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BASICS OF AGRICULTURAL ECONOMICS

To meet the total demand of the country through local production by using own resources need large quantity of inputs. But no nation has all the resources to produce everything. For instance, India does not have a championship in producing pulses and oilseeds. These are largely imported. So, the demand for these products by India is fulfilled from local production and also through imports. Similarly, within India, not all states produce everything. Cotton is largely grown in Maharashtra and Gujarat, while people across India wear cotton textiles. You must appreciate the fact that it is good to produce something when the resources to produce it are available at the least possible cost to generate profits. Only then the production is sustainable and the business expands. So far, we have used several important terms such as demand, supply, and costs. You shall learn the basic concept of agricultural economics in terms of demand, supply, price, and cost in this lesson.



LEARNING OUTCOMES

After studying this lesson, the learner:

- explains the importance of learning economics;
- describes agricultural economics in terms of definition, nature and scope;
- infers characteristics of Indian agriculture industry;
- identifies the factors of production;
- summarizes the concept of demand and supply as well as their factors;
- defines the cost and revenue concepts; and

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- demonstrates the practical applications and utility of demand, supply, price, and costs.

20.1 ECONOMICS - IT IS ABOUT SCARCITY AND CHOICES

In simplest terms, economics is the study of choice under conditions of scarcity. Scarcity arises because our wants are unlimited while resources are limited. We have less labour, less land, less time, less spending power, and less income, resulting in a shortage of resources. As all these things have limitations, we are forced to make choices. We choose to eat but not spend on expensive food outside. We choose to buy clothes from a local brand to feel good and not spend on more expensive brands. Economists study these choices that individuals make and their consequences. They also study the direct and indirect impact of these choices on society. Therefore, the scarcity of resources and the choices we make related to them form the base of economics.

Households have to make choices regarding different goods and services since their income is limited. They have to allocate their resources efficiently between consumption expenditure and savings. Business firms have to spend on raw materials and pay for wages, among other expenses. As these firms have to make choices on what to produce and what not to, they do so wisely by limiting their costs and allocating resources effectively. The government also makes choices and allocates budgets for different developmental projects, announces policies and programs, and carefully chooses which goals to pursue. Economists study these decisions and try to explain how individuals, society, and systems work and behave in a certain way. Adam Smith who is considered as ‘the father of economics’ wrote a famous book called ‘The Wealth of Nations’ regarding this phenomenon.

20.2 PRINCIPLES OF ECONOMICS

Economics is about the scarcity and management of scarce goods and services by people. For example, it involves how people decide on what and where to buy, as well as at what prices they would like to purchase a product or service. It’s all about making choices. We may encounter such questions daily, such as how to decide the amount of work to do, how much time to spend studying, or whether to go and play cricket or stay home and finish our lessons. Thus, under each of these scenarios, a choice has to be made with respect to time, which is a crucial resource. If you choose to go outside and play cricket, you will lose time for studying. Even if you wanted to do both, no two things can be done simultaneously. Spending more time playing cricket may reduce your time for any other activity, such as studying, listening to music, painting,

dancing, singing, or swimming, etc. Therefore, time has to be allocated in a way that maximizes the satisfaction derived from all of these activities. This is known as optimal allocation of resource (which here in this case is your time and labour).

When it comes to the economy, you may wonder how a firm (or a unit or a company) decides how much to produce. Is the decision of the firm guided by the price or the demand? How are demand and supply related to prices? Making such decisions is what economics is all about. Moving from people to firms and to the society, the society decides how much to spend on food and non-food items like health, education, etc. So, there seems to be an interaction between individuals and firms, and their interaction determines how much should be supplied for a particular demand. The prices at which the buyer agrees to buy and the seller agrees to sell are called the equilibrium price or market price.

The principles of economics therefore are categorized into three categories.

1. How do people decide?
2. How do people interact?
3. How does the whole economy work?

20.2.1 Principles of Individual Decision Making or How do People Decide

There are four economic principles related to it:

A. People make trade offs

The desire for the consumption of goods and services is limitless, but their production is limited by the availability of resources. For instance, you may want to grow all types of fruits, but your resources, including land, labour, and capital, are limited. Hence, you need to make decisions regarding which fruits to grow that can bring in the most profit with the existing resources. Therefore, the allocation of resources becomes crucial, and people have to make trade-offs. They have to sacrifice one goal to achieve another. You cannot grow all types of fruits, and you must prioritize the ones that align with your goals and available resources.

Similarly, if a society or nation decides to spend more on defence, it will have to spend less on other things like entertainment. However, it's crucial for a society to protect its borders from aggressors, so more spending is allocated towards safety and security rather than entertainment. This represents a trade-off; both



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cannot be achieved as the budget is limited. Therefore, it's necessary to allocate the budget efficiently and effectively.

