# UNIT -I

# Difference between microeconomics and macroeconomics

Readers Question: Could you differentiate between micro economics and macro economics?

* Microeconomics is the study of particular markets, and segments of the economy. It looks at issues such as consumer behaviour, individual labour markets, and the theory of firms.
* Macro economics is the study of the whole economy. It looks at ‘aggregate’ variables, such as aggregate demand, national output and inflation.

### Micro economics involves

* Supply and demand in individual markets.
* Individual consumer behaviour. e.g. [Consumer choice theory](https://www.economicshelp.org/university/consumer-choice.html)
* Individual labour markets – e.g. demand for labour, [wage determination.](https://www.economicshelp.org/labour-markets/wage-determination.html)
* Externalities arising from production and consumption. e.g. [Externalities](https://www.economicshelp.org/blog/9448/economics/externalities-free-market/)

### **Macro economics involves**

* Monetary / fiscal policy. e.g. what effect does interest rates have on the whole economy?
* Reasons for inflation and unemployment.
* Economic growth
* International trade and globalisation
* Reasons for differences in living standards and economic growth between countries.
* Government borrowing

### Moving from micro to macro

If we look at a simple supply and demand diagram for motor cars. Microeconomics is concerned with issues such as the impact of an increase in demand for cars.



This micro economic analysis shows that the increased demand leads to higher price and higher quantity.

#### **Macro economic analysis**

This looks at all goods and services produced in the economy.



* The macro diagram is looking at real GDP (which is the total amount of output produced in the economy) instead of quantity.
* Instead of the price of a good, we are looking at the overall price level (PL) for the economy. Inflation measures the annual % change in the aggregate price level.
* Instead of just looking at individual demand for cars, we are looking at aggregate demand (AD) – total demand in the economy.
* Macro diagrams are based on the same principles as micro diagrams; we just look at Real GDP rather than quantity and Inflation rather than Price Level (PL)

### The main differences between micro and macro economics

1. Small segment of economy vs whole aggregate economy.
2. Microeconomics works on the principle that markets soon create equilibrium. In macro economics, the economy may be in a state of **disequilibrium** (boom or recession) for a longer period.
3. There is little debate about the basic principles of micro-economics. Macro economics is more contentious. There are different schools of macro economics offering different explanations (e.g. Keynesian, Monetarist, Austrian, Real Business cycle e.t.c).
4. Macro economics places greater emphasis on empirical data and trying to explain it. Micro economics tends to work from theory first – though this is not always the case.

### Differences between microeconomics and macroeconomics

The main difference is that micro looks at small segments and macro looks at the whole economy. But, there are other differences.

**Equilibrium – Disequilibrium**

Classical economic analysis assumes that [markets return to equilibrium](https://www.economicshelp.org/microessays/equilibrium/market-equilibrium.html) (S=D). If demand increases faster than supply, this causes price to rise, and firms respond by increasing supply. For a long time, it was assumed that the macro economy behaved in the same way as micro economic analysis. Before, the 1930s, there wasn’t really a separate branch of economics called macroeconomics.

**Great Depression and birth of Macroeconomics**

In the 1930s, economies were clearly not in equilibrium. There was high unemployment, output was below capacity, and there was a state of disequilibrium. Classical economics didn’t really have an explanation for this dis-equilibrium, which from a micro perspective, shouldn’t occur.

In 1936, J.M.Keynes produced his The General Theory of Employment, Interest and Money; this examined why the depression was lasting so long. It examined why we can be in a state of disequilibrium in the macro economy. Keynes observed that we could have a negative output gap (disequilibrium in the macro-economy) for a prolonged time. In other words, microeconomic principles of markets clearing, didn’t necessarily apply to macro economics. Keynes wasn’t the only economist to investigate this new branch of economics. For example, Irving Fisher examined the role of debt deflation in explaining the great depression. But, Keynes’ theory was the most wide-ranging explanation and played a large role in creating the new branch of macro-economics.

Since 1936, macroeconomics developed as a separate strand within economics. There have been competing explanations for issues such as inflation, recessions and economic growth.

### Similarities between microeconomics and macroeconomics

Although it is convenient to split up economics into two branches – microeconomics and macroeconomics, it is to some extent an artificial divide.

1. Micro principles are used in macroeconomics. If you study the impact of devaluation, you are likely to use same economic principles, such as the elasticity of demand to changes in price.
2. Micro effects macroeconomics and vice versa. If we see a rise in oil prices, this will have a significant impact on cost-push inflation. If technology reduces costs, this enables faster economic growth.
3. Blurring of distinction. If house prices rise, this is a micro economic effect for the housing market. But, the housing market is so influential that it could also be considered a macro-economic variable, and will influence monetary policy.
4. There have been efforts to use computer models of household behaviour to predict the impact on the macro economy.

UNIT – II

**Consumer’s Behaviour: Cardinal Utility Analysis (Explained With Diagram)**

From time to time, different theories have been advanced to explain consumer’s demand for a good and to derive a valid demand theorem.

Cardinal utility analysis is the oldest theory of demand which provides an explanation of consumer’s demand for a product and derives the law of demand which establishes an inverse relationship between price and quantity demanded of a product.

