firms, and the government, the foreign sector also plays a crucial role in an economy. Therefore, the circular flow in a four-sector economy consists of households, firms, government, and the foreign sector. Money flows in each of these sectors are as follows:

1. Household Sector: The household sector of an economy provides factor services to the firms, government, and the foreign sector for which it received factor payments in return. Besides factor payments, the households also receive transfer payments like old age pensions, scholarships, etc., from the government and foreign sector. The household sector spends its earned income on Payments for goods and services purchased from firms, payments for imports, and tax payments to the government.

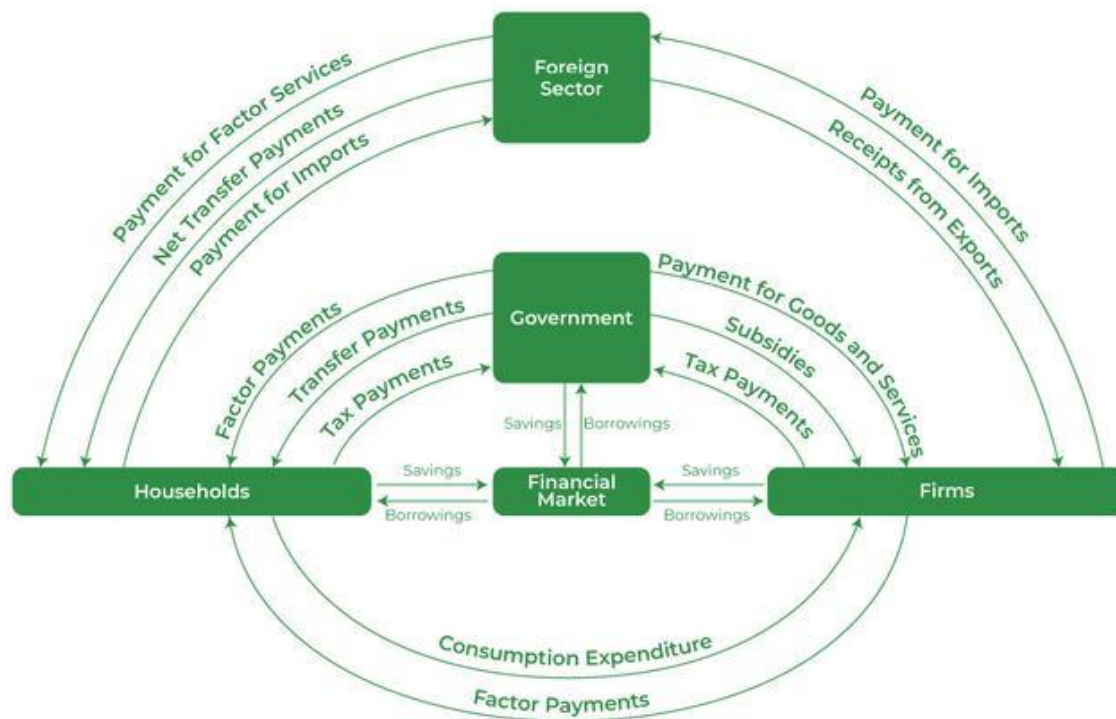
2. Firms: The firms receive revenue for the sale of goods and services from the government, households, and foreign sectors. They also receive subsidies from the government to produce goods and services. Besides, the firms make payments for taxes to the government, factor services to the households, and imports to the foreign sector.

3. Government: The government receives revenue for the sale of goods and services, fees, taxes, etc., from the firms, households, and the foreign sector. It also makes factor payments to households and spends its revenue on transfer payments and subsidies.

4. Foreign Sector: The foreign sector receives revenue for the export of goods and services from firms, households, and the government. It also makes payments to firms and the government for the import of goods and services, and households for the factor services.

The financial market also plays an important role in a four-sector economy as the savings made by the households, firms, and the government gets accumulated here and this money is invested by the financial market in the form of loans to firms, households, and the government. The inflows of money in the financial market in a four-sector economy are equal to the outflows of money, which makes the circular flow of income continuous and complete.

This concept can be better understood with the help of the following diagram:



National income accounting and determination

What is national accounting?

National income accounting refers to the set of methods and principles that are used by the government for measuring production and income, or in other words economic activity of a country in a given time period.

The various measures of determining national income are GDP (Gross Domestic Product), GNP (Gross National Product), and NNP (Net National Product) along with other measures such as personal income and disposable income.

The importance of national income accounting is that it is helpful in facilitating techniques and procedures for measurement of output and income at the aggregate level. It is a process of preparing national income accounts that is based on the principles of double entry system of business accounting.

National income accounting helps in summarizing the economic performance of a country by measuring the national income aggregates for the year.

The government policies are framed on the basis of the data obtained from national income accounting.

What is the national income accounting equation?