B. People sacrifice something to get another thing

Because resources are scarce by nature, one has to make trade-offs and sacrifice something to gain another thing. This is also known as the principle of opportunity cost. In the examples discussed above, society sacrificed entertainment to gain protection from enemies, and student sacrifices sleep to get good results. Why do you do that? Simply because we assess the returns of every choice over the cost paid for it. You chose and paid for the music class over a painting class only when you assessed that learning music could potentially lead to singing on stage and making millions of rupees, which a painter might not earn. In other words, you sacrificed painting over music because you believed that music would give you better returns.

C. People make rational decisions by thinking at margin

Several times, we often make decisions by making incremental or decremental adjustments. These are known as marginal adjustments and are a common phenomenon that we see in people around us. For example, taking an additional course in the next semester. You will analyze the situation and consider whether those extra credits are good for your focus and time allocation to other subjects. You will add courses as long as the additional or marginal benefits are more than the additional or marginal costs. Therefore, marginality is the principle of intelligent or rational decision-making. Being rational means thinking at the margin. You are rational when you decide not to have an extra slice of bread when you feel full. Eating more will not give you any benefit and might make you sick. This is rationality. Growing an extra acre of land does not mean that you have to buy an extra tractor. One tractor can serve that extra acre as well. This is rationality. When is it good to get an extra tractor? Think!

Another example is the **principle of diminishing marginal utility**. But what is 'Utility'? The total satisfaction derived by consumers from consuming these goods and services is called 'Utility'. 'Marginal utility' means the additional satisfaction that a consumer derives by consuming the additional unit of a product. It is a good way to understand how consumers make decisions. As the amount of satisfaction derived from the consumption of a commodity increases, the consumption of the good decreases. This is known as the **principle of diminishing marginal utility**, and is an effective principle in making choices.

Let us understand it from an example, when you are hungry, the first bite of food gives you satisfaction and as you finish your first bread, your satisfaction increases. There is a time when you feel full and are not able to derive same happiness anymore from third, fourth or fifth bread. So your consumption is limited by the level of satisfaction that you derived.

D. People respond to incentive

Old but true proverb. Yes, we all respond to incentives. Remember what your mom told you when you were a child and wanted her to buy you a chocolate? She would have told you to behave nicely or finish your homework, and you happily did it in anticipation of the chocolate. Have you ever noticed how quickly you grab items from the shelf in the supermarket if there's a discount or an attached offer? This is what an incentive means. We respond positively to bonuses and interest received, and interest makes us keep our money in banks or other financial instruments. This money goes into the economy of the nation and is utilized for different purposes to build the nation's economy. So incentives are important. Wearing a seat belt is an incentive as it can save your life.



ACTIVITY 1

Go to a big retail chain (i.e. shopping mall or showroom) of your area and check wheather any offer is available for products. See if you really got attracted to these offers or not. If you did, that means you responded to the incentives offered by the shop. Share your experience.

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20.2.2 Principles of how do people interact

Somebody's decisions may affect others. The decision to sell can also bring benefits to the buyer. There are several interactions in the economy of this kind. Therefore, this set of principles consists of three principles in total, which are:

A. Trade makes everybody better off

A country cannot produce everything and cannot stand in isolation. Therefore,



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trade makes any country better off as some other country may produce what India is not producing or does not have resources to produce. As the world is now open with no boundaries, it is good to import from where there is a surplus. Trade balances demand and supply, stabilizes prices, and provides a large basket of consumption goods. It, therefore, makes everybody better off. This is also known as principle of comparative advantage.

B. Markets can organize a good economic activity

Markets are the places where the buying and selling of goods and services takes place. Households and firms interact with each other. Households make decisions related to what they want to consume and how much they can pay for it. They also provide labour. On the other hand, firms produce goods for these households by combining all the necessary resources, including labour. The interaction between households and firms leads to a market for labour (input) and finished goods (output).

C. Government's role is critical to improve market outcomes

Sometimes, markets fail to allocate resources effectively, and this is known as market failure. In such situations, the government can intervene and improve market outcomes. For example, in the absence of proper regulation, it is often found that pollution levels may be high or that there may be a high level of food adulteration. Laws and regulations help control these extremes and therefore improve market outcomes.

20.2.3 Principles of how the whole economy works

It covers three principles

A. Any country's standard of living is guided by its ability to combine resources to produce different goods and services

Around the world, countries differ from each other in the standard of living they provide for their citizens. Some parts of the world suffer from poverty, high mortality rates, high birth rates, low income, poor health and education, hunger, and malnutrition. Developed nations, on the other hand, do not face any of these issues. The level of effectiveness in combining resources plays a crucial role in determining a nation's prosperity. If a worker is more productive in America than in India, America can produce more in less time. This increased production may result in generating a surplus to export. Through export earnings,

incomes rise, leading to better consumption of food and non-food items, thereby improving the standard of living. However, if a country lacks resources or has scarce resources like water, it cannot produce a significant amount and heavily relies on imports. When you import, money goes out, and income does not improve, resulting in a lower standard of living. There are also countries that have resources, but they lack the technology to extract them. In such cases, someone else deploys the technology to extract these resources and exports them, and the money goes to the person who owns the technology, not the country where the resources are located. In this scenario, the standard of living of the country owning the resources does not increase. Please think about it!