**Introduction:**

The price of a product depends upon the demand for and the supply of it. In this part of the book we are concerned with the theory of consumer’s behaviour, which explains his demand for a good and the factors determining it. Individual’s demand for a product depends upon price of the product, income of the individual, the prices of related goods.

**It can be put in the following functional form:**

Dx= f(Px, I, Py, P2, T etc.)

where Dx stands for the demand of good X, Px for price of good X, I for individual’s income, Py Pz for the prices of related goods and T for tastes and preferences of the individual. But among these determinants of demand, economists single out price of the good in question as the most important factor governing the demand for it. Indeed, the function of a theory of consumer’s behaviour is to establish a relationship between quantity demanded of a good and its own price and to provide an explanation for it.

Recently, cardinal utility approach to the theory of demand has been subjected to severe criticisms and as a result some alternative theories, namely, Indifference Curve Analysis, Samuelson’s Revealed Preference Theory, and Hicks’ Logical Weak Ordering Theory have been propounded.

**Assumptions of Cardinal Utility Analysis:**

Cardinal utility analysis of demand is based upon certain important assumptions. Before explaining how cardinal utility analysis explains consumer’s equilibrium in regard to the demand for a good, it is essential to describe the basic assumptions on which the whole utility analysis rests. As we shall see later, cardinal utility analysis has been criticised because of its unrealistic assumptions.

**The basic assumptions or premises of cardinal utility analysis are as follows:**

**The Cardinal Measurability of Utility:**

The exponents of cardinal utility analysis regard utility to be a cardinal concept. In other words, they hold that utility is a measurable and quantifiable entity. According to them, a person can express utility or satisfaction he derives from the goods in the quantitative cardinal terms. Thus, a person can say that he derives utility equal to 10 units from the consumption of a unit of good A, and 20 units from the consumption of a unit of good B.

Moreover, the cardinal measurement of utility implies that a person can compare utilities derived from goods in respect of size, that is, how much one level of utility is greater than another. A person can say that the utility he gets from the consumption of one unit of good B is double the utility he obtains from the consumption of one unit of good A.

According to Marshall, marginal utility is actually measurable in terms of money. Money represents the general purchasing power and it can therefore be regarded as a command over alternative utility-yielding goods. Marshall argues that the amount of money which a person is prepared to pay for a unit of a good rather than go without it is a measure of the utility he derives from that good.

Thus, according to him, money is the measuring rod of utility Some economists belonging to the cardinalist school measure utility in imaginary units called “utils” They assume that a consumer is capable of saying that one apple provides him utility equal to 4 utils. Further, on this ground, he can say that he gets twice as much utility from an apple as compared to an orange.

**The Hypothesis of Independent Utilities:**

The second important tenet of the cardinal utility analysis is the hypothesis of independent utilities. On this hypothesis, the utility which a consumer derives from a good is the function of the quantity of that good and of that good only In other words, the utility which a consumer obtains from a good does not depend upon the quantity consumed of other goods; it depends upon the quantity purchased of that good alone.

On this assumption, then the total utility which a person gets from the whole collection of goods purchased by him is simply the total sum of the separate utilities of the goods. Thus, the cardinalist school regards utility as ‘additive’, that is, separate utilities of different goods can be added to obtain the total sum of the utilities of all goods purchased.

**Constancy of the Marginal Utility of Money:**

Another important assumption of the cardinal utility analysis is the constancy of the marginal utility of money. Thus, while the cardinal utility analysis assumes that marginal utilities of commodities diminish as more of them are purchased or consumed, but the marginal utility of money remains constant throughout when the individual is spending money on a good and due to which the amount of money with him varies. Daniel Bernoulli first of all introduced this assumption but later Marshall adopted this in his famous book “Principles of Economics’.

As stated above, Marshall measured marginal utilities in terms of money. But measurement of marginal utility of goods in terms of money is only possible if the marginal utility of money itself remains constant. It should be noted that the assumption of constant marginal utility of money is very crucial to the Marshallian analysis, because otherwise Marshall could not measure the marginal utilities of goods in terms of money. If money which is the unit of measurement itself varies as one is measuring with it, it cannot then yield correct measurement of the marginal utility of goods.

When price of a good falls and as a result the real income of the consumer rises, marginal utility of money to him will fall but Marshall ignored this and assumed that marginal utility of money did not change as a result of the change in price. Likewise, when price of a good rises the real income of the consumer will fall and his marginal utility of money will rise. But Marshall ignored this and assumed that marginal utility of money remains the same. Marshall defended this assumption on the ground that “his (the individual consumer’s) expenditure on any one thing is only a small part of his whole expenditure.”

**Introspective Method:**

Another important assumption of the cardinal utility analysis is the use of introspective method in judging the behaviour of marginal utility. “Introspection is the ability of the observer to reconstruct events which go on in the mind of another person with the help of self-observation. This form of comprehension may be just guesswork or intuition or the result of long lasting experience.”

Thus, the economists construct with the help of their own experience the trend of feeling which goes on in other men’s mind. From his own response to certain forces and by experience and observation one gains understanding of the way other people’s minds would work in similar situations. To sum up, in introspective method we attribute to another person what we know of our own mind. That is, by looking into ourselves we see inside the heads of other individuals.

So the law of diminishing marginal utility is based upon introspection. We know from our own mind that as we have more of a thing, the less utility we derive from an additional unit of it. We conclude from it that other individuals’ mind will work in a similar fashion, that is, marginal utility to them of a good will diminish as they have more units of it.