National income accounting equation is an equation that shows the relationship between income and expense of an economy and other categories. It is represented by the following equation:

$$Y = C + I + G + (X - M)$$

Where

Y = National income

C = Personal consumption expenditure

I = Private investment

G = Government spending

X = Net exports

M = Imports

The most important metrics that are determined by national income accounting are GDP, GNP, NNP, disposable income, and personal income. Let us know more about these concepts briefly in the following lines.

Gross Domestic Product (GDP)

The most important metric that is determined by national income accounting is GDP or the gross domestic product. GDP is defined as the total monetary or the market value of all the final goods and services that are produced within the geographical boundaries of a country.

GDP works as a scorecard that reflects the economic health of a country. It is calculated on an annual basis. GDP helps in estimating the growth rate of a country. GDP can be calculated using the three methods, which are expenditures method, production method, and income method.

The other indicators of national income are derived from GDP.

GDP can be calculated by the following two methods:

1. Expenditure approach
2. Income approach

Calculation of GDP by expenditure approach is,

$$\text{GDP} = C + I + G + (X - M)$$

Where

GDP = Gross domestic product

C = Personal consumption expenditure

I = Private investment

G = Government spending

X = Net exports

M = Imports

Income approach calculation

$$\text{GDP} = \text{Private consumption} + \text{Gross investment} + \text{Government investment} + \text{Government spending} + (\text{Exports} - \text{Imports})$$

GDP gap: (2020)

The GDP gap, also known as the output gap, is the difference between the potential output and the actual output of an economy. It measures the difference between what an economy could produce at full employment and what it actually produces.

Gross National Product (GNP)

Gross national product or GNP is a measure of the total value of all the finished goods and services that is produced by the citizens of a country irrespective of their geographic location. It calculates only the final or finished goods.

It signifies how much the citizens of a country are contributing to the economy. It does not include income earned by foreign nationals within the country.

GNP is calculated using the following formulae:

$$\text{GNP} = C + I + G + X + Z$$

Where

C = Consumption

I = Investment

G = Government

X = Net exports

Z = Net factor income from abroad

Net National Product (NNP)

Net national product or NNP is the total value of all goods and services that are produced in a country during a given period of time minus the depreciation. It is represented as follows:

$$\text{NNP} = \text{GNP} - \text{Depreciation}$$

Methods of National Income Accounting

There are three methods of measuring national income. They are as follows:

1. **Product method:** In this method, a country's national income can be calculated by adding the output of all the firms in the economy to determine the nation's output.
2. **Income method:** This method is used to calculate incomes generated by production. It includes income from employment, rent obtained for buildings, patents, and copyrights, return on capital from the private sector and public sector, depreciation, etc.
3. **Expenditure method:** In this method, the national income is calculated by adding all the expenditures that are done for purchasing the national output.

Functions of National Income Accounting

The basic functions of national income accounting are as follows:

1. To determine the economic status of a country.
2. To provide a basis of evaluation and reviewing of policies that are under implementation.

Uses of National Income Accounting

Uses of national income accounting are as follows:

1. It reflects the economic performance of an economy and shows its strengths and weaknesses.
2. It helps to determine the structural changes that are appearing in the economy.
3. It helps in comparing nations based on national income.
4. It shows the contribution of each sector towards the growth of the economy.

Problems of national income accounting

(1) Problems of Definition:

What should we include in the National Income?

Ideally, we should include all goods and services produced in the course of the year, but there are some services which are not calculated in terms of money, e.g., services of housewives.

(2) Lack of Adequate Data:

The lack of adequate statistical data makes the task of estimation of national income more acute and difficult.

(3) Non-availability of Reliable Information:

The reason of illiteracy, most producers has no idea of the quantity and value of their output and do not follow the practice of keeping regular accounts.

(4) Choice of Method:

The selection of method while calculating National Income is also an important task. The wrong method leads to poor results.

(5) Lack of Differentiation in Economic Functioning:

In all the countries the occupational specialization is still incomplete so that there is a lack of differentiation in economic functioning. An individual may receive income partly from farm ownership and partly from manual work in industry in the slack season.

(6) Double Counting:

Double counting is also an important problem while calculating national income. If the value of all goods and services totaled, the total will overtake the national output, because some goods are currently consumed being used in the making of others. The best way to avoid this error is to calculate only the value of those goods and services that enter into final consumption.

Keynesian model of national income determination.

The Keynesian cross model is a simple macroeconomic model used to explain the relationship between aggregate demand and real output in an economy. The model was developed by John Maynard Keynes, a British economist, during the 1930s.

The model consists of two main components: aggregate demand and aggregate supply. Aggregate demand (AD) represents the total spending in the economy, while aggregate supply (AS) represents the total amount of output produced in the economy. The model assumes that the economy is closed, meaning that there is no trade with other countries.