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B. Price rise when the government prints too much money

Persistent price rise in General Price Level is known as inflation. If more money is circulated in the economy to chase goods and services, prices rise and inflation prevails.

C. Society faces a short-run trade-off between inflation and unemployment

In the short run, the response of prices to changes in the quantity of money in circulation is very slow. Hence, even when the government reduces the quantity of money in the short run, prices do not change immediately (inflation still persists). As a result, the demand for goods and services goes down, affecting productivity which then decreases. Due to low production, firms start laying off workers, resulting in short-term unemployment.



INTEXT QUESTIONS 20.1

1. Too many demands chase too.....resources
2. The cost of giving up something to get something else is called.....
3. People have to make choice as they are limited by the.....
4. Rational people think at
5. Too much printing of money leads to

**Notes****20.3 AGRICULTURAL ECONOMICS: DEFINITION, NATURE AND SCOPE****Definition:**

Agricultural economics is an applied social science dealing with how human choose to use technical knowledge and the scarce production resources such as land, labour, capital and management to produce food and fibre and to distribute it for consumption to various members of the society over a time (Cramer & Jensen).

Nature:

As agricultural economics is an applied social science, and is related with the allocation of scarce resources (land, labour, capital and management) in farm production, processing, and consumption; it is both theoretical and applied in nature. Theoretical, because it focuses on the development of principles of resource economics, production and distribution economics. It is applied in nature as it deals with the applications of these principles to production, consumption and distribution activities in agriculture. These principles have emerged from the basic principles in economics as discussed above.

Scope:

The scope of agricultural economics can be summarized precisely as follows –

- a. Agricultural economics deals with the relationship between different enterprises indicating choice of farming as an occupation and also between different streams or branches of farming, for example cultivation of crops, raising livestock, fisheries, poultry etc. or even between various crops.
- b. The optimum choice between the factors of production (example: how much should labour and capital be combined to produce a certain output) to maximize profit and reduce costs.
- c. Cost-benefit relationship or the relationship between factors of production and price
- d. Commercial relationships of farmers with the national and global markets

It is very important to know that agricultural economics as is applied branch, so it does not differ much from general economics. All tools that are used in general economics are also used in agricultural economics specialized towards agricultural goods and services.

20.4 CHARACTERISTICS OF INDIAN AGRICULTURE AS AN INDUSTRY, ROLE IN THE NATIONAL ECONOMY

- Indian agriculture sector is the primary sector of the economy that contributes around 18% (2nd advanced estimates of National Income 2022-23) to the national income and engages more than 55 per cent of the national population as workforce.
- India is one of the major agricultural players, globally and is one of the largest producers of many agricultural commodities. It is global leader in milk, pulses, and spices production, is second largest producer of wheat, rice, cotton, sugar, fruits, vegetable, and tea. For the year 2022-23, India's estimated production of food grains is 330.53 million tons as per 3rd advanced estimates of food grains released by the Ministry of Agriculture and Farmers Welfare and horticulture production is 351.92 million tons. Dairy is a fast-emerging sector in India. Milk production was 221 million tons in 2021-22, and poultry is a fast-growing sector in India. Today the combined gross value added by wheat and rice is lesser than the gross value added by the Milk alone.
- Agriculture provides raw material to the food processing industry which is poised for a larger growth year on year basis, indicating that the agriculture sector will tend to grow in the coming years. However, there are challenges. According to the last Agricultural Census held in 2015-16, the average land holding in India is 1.08 hectare which is continuously declining posing several challenges like use of advanced technologies on farm. Mechanisation is increasing, still the investment in the sector is low and that prevents gross capital formation hampering long term growth and development.

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Based on area of land, a landholding can be classified as

Less than 1 ha = marginal land

1 to 2 ha = small

2 to 4 ha = semi-medium

4 to 10 ha = medium

Above 10 ha = large holding

Further 1 hectare or 1 ha = 2.47 acre and 1 acre = 4046 m² (square meter)

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- The average household farm income as per the survey conducted by the National Sample Survey Organization (NSSO) in 2019 is only Rs 10, 218 per month (increased from Rs 6446 per month as per previous survey conducted in 2014). The income is not just from crops, it also includes incomes from livestock, and income from off farm and non-farm sources (wages and salaries). Low incomes have prevented young skilled workforce to engage in agriculture. Many want to leave farming. In search of jobs and better resources, many migrate from less developed regions to more developed places for work. This results in the shortage of labour also hampering farm activities in the states from where large-scale migration happens.
- Therefore Government of India formed an Inter-Ministerial Committee under the chairmanship of Dr. Ashok Dalwai, then Additional Secretary to the Government of India, to double farmers' income in 2016, the committee submitted its report in 2018 giving more than 500 recommendations for enhancing yield, and production, building logistics and infrastructure for better marketing, introducing marketing reforms and space for new marketing institutions. The committee suggested improving resource use efficiencies like irrigation, seed and fertilizers, use of digital technologies and stronger extension services. Many recommendations have been put in place; biggest and most revolutionary being the Farmers Producers Organizations (FPO), digital agriculture, start-ups etc.
- Indian agriculture is also highly dependent on South West Monsoon. The changing climatic conditions have brought bigger challenges to the removal of hunger and poverty as part of Sustainable Development Goals (SDGs) 2030. India needs to make huge budget allocation in research and development in agriculture sector.