With the above basic premises, the founders of cardinal utility analysis have developed two laws which occupy an important place in economic theory and have several applications and uses.

**These two laws are:**

(1) Law of Diminishing Marginal Utility and

(2) Law of Equi-Marginal Utility.

It is with the help of these two laws about consumer’s behaviour that the exponents of cardinal utility analysis have derived the law of demand. We explain below these two laws in detail and how law of demand is derived from them.

**Law of Diminishing Marginal Utility:**

An important tenet of cardinal utility analysis relates to the behaviour of marginal utility. This familiar behaviour of marginal utility has been stated in the Law of Diminishing Marginal Utility according to which marginal utility of a good diminishes as an individual consumes more units of a good. In other words, as a consumer takes more units of a good, the extra utility or satisfaction that he derives from an extra unit of the good goes on falling.

It should be carefully noted that it is the marginal utility and not the total utility that declines with the increase in the consumption of a good. The law of diminishing marginal utility means that the total utility increases at a decreasing rate.

**Marshall who has been a famous exponent of the cardinal utility analysis has stated the law of diminishing marginal utility as follows:**

**“The additional benefit which a person derives from a given increase of his stock of a thing diminishes with every increase in the stock that he already has.”**

This law is based upon two important facts. First, while the total wants of a man are virtually unlimited, each single want is satiable. Therefore, as an individual consumes more and more units of a good, intensity of his want for the good goes on falling and a point is reached where the individual no longer wants any more units of the good. That is, when saturation point is reached, marginal utility of a good becomes zero. Zero marginal utility of a good implies that the individual has all that he wants of the good in question.

The second fact on which the law of diminishing marginal utility is based is that the different goods are not perfect substitutes for each other in the satisfaction of various wants. When an individual consumes more and more units of a good, the intensity of his particular want for the good diminishes but if the units of that good could be devoted to the satisfaction of other wants and yielded as much satisfaction as they did initially in the satisfaction of the first want, marginal utility of the good would not have diminished.

It is obvious from above that the law of diminishing marginal utility describes a familiar and fundamental tendency of human nature. This law has been arrived at by introspection and by observing how consumers behave.

**Illustration of the Law of Diminishing Marginal Utility:**

Consider Table 7 1 where we have presented the total and marginal utilities derived by a person from cups of tea consumed per day. When one cup of tea is taken per day the total utility derived by the person is 12 utils. And because this is the first cup its marginal utility is also 12 utils with the consumption of 2nd cup per day, the total utility rises to 22 utils but marginal utility falls to 10. It will be seen from the table that as the consumption of tea increases to six cups per day, marginal utility from the additional cup goes on diminishing (i.e. the total utility goes on increasing at a diminishing rate).

However, when the cups of tea consumed per day increases to seven, then instead of giving positive marginal utility, the seventh cup gives negative marginal utility equal to – 2 utils. This is because too many cups of tea consumed per day (say more than six for a particular individual) may cause acidity and gas trouble. Thus, the extra cups of tea beyond six to the individual in question gives him disutility rather than positive satisfaction.



Figure 7 1 illustrates the total utility and the marginal utility curves. The total utility curve drawn in Figure 7.1 is based upon three assumptions. First, as the quantity consumed per period by a consumer increases his total utility increases but at a decreasing rate. This implies that as the consumption per period of a commodity by the consumer increases, marginal utility diminishes as shown in the lower panel of Figure 7.1.
Secondly, as will be observed from the figure when the rate of consumption of a commodity per period increases to Q4, the total utility of the consumer reaches its maximum level.

Therefore, the quantity Q4 of the commodity is called satiation quantity or satiety point. Thirdly, the increase in the quantity consumed of the good per period by the consumer beyond the satiation point has an adverse effect on his total utility that is, his total utility declines if more than Q4 quantity of the good is consumed.

This means beyond Q4 marginal utility of the commodity for the consumer becomes negative ads will be seen from the lower panel of Figure 7.1 beyond the satiation point Q4 marginal utility curve MU goes below the X-axis indicating it becomes negative beyond quantity Q4 per period of the commodity consumed.

It is important to understand how we have drawn the marginal utility curve. As stated above marginal utility is the increase in total utility of the consumer caused by the consumption of an additional unit of the commodity per period. We can directly find out the marginal utility of the successive units of the commodity consumed by measuring the additional utility which a consumer obtains from successive units of the commodity and plotting them against their respective quantities.

However, in terms of calculus, marginal utility of a commodity X is the slope of the total utility function U = f(Qx). Thus, we can derive the marginal utility curve by measuring the slope at various points of the total utility curve TU in the upper panel of Figure7.1 by drawing tangents at them. For instance, at the quantity Q1 marginal utility (i.e. dU/ dQ = MU1) is found out by drawing tangent at point A and measuring its slope which is then plotted against quantity in the lower panel of Figure 7.1. In the lower panel we measure marginal utility of the commodity on the Y-axis. Likewise, at quantity Q2 marginal utility of the commodity has been obtained by measuring slope of the total utility curve TU at point B and plotting it in the lower panel against the quantity Q2.