The equation for aggregate demand is given by:

$$AD = C + I + G$$

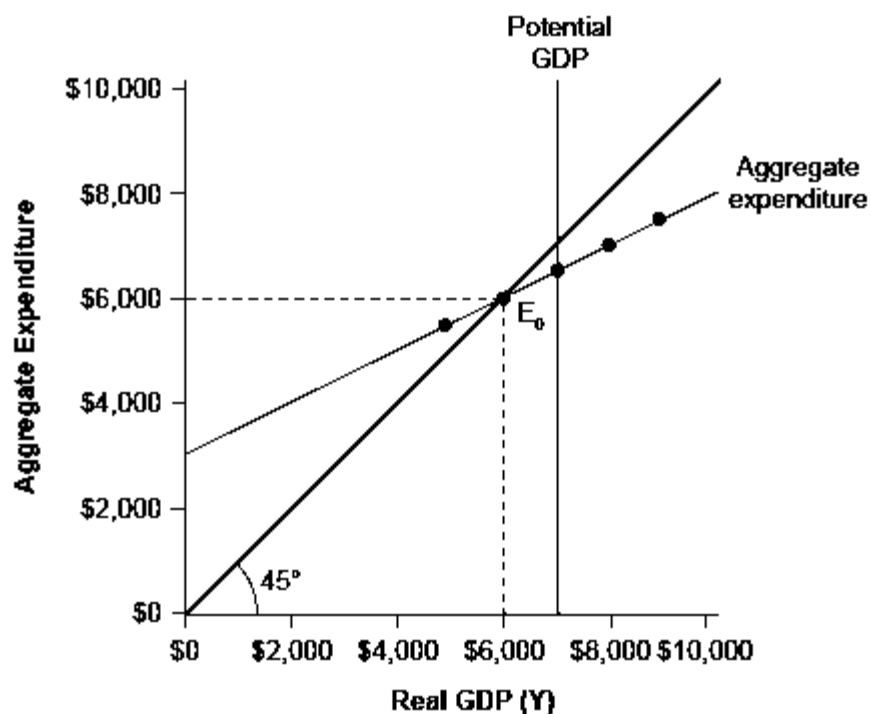
where C is consumption, I is investment, and G is government spending. Consumption is assumed to depend on disposable income, while investment is assumed to depend on interest rates and expectations. Government spending is assumed to be exogenous, meaning that it is determined outside the model.

The equation for aggregate supply is given by:

$$AS = Y$$

where Y is real output.

The model assumes that in the short run, prices are fixed, meaning that changes in aggregate demand will result in changes in real output. This is known as the Keynesian assumption of price stickiness.



The model can be represented graphically as a 45-degree line diagram. The 45-degree line represents the equilibrium level of output, where aggregate demand equals aggregate supply. The intersection of the AD and AS curves with the 45-degree line represents the equilibrium level of output.

The Keynesian cross model is useful for analyzing the effects of changes in government spending or taxation on the economy, as well as the effects of changes in investment or consumption. It is also used to analyze the effectiveness of fiscal policy in stabilizing the economy.

Multiplier and its types in economics

In economics, the multiplier refers to the concept that a change in one component of aggregate demand leads to a greater change in national income or output. The multiplier effect occurs because increased spending leads to increased production and income, which in turn leads to further increases in spending.

There are several types of multipliers in economics, including:

Keynesian multiplier: The Keynesian multiplier, also known as the expenditure multiplier, is the most well-known type of multiplier. It refers to the increase in national income that results from an increase in government spending. The multiplier effect arises because an increase in government spending leads to an increase in aggregate demand, which in turn leads to an increase in production and income. The size of the Keynesian multiplier depends on the marginal propensity to consume (MPC), which is the fraction of additional income that is spent on consumption.

Investment multiplier: The investment multiplier refers to the increase in national income that results from an increase in investment spending. The investment multiplier is similar to the Keynesian multiplier, but it focuses on the effects of changes in investment spending rather than government spending.

Tax multiplier: The tax multiplier refers to the decrease in national income that results from a decrease in government spending due to an increase in taxes. The tax multiplier is the opposite of the Keynesian multiplier, as it measures the decrease in income that results from a decrease in spending.

Balanced budget multiplier: The balanced budget multiplier refers to the effect of changes in government spending that are offset by changes in taxation. In this case, the multiplier effect is neutral, as the increase in spending is offset by the decrease in spending due to taxation.

Overall, the multiplier effect is an important concept in macroeconomics, as it helps to explain how changes in one component of aggregate demand can lead to larger changes in national income or output. The specific type of multiplier depends on the source of the change in spending and the way that it is financed.

Define real GNP and nominal GNP. How do GNP deflator used for calculating inflation rate? (6) (2020)

GNP stands for Gross National Product and it is a measure of the total economic output produced by a country's residents, regardless of where they are located. Real and nominal GNP are two different ways of measuring a country's economic output.

Nominal GNP is the total value of a country's final goods and services produced in a given period, usually a year, expressed in current prices. Nominal GNP does not account for inflation or changes in prices over time, so it can be misleading in comparing economic output across different periods. For example, if a country's nominal GNP increased from one year to the next, it might not necessarily mean that the country's real economic output also increased, as the increase in nominal GNP could be due to inflation or rising prices.