**ACTIVITY 2**

Visit a vegetable market. Try to purchase some vegetables. Notice and write the factors that affected your decision to purchase from a certain retailer.

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20.5 DEMAND AND SUPPLY**20.5.1 Demand**

Demand is your ability and willingness to buy a certain quantity of good at a certain price, other things being constant. Willingness means you have the desire to buy the product and ability means you can afford to pay for it. Until you have these two, you cannot create demand for any good or service. **The law of demand** states that a quantity demanded of a good and service during a given period relates inversely to its price, considering other factors remain constant.

If the price of good x is P_x and quantity demanded is Q_x , then according to the law of demand

$$Q_x = 1/P_x$$

As the relationship is inverse by nature, when price increases, quantity demanded decreases, and when price decreases, quantity demanded increases.

The nature of the demand curve is therefore downward sloping and it is due to two effects

- a) **Substitution effect:** As many wants to chase few resources, which increases the price of a good, then consumers substitute that good with relatively cheaper goods, and the quantity demanded of the cheaper goods increases (and vice versa). For example, you might consider replacing a costly pulse with a relatively cheaper one. If you do so, you will notice that the demand for the cheaper product rises while that of the costlier one decreases. Therefore, price and quantity demanded are negatively related to each other and the curve is downward sloping.
- b) **Income effect:** Income is of two types: money income, which is simply the total money a person receives, and real income, which refers to the purchasing power of the money earned. A fall in the price of a good increases consumers' real income, making them able to purchase more goods. For a normal good, this leads to an increase in the quantity demanded.

The movement along the demand curve is caused only by the change in price. In figure 20.1 below as the price decreases from P_A to P_B the quantity demanded increases from Q_A to Q_B . This is known as movement along the demand curve.

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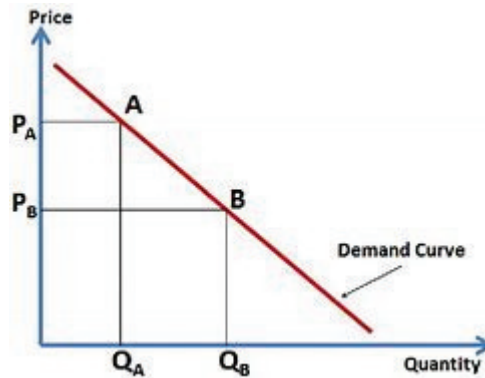


Fig. 20.1: Movement along the demand curve

Exceptions to the law of demand

There are certain exceptions to the law of demand where the inverse relationship between quantity demanded and price does not fit. These are

- For prestigious or luxury goods such as diamonds and BMW cars people prefer to purchase them at high prices. These items are typically bought by high-income individuals for whom prestige and luxury are important. An increase in the price of these items may even lead them to spend more, as the more expensive the possession, the greater the prestige one has in society.
- For necessary goods also, demand rises despite price rise. You will not stop consuming milk or reading the newspaper every morning. While milk prices have increased, people have not stopped consuming it. So the items of necessity do not follow the law of demand.
- Giffen goods do not follow the law of demand. They were named after a Scottish economist, statistician, and journalist named Robert Giffen in the late 19th century. These goods are low-income non-luxury items that have very few substitutes available in the market. As these goods are low-income or inferior, and do not have close substitutes, their demand does not decrease despite an increase in price. For example, bread can become a Giffen good during a war when there is no substitute. Although it may be an inferior good during normal times (when you might prefer to have pasta instead), the demand for bread increases during a war, and people will line up for it. Even if the price increases, demand will not decrease as there is no close substitute available.

Demand and the quantity demanded: It is very important to understand the difference between the demand and quantity demanded of a good. The change in the quantity demanded happens only when there is a change in price and it is represented by the movement along the demand curve as above (Fig. 20.1), the change in demand happens

due to the factors affecting demand i.e., income, price of substitutes, tastes, preferences, consumer expectations. In such cases whole demand curve shifts either upward or downward. An upward shift in the demand is known as increase in demand, while the downward shift indicates the opposite of it (decrease in demand).

Quantity demanded is reflected by movement along the demand curve, demand is reflected by movement of the demand curve. This is very important and shall be understood very carefully.

Factors affecting demand/ shifts in the demand curve: A demand curve indicates the relation between prices of a good and quantities demanded when other factors that could affect demand remain unchanged. These factors are also called determinants and are as follows

- Changes in income of consumer
- Changes in prices of substitute goods or complements
- Changes in expectations of consumers
- Changes in the number or composition of consumers
- Changes in tastes of consumers

The change in these determinants results in a change in the demand. At every price, different quantity is demanded, and so the entire demand curve is shifted either up or down (Fig. 20.2). This is known as movement of the demand curve and is possible only when the determinants change.