It will be seen from the figure that at Q4 of the commodity consumed, the total utility reaches at the maximum level T. Therefore, at quantity Q4 the slope of the total utility curve is zero at this point. Beyond the quantity Q4 the total utility declines and marginal utility becomes negative. Thus, quantity Q4 of the commodity represents the satiation quantity.



Another important relationship between total utility and marginal utility is worth noting. At any quantity of a commodity consumed the total utility is the sum of the marginal utilities. For example, if marginal utility of the first, second, and third units of the commodity consumed are 15, 12, and 8 units, the total utility obtained from these three units of consumption of the commodity must equals 35 units (15 + 12 + 8 = 35).

Similarly, in terms of graphs of total utility and marginal utility depicted in Figure 7.1 the total utility of the quantity Q4 of the commodity consumed is the sum of the marginal utilities of the units of commodity up to point Q4. That is, the entire area under the marginal utility curve MU in lower panel up to the point Q4 is the sum of marginal utilities which must be equal to the total utility Q4T in the upper panel.

**Marginal Utility and Consumer’s Tastes and Preferences:**

The utility people derive from consuming a particular commodity depends on their tastes and preferences. Some consumers like oranges, others prefer apples and still others prefer bananas for consumption. Therefore, the utility which different individuals get from these various fruits depends on their tastes and preferences.

An individual would have different marginal utility curves for different commodities depending on his tastes and preferences. Thus, utility which people derive from various goods reflect their tastes and preferences for them. However, it is worth noting that we cannot compare utility across consumers. Each consumer has a unique subjective utility scale. In the context of cardinal utility analysis, a change in consumer’s tastes and preferences means a shift in his one or more marginal utility curves.

However, it may be noted that a consumer’s tastes and preferences do not frequently change, as these are determined by his habits. Of course, tastes and preferences can change occasionally. Therefore, in economic theory we generally assume that tastes or preferences are given and relatively stable.

**Significance of Diminishing Marginal Utility:**

The significance of the diminishing marginal utility of a good for the theory of demand is that it helps us to show that the quantity demanded of a good increase as its price falls and vice versa. Thus, it is because of the diminishing marginal utility that the demand curve slopes downward. If properly understood the law of diminishing marginal utility applies to all objects of desire including money.

But it is worth mentioning that marginal utility of money is generally never zero or negative. Money represents purchasing power over all other goods, that is, a man can satisfy all his material wants if he possesses enough money. Since man’s total wants are practically unlimited, therefore, the marginal utility of money to him never falls to zero.

The marginal utility analysis has a good number of uses and applications in both economic theory and policy. The concept of marginal utility is of crucial significance in explaining determination of the prices of commodities. The discovery of the concept of marginal utility has helped us to explain the paradox of value which troubled Adam Smith in “The Wealth of Nations.”

Adam Smith was greatly surprised to know why water which is so very essential and useful to life has such a low price (indeed no price), while diamonds which are quite unnecessary, have such a high price. He could not resolve this water-diamond paradox. But modern economists can solve it with the aid of the concept of marginal utility.

According to the modern economists, the total utility of a commodity does not determine the price of a commodity and it is the marginal utility which is crucially important determinant of price. Now, the water is available in abundant quantities so that its relative marginal utility is very low or even zero. Therefore, its price is low or zero. On the other hand, the diamonds are scarce and therefore their relative marginal utility is quite high and this is the reason why their prices are high.

**Prof. Samuelson explains this paradox of value in the following words:**

The more there is of a commodity, the less the relative desirability of its last little unit becomes, even though its total usefulness grows as we get more of the commodity. So, it is obvious why a large amount of water has a low price or why air is actually a free good despite its vast usefulness. The many later units pull down the market value of all units.

Besides, the Marshallian concept of consumer’s surplus is based on the principle of diminishing marginal utility.

**Consumer’s Equilibrium: Principle of Equi-Marginal Utility:**

Principle of equi-marginal utility occupies an important place in cardinal utility analysis. It is through this principle that consumer’s equilibrium is explained. A consumer has a given income which he has to spend on various goods he wants. Now, the question is how he would allocate his given money income among various goods, that is to say, what would be his equilibrium position in respect of the purchases of the various goods. It may be mentioned here that consumer is assumed to be ‘rational’, that is, he carefully calculates utilities and substitutes one good for another so as to maximise his utility or satisfaction.

Suppose there are only two goods X and Y on which a consumer has to spend a given income. The consumer’s behaviour will be governed by two factors first, the marginal utilities of the goods and secondly, the prices of two goods. Suppose the prices of the goods are given for the consumer.

The law of equi-marginal utility states that the consumer will distribute his money income between the goods in such a way that the utility derived from the last rupee spent on each good is equal. In other words, consumer is in equilibrium position when marginal utility of money expenditure on each good is the same. Now, the marginal utility of money expenditure on a good is equal to the marginal utility of a good divided by the price of the good. In symbols,

MUm = MUx / Px

Where MUm is marginal utility of money expenditure and MUm is the marginal utility of X and Px is the price of X. The law of equi-marginal utility can therefore be stated thus: the consumer will spend his money income on different goods in such a way that marginal utility of money expenditure on each good is equal. That is, consumer is in equilibrium in respect of the purchases of two goods X and V when

MUx / Px= MUy / Py

Now, if MUx / Px and MUy / Py are not equal and MUx / Px is greater than MUy / Py, then the consumer will substitute good X for good Y. As a result of this substitution, the marginal utility of good X will fall and marginal utility of good y will rise. The consumer will continue substituting good X for good Y until MUx / Px becomes equal to MUy / Py. When MUx / Px becomes equal to MUy / Py the consumer will be in equilibrium.