On the other hand, **real GNP** is a measure of a country's economic output that has been adjusted for inflation or changes in prices over time. Real GNP is calculated by taking the nominal GNP and adjusting it for changes in the general price level using a price index such as the Consumer Price Index (CPI) or the GDP deflator. Real GNP provides a more

accurate picture of a country's economic output over time because it accounts for changes in the purchasing power of money.

Calculation:

The GNP deflator is a measure of the overall price level of goods and services produced in a country. It is calculated by dividing nominal GNP by real GNP and multiplying the result by 100. The GNP deflator reflects changes in the prices of all goods and services produced by an economy, including consumption, investment, government spending, and net exports.

The GNP deflator can be used to calculate the inflation rate because it measures changes in the overall price level of goods and services produced in an economy. To calculate the inflation rate using the GNP deflator, you need to compare the GNP deflator in one period to the GNP deflator in another period.

The formula for calculating the inflation rate using the GNP deflator is:

$$\text{Inflation rate} = \frac{(\text{GNP deflator in current period} - \text{GNP deflator in base period})}{\text{GNP deflator in base period}} \times 100\%$$

For example, let's say that the GNP deflator for the base year (year 1) is 100, and in the current year (year 2), it is 120. The inflation rate would be calculated as follows:

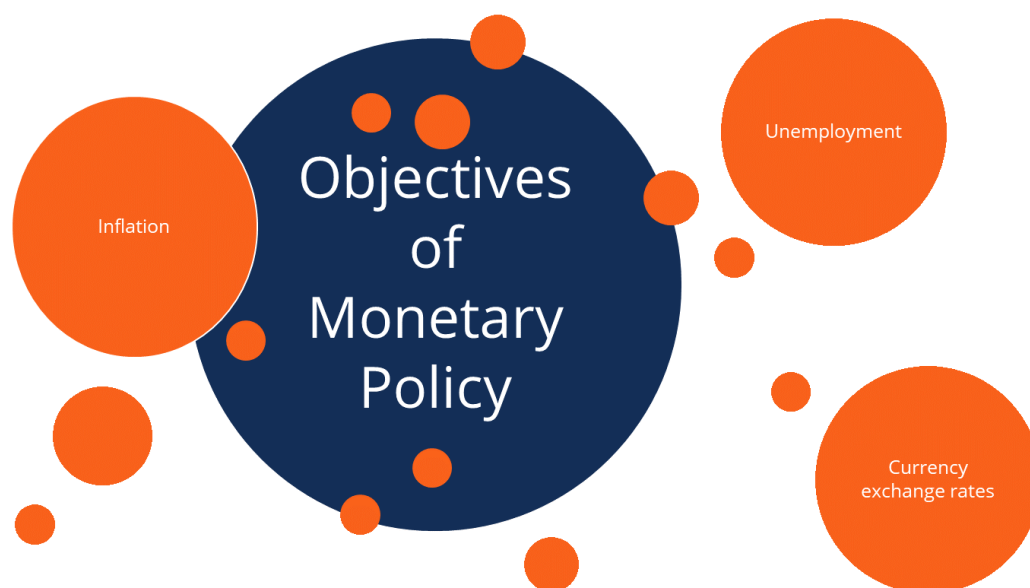
$$\text{Inflation rate} = \frac{(120 - 100)}{100} \times 100\% = 20\%$$

This means that prices have increased by 20% since the base year.

What is Monetary Policy?

Monetary policy is an economic policy that manages the size and growth rate of the money supply in an economy. It is a powerful tool to regulate macroeconomic variables such as inflation and unemployment.

These policies are implemented through different tools, including the adjustment of the interest rates, purchase or sale of government securities, and changing the amount of cash circulating in the economy. The central bank or a similar regulatory organization is responsible for formulating these policies.



Objectives of Monetary Policy

The primary objectives of monetary policies are the management of inflation or unemployment and maintenance of currency exchange rates.

1. Inflation

Monetary policies can target inflation levels. A low level of inflation is considered to be healthy for the economy. If inflation is high, a contractionary policy can address this issue.

2. Unemployment

Monetary policies can influence the level of unemployment in the economy. For example, an expansionary monetary policy generally decreases unemployment because the higher money supply stimulates business activities that lead to the expansion of the job market.

3. Currency exchange rates

Using its fiscal authority, a central bank can regulate the exchange rates between domestic and foreign currencies. For example, the central bank may increase the money supply by issuing more currency. In such a case, the domestic currency becomes cheaper relative to its foreign counterparts.

Tools of Monetary Policy

Central banks use various tools to implement monetary policies. The widely utilized policy tools include:

1. Interest rate adjustment

A central bank can influence interest rates by changing the discount rate. The discount rate (base rate) is an interest rate charged by a central bank to banks for short-term loans. For example, if a central bank increases the discount rate, the cost of borrowing for the banks increases. Subsequently, the banks will increase the interest rate they charge their customers. Thus, the cost of borrowing in the economy will increase, and the money supply will decrease.