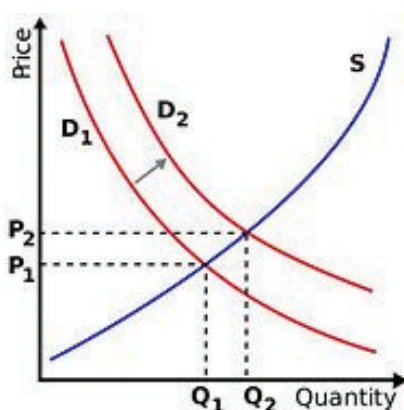


Fig. 20.2: Shift in Demand Curve (Change in demand)

Change in demand: When the demand increases, at each and every price, more of the good is demanded. The demand curve hence shifts to the right. In the following sections, we will discuss the shift in the demand curve and factors affecting these shifts.



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- a. **Change in consumer income:** The goods are classified into two categories- Normal good and Inferior good, depending on the response for their demand to the change in consumer income.

A good is said to be normal when its demand increases when consumer income increases. An increase in income shifts the demand curve to the right means more of the good is demanded at each and every price. An increase in income will raise the demand for air conditioners.

An inferior good is a good whose demand increases as consumer income falls. For example, demand for public transport increases when income falls.

- b. **Change in price of related goods:** Related goods are of two types

I. **Substitutes:** These can be substituted for each other and cannot be consumed together. For example, wheat and maize, Pepsi and Coca-Cola. These goods are related in a way that an increase in the price of one shifts the demand curve for the other rightward. If the price of wheat rises, people tend to shift to a close substitute, such as maize, and therefore the demand for maize increases. The reverse also holds true. A decrease in the price of Coca-Cola leads to a decrease in the demand for Pepsi, simply because people demand more Coca-Cola at low prices.

II. **Complements:** Complementary goods are always consumed or utilized together, for example, a car and fuel, bread and butter. Therefore, when the price of a car increases, the demand for cars goes down, and as a result, the demand for fuel also decreases. This is because an increase in the price of one complement leads to a decline in the demand for the other. Similarly, when the price of bread decreases, there is a greater demand for butter because the low price of bread increases the demand for it, and since bread and butter are consumed together, the demand for butter also increases.

- c. **Change in consumer expectations:** Consumers expectations also change the demand. When they expect price to rise in the future, demand for the goods increases today. For example, if you expect that price of onion will shoot to Rs 150 per Kg tomorrow as against only Rs 50 today, your demand for onion will increase today. Opposite of it happens when consumer expects that prices will decline in the future. In that case demand slows down today.

- d. **Changes in consumer taste:** A change in taste of consumers creates altogether a new demand. For example, if you have developed a taste for momos, and many more like you, then the signal that goes to the momo maker is that more demand has come at all prices that he or she is offering for the product.
- e. **Changes in composition and number of consumers:** If there is a rise in population, demand for food will increase. If only vegetarian population increases, demand for fruits and vegetables will increase more than demand for meat and eggs.

**ACTIVITY 3**

Creation of demand is not easy. Try to sell a pen to your friend. See if you could convince him to purchase it. What did you do to convince him? How did you create the demand for this pen that you just sold? Share your experience.

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20.5.2 Supply

A supply is from the side of the producer. Supply refers to the relation between the price of a good and the quantity that the producers are willing and able to offer for sale during a given period, while other things are constant.

The law of supply states that the quantity of a good supplied during a given period is usually directly related to the price of the good. Increase in price leads to increase in quantity supplied and vice versa. The Supply curve is therefore upward sloping (Fig. 20.3)

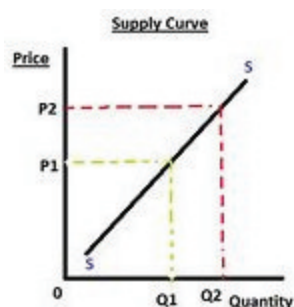


Fig. 20.3: Supply curve



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Like demand, movement of supply curve is caused by the change in . In that event it is known as change in quantity supplied (Fig. 20.4)

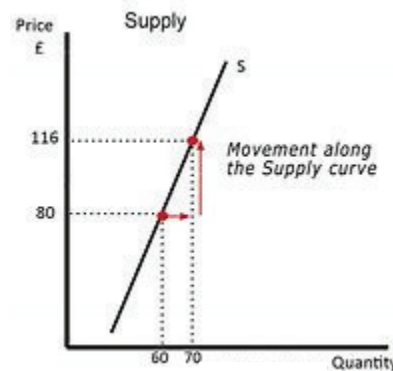


Fig. 20.4: Movement along the Supply Curve

Factors affecting supply cause movement of the supply curve

For the change of supply or movement of supply curve, following factors are involved. These factors are

- Technological changes
- Changes in prices of relevant resources
- A change in price of alternative goods
- Changes in expectations of producers
- Changes in the number of producers or suppliers

Changes in supply therefore are caused by changes in the factors or determinants to the supply curve. It results in changes to the relationship between the price and quantity supplied, and at each and every price, a different quantity is supplied. As a result, we get a new supply curve

A. Technological changes

Technology is the economy's stock of knowledge about how to combine resources efficiently. It is easy to supply more when one has an effective technology. For example, you can produce more with high yielding varieties of seeds (which is an improved technology) as compared to low yielding ones. Improvement in technology shifts supply curve right and degradation of technology reduces supply at all prices. Several researches have shown that using Micro Irrigation Techniques (sprinkler or drip irrigation) over conventional technique (flood irrigation) has improved the yield of the crop.