But the equality of MUx / Px with MUy / Py can be achieved not only at one level but at different levels of expenditure. The question is how far does a consumer go in purchasing the goods he wants. This is determined by the size of his money income. With a given income and money expenditure a rupee has a certain utility for him: this utility is the marginal utility of money to him.

Since the law of diminishing marginal utility applies to money income also, the greater the size of his money income the smaller the marginal utility of money to him. Now, the consumer will go on purchasing goods until the marginal utility of money expenditure on each good becomes equal to the marginal utility of money to him.

**Thus, the consumer will be in equilibrium when the following equation holds good:**

MUx / Px = MUy / Py= MUm

Where MUm is marginal utility of money expenditure (that is, the utility of the last rupee spent on each good).

If there are more than two goods on which the consumer is spending his income, the above equation must hold good for all of them. Thus

MUx / Px = MUy / Py= …….. = MUm

**Let us illustrate the law of equi-marginal utility with the aid of an arithmetical table given below:**



Let the prices of goods X and Y be Rs. 2 and Rs. 3 respectively. Reconstructing the above table by dividing marginal utilities (MU) of X by Rs. 2 and marginal utilities (MU) of 7 by Rs. 3 we get the Table 7.3.



Suppose a consumer has money income of Rs. 24 to spend on the two goods. It is worth noting that in order to maximise his utility the consumer will not equate marginal utilities of the goods because prices of the two goods are different. He will equate the marginal utility of the last rupee (i.e. marginal utility of money expenditure) spent on these two goods.

In other words, he will equate MUx / Px with MUy / Py while spending his given money income on the two goods. By looking at the Table 7.3 it will become clear that MUx / Px is equal to 5 utils when the consumer purchases 6 units of good X and MUy / Py is equal to 5 utils when he buys 4 units of good Y. Therefore, consumer will be in equilibrium when he is buying 6 units of good X and 4 units of good 7and will be spending (Rs. 2 x 6 + Rs. 3 x 4 ) = Rs. 24 on them that are equal to consumer’s given income. Thus, in the equilibrium position where the consumer maximises his utility.

MUx / Px = MUy / Py= MUm

10/2 = 15/3 =5

Thus, marginal utility of the last rupee spent on each of the two goods he purchases is the same, that is, 5 utils.

Consumers’ equilibrium is graphically portrayed in Fig. 7.2. Since marginal utility curves of goods slope downward, curves depicting and MUx / Px and MUy / Pyalso slope downward. Thus, when the consumer is buying OH of X and OK of Y, then

MUx / Px = MUy / Py= MUm



Therefore, the consumer is in equilibrium when he is buying 6 units of X and 4 units of Y. No other allocation of money expenditure will yield him greater utility than when he is buying 6 units of commodity X and 4 units of commodity Y. Suppose the consumer buys one unit less of good X and one unit more of good Y.

This will lead to the decrease in his total utility. It will be observed from Figure 7.2 (a) that the consumption of 5 units instead of 6 units of commodity X means a loss in satisfaction equal to the shaded area ABCH and from Fig. 7.2(b) it will be seen that consumption of 5 units of commodity Y instead of 4 units will mean gain in utility equal to the shaded area KEFL. It will be noticed that with this rearrangement of purchases of the two goods, the loss in utility ABCH exceeds gain in utility KEFL.

Thus, his total satisfaction will fall as a result of this rearrangement of purchases. Therefore, when the consumer is making purchases by spending his given income in such a way that MUx / Px = MUy / Py, he will not like to make any further changes in the basket of goods and will therefore be in equilibrium situation by maximizing his utility.

**Limitations of the Law of Equi-Marginal Utility:**

Like other laws of economics, law of equi-marginal utility is also subject to various limitations. This law, like other laws of economics, brings out an important tendency among the people. This is not necessary that all people exactly follow this law in the allocation of their money income and therefore all may not obtain maximum satisfaction.

**This is due to the following reasons:**

(1) For applying this law of equi-marginal utility in the real life, consumer must weigh in his mind the marginal utilities of different commodities. For this he has to calculate and compare the marginal utilities obtained from different commodities.

But it has been pointed out that the ordinary consumers are not so rational and calculating. Consumers are generally governed by habits and customs. Because of their habits and customs they spend particular amounts of money on different commodities, regardless of whether the particular allocation maximises their satisfaction or not.

(2) For applying this law in actual life and equate the marginal utility of the last rupee spent on different commodities, the consumers must be able to measure the marginal utilities of different commodities in cardinal terms. However, this is easier said than done. It has been said that it is not possible for the consumer to measure utility cardinally.

Being a state of psychological feeling and also there being no objective units with which to measure utility, it is cardinally immeasurable. It is because of the immeasurability of utility in cardinal terms that the consumer’s behaviour has beenexplained with the help of ordinal utility by J.R. Hicks and R.G.D. Allen.

(3) Another limitation of the law of equi-marginal utility is found in case of indivisibility of certain goods. Goods are often available in large indivisible units. Because the goods are indivisible, it is not possible to equate the marginal utility of money spent on them. For instance, in allocating money between the purchase of car and foodgrains, marginal utilities of the last rupee spent on them cannot be equated.