2. Change reserve requirements

Central banks usually set up the minimum amount of reserves that must be held by a commercial bank. By changing the required amount, the central bank can influence the money supply in the economy. If monetary authorities increase the required reserve amount, commercial banks find less money available to lend to their clients, and thus, money supply decreases.

Commercial banks can't use the reserves to make loans or fund investments into new businesses. Since it constitutes a lost opportunity for the commercial banks, central banks pay them interest on the reserves. The interest is known as IOR or IORR (interest on reserves or interest on required reserves).

3. Open market operations

The central bank can either purchase or sell securities issued by the government to affect the money supply. For example, central banks can purchase government bonds. As a result, banks will obtain more money to increase the lending and money supply in the economy.

Expansionary vs. Contractionary Monetary Policy

Depending on its objectives, monetary policies can be expansionary or contractionary.

Expansionary Monetary Policy

This is a monetary policy that aims to increase the money supply in the economy by decreasing interest rates, purchasing government securities by central banks, and lowering the reserve requirements for banks. An expansionary policy lowers unemployment and stimulates business activities and consumer spending. The overall goal of the expansionary monetary policy is to fuel economic growth. However, it can also possibly lead to higher inflation.

Contractionary Monetary Policy

The goal of a contractionary monetary policy is to decrease the money supply in the economy. It can be achieved by raising interest rates, selling government bonds, and increasing the reserve requirements for banks. The contractionary policy is utilized when the government wants to control inflation levels.

What is a Fiscal Policy?

A government uses fiscal policy to adjust its spending and tax rates to monitor and influence the performance of the country. The fiscal policy is based on Keynesian economics, a theory by economist John Maynard Keynes. As per the theory, a government can play a major role in influencing productivity levels in an economy by adjusting the tax rates and public spending.

So, this policy helps control inflation, address unemployment, and ensure the health of the currency in the international market. Now that we know what is fiscal policy let's understand its objectives and types.

Objectives of Fiscal Policy

- Boosting employment levels
- Maintain or stabilize the economy's growth rate
- Maintain or stabilize the price levels
- Encourage economic development
- Raising the standard of living
- Maintaining equilibrium in Balance of Payments.

Fiscal Policy Tools

A government has two tools at its disposal under the fiscal policy – taxation and public spending.

Taxation includes taxes on income, property, sales, and investments. On the one hand, more taxes mean more income for the government, but it also results in less income in the hand of the people.

Public spending includes subsidies, and transfer payments, like salaries to government employees, welfare programs, and public works projects. Those who get the funds have more money to spend.

Types of Fiscal Policy

There are two types of fiscal policy – expansionary and contractionary fiscal policy.

Expansionary Fiscal Policy

A government uses this type of policy to stimulate economic growth by increasing spending or lowering taxes, or both. The objective of this policy is to ensure more money in the hands of the citizens so that they spend more. More spending, in turn, leads to more income and more job creation.

There have been debates over which is more effective – tax cuts or spending. Some say that spending in the form of public projects ensures that the money reaches the consumers. Those in favor of the tax argue that tax cuts allow businesses to hire more staff. Though there is no consensus on which of the two is better, the government uses a combination of both tools to boost economic growth.

Contractionary Fiscal Policy

A government rarely uses this policy as it aims to slow economic growth. You must be thinking about why any government will want to do that. The answer is to curtail inflation. Too much inflation has the potential to damage the economy in the long term. So, the government has to step in to control inflation.

Here also, the government has the same tools at its disposal – spending and tax cuts. But, they are used differently – taxes are raised while the spending is reduced. One can easily imagine how unpopular such measures will be among the voters.

Discuss Monetary and Fiscal policy with their authorities, instruments and objectives. (5) (2019)

Monetary policy and fiscal policy are two important tools used by governments and central banks to manage the economy. While they have different authorities, instruments, and objectives, they are both aimed at promoting economic growth and stability.

Monetary Policy:

Authority: The central bank is responsible for implementing monetary policy. In the United States, this is the Federal Reserve.

Instruments: The primary instruments used by the central bank to implement monetary policy include open market operations, reserve requirements, the discount rate, and forward guidance. These tools are aimed at influencing the money supply, interest rates, and inflation.

Objectives: The primary objective of monetary policy is to maintain price stability, which is achieved by keeping inflation within a target range. However, monetary policy also aims to promote economic growth and stability, by supporting full employment and stable economic conditions.

Fiscal Policy:

Authority: Fiscal policy is determined by the government, which is responsible for collecting taxes and spending money on various programs and projects.

Instruments: The primary instruments used by the government to implement fiscal policy include taxation and spending. By increasing or decreasing taxes and government spending, the government can influence the level of economic activity and promote growth and stability.

Objectives: The primary objective of fiscal policy is to promote economic growth and stability, by supporting full employment and stable economic conditions. However, fiscal policy can also be used to address specific issues, such as income inequality or environmental concerns.