*Notes***B. Changes in price of relevant sources**

When the price of resources increases, it becomes difficult to procure those resources and combine them efficiently to produce goods. Supply increases when raw materials are available at cheaper rates. For example, if seeds, fertilizers, and labour become more expensive, it will be difficult for the farmer to purchase them and produce crops. When production decreases, supply will also decrease. The opposite is true when resources or raw materials become less expensive.

C. A change in price of alternative goods

Let us begin with an example. If the price of meat increases, producers of meat will supply more meat at all prices. As they increase the supply of meat, the supply of leather will also increase. How is this possible? It is possible because when animals are culled for meat purposes, their hides and skins are removed and utilized by the leather and other industries to produce leather and other products. Hence, high meat prices promote meat producers to supply more meat in the market, which leads to more culling and more availability of leather.

D. Changes in expectations of producers

If producers expect that the prices of resources used in the production process will rise in the future, they will supply less in the future (as the cost of production will rise), so the supply curve will shift downwards. If the expectation is the opposite, the supply curve will move upwards.

E. Changes in the number of producers or suppliers

It simply means that when the number of producers increases, generally the supply also increases, assuming other things remain constant. For instance, if there are more chocolate manufacturers, we can expect the supply of chocolates to increase in the market. Right? I hope you can relate to many such items.

**INTEXT QUESTIONS 20.2**

1. Movement of demand and supply curve is caused by
2. Movement along the demand and supply curve is due to
3. When price rise, other things constant, quantity demanded
4. Bread and Jam are.....goods.

**Notes**

5. Wheat and Maize are.....goods.
6. Goods that do not obey law of demand are calledgoods.

20.6 PRICE DETERMINATION

Prices are determined by the interaction of demand and supply forces. At higher prices, sellers are interested in supplying, but at lower prices, buyers are interested in buying. Both these forces interact with each other until there is an agreement on a price between sellers and buyers to sell and to buy, respectively. When this happens, the trade is executed, meaning the commodity is exchanged between the buyer and the seller, and the transaction is settled in cash. The buyer pays cash (the settled price, equilibrium price, or market clearing price) to the seller, and the seller transfers the commodity to the buyer. This market equilibrium is expressed in fig. 20.5. The figure expresses the price of talcum powder and the quantity demanded of the commodity. E is the equilibrium price arrived at by the interaction of demand and supply forces. At higher prices producers are willing to sell more and there is surplus because buyers are not willing to buy (see the quantity demanded at Rs 600 is 10 units while the supply available is 70 units indicated by point A and B). When no sale happens at that high price, sellers reduce the offer price and at E i.e., Rs 300, they find buyers to purchase talcum powder. At any point below E, example at Rs 100, you would see that buyers are willing to buy but sellers don't offer the product. Hence buyers relax themselves and get willing to purchase at a higher price. At low price there is shortage in the market, because sellers don't supply. The pressure again keeps the price back to point E. At E, you would see that both parties agree to trade (buy and sell).

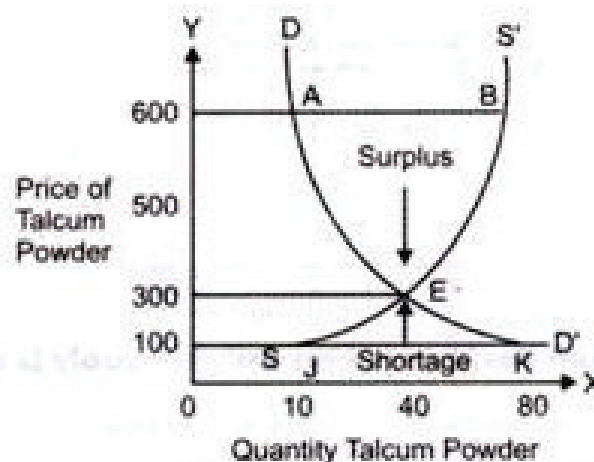


Fig. 20.5: Market Equilibrium example

**INTEXT QUESTIONS 20.3**

1. Price of a product determined by the interaction of demand and supply forces of market is termed as
2. If a product is available at higher price than equilibrium price, market receives surplus (True/False).
3. At lower price, demand is

*Notes***20.7 FACTORS OF PRODUCTION**

The major factors of production are land, labour, capital and management. The technical relationship of these factors is termed as production function. These four factors come together to produce crops and livestock goods and services. Land is the resource you all are aware. Without land, where will you grow? Labour is another crucial factor. It is the human effort that goes in the process of production. It could be a farmer's owned human labour which is known as family labour or could be hired. It is important to know that the labour could be of two kinds. One is just related to the number of humans engaged in the process of production, the other is efficiency of labour which is related to skills the humans have, also known as human capital. Acquiring of skills by workers is known as acquiring human capital. If the amount of human capital by workers can be raised, it will bring more efficiency in production.