An ordinary car costs about Rs. 300,000 and is indivisible, whereas foodgrains are divisible and money spent on them can be easily varied. Therefore, the marginal utility of rupee obtained from cars cannot be equalised with that obtained from foodgrains. Thus, indivisibility of certain goods is a great obstacle in the way of equalisation of marginal utility of a rupee from different commodities.

**Derivation of Demand Curve and the Law of Demand:**

We now turn to explain how the demand curve and law of demand is derived in the marginal utility analysis. As stated above, the demand curve or law of demand shows the relationship between price of a good and its quantity demanded. Marshall derived the demand curves for goods from their utility functions.

It should be further noted that in his utility analysis of demand Marshall assumed the utility functions of different goods to be independent of each other. In other words, Marshallian technique of deriving demand curves for goods from their utility functions rests on the hypothesis of additive utility functions, that is, utility function of each good consumed by a consumer does not depend on the quantity consumed of any other good.

As has already been noted, in case of independent utilities or additive utility functions, the relations of substitution and Complementarity between goods are ruled out. Further, in deriving demand curve or law of demand Marshall assumes the marginal utility of money expenditure (Mum) in general to remain constant.

We now proceed to derive demand curve from the law of equi-marginal utility. Consider the case of a consumer who has a certain given income to spend on a number of goods. According to the law of equi-marginal utility, the consumer is in equilibrium in regard to his purchases of various goods when marginal utilities of the goods are proportional to their prices.

**Thus, the consumer is in equilibrium when he is buying the quantities of the two goods in such a way that satisfies the following proportionality rule:**

MUx / Px = MUy / Py= MUm

Where MUmstands for marginal utility of money income in general.

With a certain given income for money expenditure the consumer would have a certain marginal utility of money (Mum) in general. In order to attain the equilibrium position, according to the above proportionality rule, the consumer will equalise his marginal utility of money (expenditure) with the ratio of the marginal utility and the price of each commodity he buys.

It follows therefore that a rational consumer will equalise the marginal utility of money (MUm) with MUx / Px of good X, with MUm/ PY of good 7 and so on. Given Ceteris Paribus assumption, suppose price of good X falls. With the fall in the price of good X, the price of good Y, consumer’s income and tastes remaining unchanged, the equality of the MUx / Px with MUy / Pyand MUm in general would be disturbed.

With the lower price than before MUx / Px will be greater than MUy / Pyor MUm(It is assumed of course that the marginal utility of money does not change as a result of the change in the price of one good). Then, in order to restore the equality, marginal utility of X or MUx must be reduced. And the marginal utility of X or MUx can be reduced only by the consumer buying more of the good X.

It is thus clear from the proportionality rule that as the price of a good falls, its quantity demanded will rise, other things remaining the same. This will make the demand curve for a good downward sloping. How the quantity purchased of a good increases with the fall in its price and also how the demand curve is derived in the cardinal utility analysis is illustrated in Fig. 7.3.



In the upper portion of Fig. 7.3, on the Y-axis MUx / Px is shown and on the X-axis the quantity demanded of good X is shown. Given a certain income of the consumer, marginal utility of money in general for him is equal to OH. The consumer is buying Oq1 of good X when price is Px1since at the quantity Oq1 of X, marginal utility of money OH is equal to MUx / Px1.

Now, when price of good X falls to Px2. The curve will shift upward to the new position MUx/Px2. In order to equate marginal utility of money (OH) with the new MUx / Px2 the consumer increases the quantity demanded to Oq2. Thus, with the fall in price of good X to Px2, the consumer buys more of it.

It should be noted that no account is taken of the increase in real income of the consumer as a result of fall in price of good X. This is because if change in real income is taken into account, then marginal utility of money will also change and this would have an effect on the purchases of goods. Marginal utility of money can remain constant in two cases. First, when the elasticity of marginal utility curve (price elasticity of demand) is unity so that even with increase in the purchase of a commodity following the fall in price, the money expenditure made on it remains the same.

Second, marginal utility of money will remain approximately constant for small changes in price of unimportant goods, that is, goods which account for negligible part of consumer’s budget. In case of these unimportant goods increase in real income following the fall in price is negligible and therefore can be ignored.

At the bottom of Figure 7.3 the demand curve for X is derived. In this lower panel, price is measured on the Y-axis. As in the upper panel, the X-axis represents quantity. When the price of good X is Px1, the relevant curve of MU/P is MUx / Px1 which is shown in the upper panel. With MUx / Px1, he buys Oq1 of good X. Now, in the lower panel this quantity Oq1 is directly shown to be demanded at the price Px2.

When price of X falls to Px2, the curve of MU/P shifts upward to the new position MUx / Px2. With MUx / Px2the consumer buys Oq2 of X. This quantity Oq2 is directly shown to be demanded at price Px2 lower panel. Similarly, by varying price further we can know the quantity demanded at other prices. Thus, by joining points A, B and C we obtain the demand curve DD. The demand curve DD slopes downward which shows that as price of a good falls, its quantity purchased rises.

**Critical Evaluation of Marshall’s Cardinal Utility Analysis:**

Cardinal utility analysis of demand which we have studied above has been criticised on various grounds.