While monetary and fiscal policy are distinct tools, they often work together to achieve economic objectives. For example, during times of economic recession, the central bank may implement expansionary monetary policy to lower interest rates and stimulate borrowing and investment, while the government may implement expansionary fiscal policy by increasing spending on infrastructure projects or providing tax cuts to individuals.

and businesses. By working together, these policies can help promote economic growth and stability.

Explain income and expenditure Methods of National income accounting. (4) (2019)

Income Method of National Income

The income approach is an evaluation methodology used for real estate estimation, which is computed by dividing the capitalization tariff or price by the net operating income of the rental payments. Investors use this computation to value properties based on their profitability.

Income Method of Calculating National Income

The income method formula takes into consideration that the measurement of National Income is representative of the flow of income factor. The four elements of production in this regard include:

1. Land (which receive rent)
2. Labor (which receive salary/wages)
3. Capital (which receive interest)
4. Entrepreneurship (which receive profit in the form of remuneration)

The Formula of Income Method is:

National Income = Employees' compensation + Net income + Operating surplus (W + R + P + I) + Net Factor Income generated from abroad

[Where,

W = Salaries and Wages

R = Rental income

P = Profit

I = Mixed Income]

Expenditure Method of National Income

The expenditure method of calculating national income or gross domestic product considers the final goods and services produced in a country during a period of time.

The formula for calculating national expenditure is:

$$\text{National income} = C + I + G + (X - M)$$

Where,

C = Consumption by residents of the nation

I = Investment

G = Government spending

X = Exports

$M = \text{Imports}$

Or **National income** = $C + I + G + NX$

Where,

Net exports (NX) = Exports – Imports

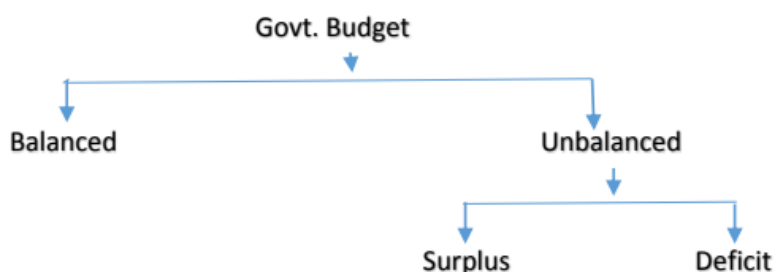
However, the expenditure method excludes the expenditures that are done on the purchase of shares, bonds, and second-hand goods.

Budgets of Bangladesh:

Definition: A budget is a financial plan that outlines expected income and expenses over a certain period of time. It is an estimate of how much money an individual or organization will earn and spend during that time period. The main purpose of a budget is to help individuals or organizations control their spending, prioritize their expenses, and ensure that they have enough money to cover their needs.

Balanced and Unbalanced Budget

A govt. budget is an annual financial statement which outlines the estimated Govt. expenditure and expected Govt. receipts or revenues for the forthcoming fiscal year. Depending on the feasibility of these estimates, Budgets are of two types – Balanced Budget and Unbalanced Budget.



Balanced Budget: Govt. Budget is said to be a balanced budget if estimated Govt. receipts are equal to the estimated Govt. expenditure.

Balanced Budget → Budget Receipts = Budget Expenditure.

Merits: -

- 1) Balanced Budget, an ideal approach to achieve a balanced economy and maintain fiscal discipline.
- 2) It does not indulge in wasteful expenditure.

Demerits: -

- 1) Not applicable for a developing country like India or less developed countries. In such countries, the Government should have more expenditures (than revenue) which will raise aggregate demand.
- 2) Restricts the Govt. from spending on Public welfare.
- 3) Cannot secure full employment.
- 4) Not effective during war and emergency, e.g. during depression it cannot solve unemployment problem.
- 5) Cannot tackle inflation or deflation.

Balanced Budget multiplier defined as the ratio of increase in income to increase in Government expenditure financed by taxes.

Its value is always equal to unity

$$\frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = 1$$

Unbalanced Budget: -

Govt. budget is said to be an unbalanced budget if Government receipts are not equal to expenditures of the Govt. It is of two kinds:

a) Surplus Budget: - If estimated Government receipts are more than the estimated Govt. expenditure, then the budget is termed as 'Surplus Budget'. It lowers aggregate demand.

Government expected revenue > Government proposed expenditure.

b) Deficit Budget: - If estimated Government receipts are less than the estimated Government expenditure, then the budget is termed as 'Deficit Budget'.

Government's estimated Revenue < Government proposed Expenditure.

Revenue budget and capital budget(4) (2019)

Revenue budget and capital budget are two types of budgets that are commonly used by governments and organizations to manage their finances.