Capital is the third factor of production. But what is capital? You might be wondering that any resource is called capital if it satisfies two conditions. i.e., 1. the resource must have been produced and 2. the resource should have the ability to produce other goods and services. One thing that is not considered capital is money. A firm cannot use money directly to produce other goods but it can certainly be used in acquiring capital which can then be utilized by human labor to produce a good or a service. For example, money cannot be grown on land. But from money, you can purchase capital like seeds, fertilizers, machinery, tools etc. which can be combined in different proportions by human efforts (labour) on a certain piece of land to yield a certain output of the crop. Management efforts help in combining all other resources well. A bad management has negative impact on yield and incomes. Hence management is considered fourth factor of production.

Budget in hand is always a limiting resource in combination of inputs or outputs. As a consumer we often think to make decisions of choosing among several commodities,



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but we are constrained by the budget. Consumer makes rational decisions by combining the more number of low priced product and less of high priced product.

20.8 ELEMENTS OF COSTS AND BENEFITS WITH EXAMPLES

20.8.1 Short run and long run costs

In economics, **short run** refers to the time period of production when at least one of the resources or factors of production is fixed and cannot be changed. In short run, a firm can only change its variable resources. **Variable resources** are those that can change with the level of output. Examples of variable resources are seed, fertilizers, plant protection chemicals, manures, hired labour, etc. In short run therefore, a firm can change its level of production by changing its variable resources only. The costs incurred in short run are known as **short run costs**. It means that short run has both fixed and variable costs.

20.8.2 Long run Costs

It is easy for a firm to adjust its fixed and variable factors and hence it has more flexibility in adapting to changing conditions. For example, with changing climatic conditions, no new technology can be adapted in short run because technology development and adoption takes time. However in long run, technology development and adoption is feasible and hence in long run it becomes easy to expand size of firm. One can add more land in long run. The costs associated with these resources are known as long run costs.

20.8.3 Let us now understand fixed and variable costs

Fixed Costs: These are costs that do not change with the level of production, and have to be incurred by the producer irrespective of the increase or decrease in output. For example, land is a fixed resource and remains unchanged regardless of the crop yield. The cost of land is fixed, irrespective of the output a farmer gets from it. Similarly, if the land belongs to somebody else, the farmer has to pay rent, which remains constant regardless of the level of output. Machinery costs are also fixed and cannot be divided to produce less. Therefore, fixed costs are incurred at once in the production system.

Variable costs: These costs vary with the level of output. 1 kg of seed yields 100 kg of crop. To produce 200 kg of crop, one will need 2 kg of seed and hence shall pay for 2 kg. So, the cost of raw materials like seed, fertilizers, pesticides, manure, irrigation and labour cost of weeding, harvesting, ploughing are common variable costs incurred by a farmer in the production of crops.

Total costs: Fixed costs and variable costs together form the total costs incurred by a farmer.

Cost of Production: If the total cost is expressed in terms of the unit quantity produced, it is known as cost of production. Examples include rupees per kilogram (Rs./kg) or rupees per quintal (Rs./q) or rupees per ton (Rs./t).

Cost of Cultivation: If the total costs are expressed in terms of area under cultivation (Rs. per acre or Rs. per hectare), it is referred to as cost of cultivation (as you have cultivated an area under that crop).

An illustration of Cost of Production and Cost of Cultivation: For example, if you have incurred Rs. 10,000 to cultivate one acre of any crop then your cost of cultivation is Rs. 10,000 per acre. Now let us assume that from one acre of this crop, you received 100 Kg of the product then your cost of production will be Rs. 10,000/100 Kg. Right? If I wish to convert it into Rs./Kg then it can be expressed as Rs. 100 per Kg. It means that from one acre if you are producing 100 kg of a crop, your cost of production per kg is Rs. 100 per Kg and your cost of cultivation per acre is Rs. 10,000 per acre. Hope you understood the difference between the cost of cultivation and cost of production.