**The following shortcomings and drawbacks of cardinal utility analysis have been pointed out:**

**(1) Cardinal measurability of utility is unrealistic:**

Cardinal utility analysis of demand is based on the assumption that utility can be measured in absolute, objective and quantitative terms. In other words, it is assumed in this analysis that utility is cardinally measurable. According to this, how much utility a consumer obtains from goods can be expressed or stated in cardinal numbers such as 1, 2, 3, 4 and so forth. But in actual practice utility cannot be measured in such quantitative or cardinal terms.

Since utility is a psychic feeling and a subjective thing, it cannot be measured in quantitative terms. In real life, consumers are only able to compare the satisfactions derived from various goods or various combinations of the goods. In other words, in the real life consumer can state only whether a good or a combination of goods gives him more or less, or equal satisfaction as compared to another. Thus, economists like J.R. Hicks are of the opinion that the assumption of cardinal measurability of utility is unrealistic and therefore it should be given up.

**(2) Hypothesis of independent utilities is wrong:**

Utility analysis also assumes that utilities derived from various goods are independent. This means that the utility which a consumer derives from a good is the function of the quantity of that good and of that good alone. In other words, the assumption of independent utilities implies that the utility which a consumer obtains from a good does not depend upon the quantity consumed of other goods; it depends upon the quantity purchased of that good alone.

On this assumption, the total utility which a person gets from the whole collection of goods purchased by him is simply the total sum of the separate utilities of various goods. In other words, utility functions are additive.

Neo-classical economists such as Jevons, Menger, Walras and Marshall considered that utility functions were additive. But in the real life this is not so. In actual life the utility or satisfaction derived from a good depends upon the availability of some other goods which may be either substitutes for or complementary with each other. For example, the utility derived from a pen depends upon whether ink is available or not.

On the contrary, if you have only tea, then the utility derived from it would be greater but if along with tea you also have the coffee, then the utility of tea to you would be comparatively less. Whereas pen and ink are complements with each other, tea and coffee are substitutes for each other.

It is thus clear that various goods are related to each other in the sense that some are complements with each other and some are substitutes for each other. As a result of this, the utilities derived from various goods are interdependent, that is, they depend upon each other. Therefore, the utility obtained from a good is not the function of its quantity alone but also depends upon the existence or consumption of other related goods (complements or substitutes).

It is thus evident that the assumption of the independence of utilities by Marshall and other supporters of marginal utility analysis is a great defect and shortcoming of their analysis. As we shall see below, the hypothesis of independent utilities along with the assumption of constant marginal utility of money reduces the validity of Marshallian demand theorem to the one- commodity model only.

**(3) Assumption of constant marginal utility of money is not valid:**

An important assumption of cardinal utility analysis is that when a consumer spends varying amount on a good or various goods or when the price of a good changes, marginal utility of money remains unchanged. But in actual practice this is not correct. As a consumer spends his money income on the goods, money income left with him declines.

With the decline in money income of the consumer as a result of increase in his expenditure on goods, the marginal utility of money to him rises. Further, when price of a commodity changes, the real income of the consumer also changes. With this change in real income, marginal utility of money will change and this would have an effect on the demand for the good in question, even though the total money income available with the consumer remains the same.

But utility analysis ignores all this and does not take cognizance of the changes in real income and its effect on demand for goods following the change in price of a good. As we shall see below, it is because of the assumption of constant marginal utility of money that Marshall ignored the income effect of the price change which prevented Marshall from understanding the composite character of the price effect (that is, price effect is the sum of substitution effect and income effect).

Moreover, as we shall see later, the assumption of constant marginal utility of money together with the hypothesis of independent utilities renders the Marshall’s demand theorem to be valid in case of one commodity. Further, it is because of the constant marginal utility of money and therefore the neglect of the income effect by Marshall that he could not explain Giffen Paradox.

According to Marshall, utility from a good can be measured in terms of money (that is, how much money a consumer is prepared to sacrifice for a good). But, to be able to measure utility in terms of money marginal utility of money itself should remain constant. Therefore, assumption of constant marginal utility of money is very crucial to Marshallian demand analysis. On the basis of constant marginal utility of money Marshall could assert that “utility is not only measurable in principle” but also “measurable in fact”.

But, as we shall see below, in case a consumer has to spread his money income on a number of goods, there is a necessity for revision of marginal utility of money with every change in price of a good. In other words, in a multi-commodity model marginal utility of money does not remain invariant or constant.

Now, when it is realised that marginal utility of money does not remain constant, then Marshall’s belief that utility is ‘measurable in fact’ in terms of money does not hold good. However, if in marginal utility analysis, utility is conceived only to be ‘measurable in principle’ and not in fact, then it practically gives up cardinal measurement of utility and comes near to the ordinal measurement of utility.

**(4) Marshallian demand therem cannot genuinely be derived except in a one commodity case:**

J.R. Hicks and Tapas Majumdar have criticised Marshallian utility analysis on the ground that “Marshallian demand theorem cannot genuinely be derived from the marginal utility hypothesis except in a one-commodity model without contradicting the assumption of constant marginal utility of money. In other words, Marshall’s demand theorem and constant marginal utility of money are incompatible except in a one commodity case. As a result, Marshall’s demand theorem cannot be validity derived in the case when a consumer spends his money on more than one good.