Revenue Budget: A revenue budget is a financial plan that outlines the expected income and expenditure for a specific period, typically a fiscal year. The primary purpose of a revenue budget is to estimate the revenue from various sources, such as taxes, fees, and grants, and allocate those funds to different departments or programs. The revenue budget mainly focuses on day-to-day expenses, such as salaries, utilities, and supplies, and it is usually prepared on an annual basis.

Capital Budget: A capital budget is a financial plan that outlines the expected income and expenditure for capital projects or long-term investments. The primary purpose of a capital budget is to estimate the funds required for acquiring or improving fixed assets, such as buildings, machinery, and equipment. The capital budget mainly focuses on investments that will generate long-term benefits and is typically prepared for several years in advance.

Differences between Revenue Budget and Capital Budget: The main difference between revenue budget and capital budget is the purpose for which the funds are allocated. The revenue budget focuses on the day-to-day expenses and operational costs of an organization, whereas the capital budget focuses on long-term investments that generate future benefits. Another difference is the time horizon; the revenue budget is

typically prepared on an annual basis, whereas the capital budget is usually prepared for several years in advance.

In summary, revenue budget and capital budget are both important financial tools that organizations and governments use to manage their finances. While revenue budget focuses on day-to-day expenses, capital budget focuses on long-term investments, and both are necessary to ensure the financial stability and success of an organization.

Merits: -

- 1) In underdeveloped countries deficit budget is used for financing planned development and in advanced countries it is used as stability tool to control business and economic functions.
- 2) In developing countries like India, for promoting economic growth deficit budget is the only option.
- 3) When there is too much inflation, the Govt. can adopt the policy of surplus budget as it will reduce aggregate demand.
- 4) Deficit budget is a good policy to control recession when an economy is in an under-employment equilibrium level.

Demerits: -

- 1) When receipts not equal to expenditure is a liability of the Govt.
- 2) In modern times it is virtually impossible to have a Surplus Budget and Deficit Budget can encourage imprudent expenditures by the Government.
- 3) Deficit Budget increases burden on the Government by accumulating debts.

From the above discussion it follows that the Govt. should live within its means and annually balance its budget is the fiscal policy objective, but to promote economic growth and development, Govt. often adopts Unbalanced Budget (specially Deficit Budget) as a virtue.

Twin deficit hypothesis

The Twin Deficit Hypothesis is an economic theory that suggests that a country's trade deficit and government budget deficit are related. The theory argues that when a government runs a budget deficit, it leads to a higher demand for goods and services, which can lead to an increase in imports and hence, a trade deficit. The Twin Deficits Hypothesis assumes that government deficits are financed by borrowing, which leads to a higher demand for loanable funds and, in turn, leads to a higher interest rate. A higher interest rate can attract foreign investment, which can increase the demand for the country's currency and cause an appreciation of the currency. The appreciation of the currency can make exports more expensive, leading to a trade deficit.

The Twin Deficits Hypothesis is controversial, and economists do not agree on its validity. Some economists argue that a trade deficit and budget deficit can occur independently,

and there may not be a causal relationship between the two deficits. Other economists argue that a trade deficit is caused by factors other than a budget deficit, such as changes in exchange rates or international competitiveness.

An example of the Twin Deficit Hypothesis can be seen in the United States. The United States has been running a trade deficit for many years, which means it imports more goods and services than it exports. At the same time, the US government has been running a budget deficit, which means it spends more money than it receives in revenue.

According to the Twin Deficit Hypothesis, the US government's budget deficit has contributed to the trade deficit. When the government runs a budget deficit, it needs to borrow money to finance its spending. This borrowing can lead to a higher demand for loanable funds, which can drive up interest rates. Higher interest rates can attract foreign investment, which can increase the demand for US dollars and cause the dollar to appreciate. The appreciation of the dollar can make US exports more expensive and less competitive, which can lead to a trade deficit.

However, some economists argue that the US trade deficit is caused by factors other than the government's budget deficit. For example, changes in exchange rates, shifts in global demand for goods and services, and differences in production costs among countries can all contribute to a trade deficit. Therefore, the validity of the Twin Deficit Hypothesis remains a topic of debate among economists.

How does an economy can finance deficit?

An economy can finance its deficit in several ways:

1. **Borrowing:** The government can issue bonds and borrow money from investors both domestically and internationally. This can be a short-term or long-term borrowing.
2. **Printing Money:** Central banks can print more money, which can be used to finance the government's deficit. However, this can lead to inflation if done excessively.
3. **Increasing taxes:** The government can increase taxes to raise revenue and finance its deficit. However, this can be politically unpopular and can affect the economy's growth.
4. **Reducing government spending:** The government can reduce its spending to reduce its deficit. This can include cuts in welfare programs, infrastructure spending, or government salaries.
5. **Foreign aid:** The government can receive financial aid from other countries to finance its deficit.
6. **Public-private partnerships:** The government can partner with private companies to finance its projects and reduce its deficit. This can include infrastructure projects such as highways, bridges, and airports.