There are also concepts of average costs and marginal costs

Average cost: This is the cost incurred per unit of output. It is expressed as

$$\text{Average cost (AC)} = \text{Total cost/Quantity}$$

Marginal cost: It is defined as the change in total cost with respect to the change in the total quantity produced.

$$\text{Marginal cost (MC)} = \text{Change in the total cost/Change in the total quantity}$$

Total or returns: Returns are the receipts generated from the sale of the produce. These are the product of the quantity sold in the market and the sales price.

$$\text{Gross returns or total returns} = \text{Total output sold in the market} \times \text{Sales price}$$

Net returns: The net receipts generated after meeting the costs incurred are known as net returns.

$$\text{Net returns} = \text{Gross returns} - \text{Gross or total costs}$$

$$\text{Net returns over variable costs} = \text{Gross returns} - \text{Variable costs}$$

$$\text{Net returns over fixed costs} = \text{Gross returns} - \text{Fixed costs}$$



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**Notes****ACTIVITY 4**

Meet a farmer in your locality. Ask him about his area of cultivation and the costs that he incurred for growing the crop in that season and convert it into per hectare (remember, 1 hectare = 2.47 acre). Please ask the fixed and variable costs both. Then enquire about his yield and price at which he sold the crop. Try to calculate the cost of cultivation of that crop. Find Net returns.

**WHAT YOU HAVE LEARNT**

- Individuals face trade-offs while making decisions.
- The cost of sacrificing something to get some other thing is known as Opportunity cost.
- Rational people weigh marginal benefits and marginal costs.
- In case of a market failure, Government can improve the market outcome.
- Trade makes everybody better off and is the engine of any economy.
- If money grows in circularity, inflation rises.
- More productive a nation, better is its standard of living.
- Society faces a short-run trade off between inflation and unemployment.
- Agricultural Economics is applied social science which is all about combination of resources to maximize agricultural production, minimize costs and make optimum profits.
- Agriculture sector in India is flourishing but has several challenges.
- Doubling or enhancing farmers' income is important.
- Technology can make lives better, but its cost should not be too high.
- Demand and Supply situations govern the economy.
- A change in quantity demanded is not a change in demand.



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- Change in quantity demanded is caused by a change in price.
- Change in quantity demanded is a movement along the demand curve.
- Change in demand is caused by a change in the determinants.
- Change in demand shifts the demand curve.
- Giffen goods and luxurious goods do not follow the law of demand.
- The quantity of a good supplied is directly related to its price.
- A change in quantity supplied is caused by a change in the price of the product, leading to a movement along the supply curve.
- A change in supply is caused by changes in the determinants, resulting in a shift of the entire supply curve either upwards or downwards.
- The satisfaction which is derived from consumption of a commodity is called utility.
- The principle of utility is an important principle in decision making process, especially the Principle of Diminishing Marginal Utility.
- People are bound by the budget in hand and that leads to substitution between input of output.
- If one wants to use machinery, naturally the labour usage will be low.
- The price at which the quantity demanded to sell and buy is agreed upon by a buyer and seller is called the equilibrium price.
- Total cost is further divided into fixed and variable costs.
- Fixed costs do not change with the level of output, while variable costs do change.



TERMINAL QUESTIONS

1. What is Economics? Who is the father of economics and which book he wrote?
2. Why does the society or the individual face the problem of trade off?
3. Explain the principle of opportunity cost.
4. What is demand? How is it generated?
5. Discuss the factors affecting demand.
6. Explain the characteristics of Indian agriculture.



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7. What is the Principle of Diminishing Marginal Utility? Why it is important?
8. Discuss the short run and long run costs in agricultural economics.
9. Discuss the factors of production.
10. Why is the demand curve downward sloping?
11. Discuss the different exceptions of the law of demand.
12. What are complementary goods? Give examples.
13. What are substitutes? Give examples
14. Give examples of Giffen goods?
15. What kind of relationship do supplied quantity share with the price of that product?
16. Explain the determinants of supply.
17. How market equilibrium is determined?
18. Draw a graph of market equilibrium citing an example on your own and explain the same.
19. Explain the fixed costs that a farmer incurs.
20. What are the different kinds of variable costs incurred by a farmer?

**ANSWERS TO INTEXT QUESTIONS****20.1**

1. Less
2. Opportunity Cost
3. Income
4. Margin
5. Inflation

20.2

1. Factors affecting demand and supply
2. Only and only Change in price

3. Low
4. Complements
5. Substitutes
6. Giffen goods

20.3

1. Clearing Price
2. Surplus
3. Low

GLOSSARY

Economics: It is the study of choice under conditions of scarcity.

Agricultural economics: It is a branch of economics which studies how scarce resources like land, labour, capital or management can be used efficiently for better agricultural production and distribution to consumer.

Demand: Demand is ability and willingness of a person to buy a certain quantity of good at a certain price.

Supply: Supply is ability and willingness of a seller to provide a certain quantity of good to buyers.

Fixed cost: These are the costs which do not change with the level of production. E.g., cost of land, machinery or farm buildings.

Variable cost: These are the costs which vary with how much a farmer produces or sells. Examples for such costs are cost of seeds, pesticides or fertilizer.

SUGGESTED READINGS

Hand Book of Agriculture, Published by Indian Council of Agricultural Research (ICAR), New Delhi.

Singh, A., Sandhu, A. N. and Singh, J. (2014). Fundamentals of Agricultural Economics, Himalaya Publishing House, New Delhi.

*Notes*

WHAT YOU HAVE LEARNT