What are the goals of last five-year planning of Bangladesh

The last Five-Year Plan of Bangladesh (2016-2020) aimed to achieve several economic goals, including:

1. **Achieve higher GDP growth:** The government set a target of achieving an average GDP growth rate of 7.4% per year during the plan period.
2. **Reduce poverty and unemployment:** The plan aimed to reduce the poverty rate from 24.3% to 12.3% and the unemployment rate from 4.5% to 3.5% by the end of the plan period.
3. **Increase investment in infrastructure:** The plan aimed to increase investment in infrastructure, including roads, bridges, ports, and power generation, to support economic growth.
4. **Increase agricultural productivity:** The plan aimed to increase agricultural productivity by promoting modern technologies, improving irrigation, and enhancing access to credit.
5. **Promote industrialization and exports:** The plan aimed to promote industrialization and exports by encouraging investment in manufacturing, textiles, and other industries.
6. **Improve social services:** The plan aimed to improve access to education, healthcare, and social services for the population.
7. **Promote sustainable development:** The plan aimed to promote sustainable development by encouraging investment in renewable energy, reducing carbon emissions, and protecting the environment.

Overall, the goals of the last Five-Year Plan of Bangladesh were to promote inclusive economic growth, reduce poverty and unemployment, and achieve sustainable development.

Source of income and expenditure in Bangladesh (4) (2019)

Bangladesh has a mixed economy where both private and public sectors contribute to the national income. The major sources of income and expenditure in Bangladesh are as follows:

Sources of Income:

1. Agriculture: Bangladesh is primarily an agricultural country, and the agriculture sector contributes to a significant portion of the country's GDP. Major crops include rice, jute, tea, wheat, sugarcane, and vegetables.
2. Garment Industry: The garment industry is one of the major contributors to Bangladesh's economy, employing millions of workers and generating significant foreign exchange earnings.
3. Remittances: Bangladesh receives a substantial amount of remittances from its citizens working abroad, which is a significant source of income for the country.
4. Manufacturing: Bangladesh has a growing manufacturing industry that produces goods such as textiles, pharmaceuticals, and electronics.
5. Services: The services sector in Bangladesh is expanding, with areas such as tourism, telecommunications, and banking showing promising growth.

Expenditures:

1. Infrastructure Development: Bangladesh is investing heavily in infrastructure development, including transportation, energy, and telecommunications.
2. Education and Health: The government of Bangladesh allocates a significant portion of its budget towards education and healthcare.
3. Defense: The government of Bangladesh spends a substantial amount on defense to ensure national security and maintain law and order.
4. Social Safety Net Programs: Bangladesh has implemented various social safety net programs to provide financial assistance to the poor and vulnerable.
5. Debt Servicing: Bangladesh has borrowed from foreign countries and international organizations to finance its development projects, and as a result, a significant portion of the budget is allocated towards debt servicing.

Overall, the sources of income and expenditures in Bangladesh are diverse, and the country is continuously working towards improving its economic performance and providing better living standards for its citizens.

What are the interregional and international trades. Define tariff, quota, exchange rate and balance of payment. (6) (2019)

Interregional trade refers to the exchange of goods and services between regions or areas within a country, while international trade refers to the exchange of goods and services between different countries.

Interregional trade can occur between regions within a country due to differences in natural resources, climate, labor force, or other factors. For example, a region with abundant natural resources such as oil or minerals may trade with other regions that do

not have such resources, while regions with a skilled labor force may trade with regions that require their expertise.

International trade, on the other hand, occurs between different countries due to differences in resources, technology, labor force, and other factors. International trade allows countries to obtain goods and services that they may not have or may not produce efficiently, while also allowing countries to sell their goods and services to other countries.

Both interregional and international trade can be beneficial to the economies of the regions or countries involved, as it allows them to specialize in the production of goods and services that they have a comparative advantage in, and to obtain goods and services at a lower cost than if they were to produce them domestically.

2nd Part:

1. **Tariff:** A tariff is a tax imposed by a government on imported goods. Tariffs are often used to protect domestic industries from foreign competition or to generate revenue for the government. The tariff increases the price of the imported goods, making them less competitive with domestically produced goods.
2. **Quota:** A quota is a limit on the amount of a specific good that can be imported into a country. Quotas are often used to protect domestic industries by limiting the amount of foreign competition they face. The quota can be set at a specific amount or as a percentage of total imports.
3. **Exchange rate:** The exchange rate is the value of one currency in terms of another currency. Exchange rates are determined by supply and demand in the foreign exchange market. Changes in exchange rates can have significant effects on trade between countries, as they affect the cost of imports and exports.
4. **Balance of payments:** The balance of payments is a record of all the economic transactions between a country and the rest of the world over a specific period of time, usually a year. The balance of payments includes both the current account, which records the country's trade in goods and services, and the capital account, which records the country's financial transactions with the rest of the world. If a country has a surplus in its balance of payments, it means that it is earning more from its exports than it is spending on imports, while a deficit indicates that the opposite is true.