In order to know the truth of this assertion consider a consumer who has a given amount of money income to spend on some goods with given prices? According to utility analysis, the consumer will be in equilibrium when he is spending money on goods in such a way that the marginal utility of each good is proportional to its price. Let us assume that, in his equilibrium position, consumer is buying q1 quantity of a good X at a price P1. Marginal utility of good X, in his equilibrium position, will be equal to its price p1 multiplied by the marginal utility of money (which, in Marshallian utility analisis, serves as the unit of measurement).

**Thus, in the equilibrium position, the following equation will be fulfilled:**

MUx / = MUmx p1

Since the consumer is buying q1 quantity of good X at price P1, he will be spending P1Q1 amount of money on it. Now, suppose that the price of good X rises from p1 to p2. With this rise in price of X, all other things remaining the same, the consumer will at once find himself in disequilibrium state, for the marginal of good X will now be less than the higher price pg multiplied by the marginal utility of money (Mum) which is assumed to remain unchanged and constant. Thus, now there will be

MUx < MUm. P2

In order to restore his equilibrium, the consumer will buy less of good X so that the marginal utility of good X (MUx) would rise and become equal to the product of p2 and MUm. Suppose in this new equilibrium position, he is buying q2 of good X which will be less than q1. With this he will now be spending p2q2 amount of money on good X. Now the important thing to see is that whether his new expenditure p2q2 on good X is equal to, smaller or greater than P1 q1.

This depends upon the elasticity of marginal utility curve i.e., price elasticity of demand. If the elasticity of marginal utility curve of good X is unity, then the new expenditure on good X (i.e. p2q2) after the rise in its price from p1 to p2 will be equal to the initial expenditure p1q1. When the monetary expenditure made on the good remains constant as a result of change in price, then the Marshallian theory is valid.

But constant monetary expenditure following a price change is only a rare phenomenon. However, the Marshallian demand theory breaks down when the new expenditure p2q2 after the rise in price, instead of being equal is smaller or greater than the initial expenditure p2q2.

If elasticity of marginal utility curve is greater than one (that is, price demand for the good is elastic), then the new expenditure p2q2, after the rise in price from p1 to p2, will be less than the initial expenditure p. On the other hand, if the elasticity of marginal utility curve is less than unity, then the new expenditure p2q2 after the rise in price will be greater than the initial expenditure p1q1.

Now, if the new expenditure p2q2 on good X is less than the initial expenditure p1q1 or it, it means more money will be left with the consumer to spend on goods other than X. And if the new expenditure p2q2 on good X is greater than the initial expenditure p1q1 on it, then less money would be left with him to spend on goods other than X.

In order that the consumer spends the entire amount of money available with him, then in case of new expenditure p2q2 on good X being smaller or greater than initial expenditure p1q1 on it, the expenditure or goods other than X and therefore consumer’s demand for them will change.

But in Marshallian theoretical framework, this further adjustment in consumer’s expenditure on goods other than X can occur only if the unit of utility measurement, that is, the marginal utility of money revised or changed. But Marshall assumes marginal utility of money to remain constant.

Thus, we see that marginal utility of money cannot be assumed to remain constant when the consumer has to spread his money income on a number of goods. In case of more than one good, Marshallian demand theorem cannot be genuinely derived while keeping the marginal utility of money constant.

If, in Marshallian demand analysis, this difficulty is avoided “ by giving up the assumption of constant marginal utility of money, then money can no longer provide the measuring rod, and we can no longer express the marginal utility of a commodity in units of money. If we cannot express marginal utility in terms of common numeraire (which money is defined to be) the cardinality of utility would be devoid of any operational significance.

Only in case there is one good on which the consumer has to spend his money, Marshallian demand theorem can be validity derived. To conclude, in the words of Majumdar, “Except in a strictly one-commodity world, therefore, the assumption of a constant marginal utility of money would be incompatible with the Marshallian demand theorem.

Without the assumption of an invariant unit of measurement, the assertion of measurability would be entirely meaningless. The necessity and the possibility of revision of the unit of utility measurement, following every change in price, had been assumed away in Marshallian theory under the cover of ‘other things remaining the same’ clause.”

(6) Cardinal utility analysis does not split up the price affect into substitution and income effects: The third shortcoming of the cardinal utility analysis is that it does not distinguish between the income effect and the substitutional effect of the price change.

We know that when the price of a good falls, the consumer becomes better off than before, that is, a fall in price of a good brings about an increase in the real income of the consumer. In other words, if with the fall in price the consumer purchases the same quantity of the good as before, then he would be left with some income.

With this income he would be in a position to purchase more of this good as well as other goods. This is the income effect of the fall in price on the quantity demanded of a good. Besides, when the price of a good falls, it becomes relatively cheaper than other goods and as a result the consumer is induced to substitute that good for others. This results is increase in quantity demanded of that good. This is the substitution effect of the price change on the quantity demanded of the good.

With the fall in price of a good, the quantity demanded of it rises because of income effect and substitution effect. But cardinal utility analysis does not make clear the distinction between the income and the substitution effects of the price change. In fact, Marshall and other exponents of marginal utility analysis ignored income effect of the price change by assuming the constancy of marginal utility of money. Thus, according to Tapas Majumdar, “the assumption of constant marginal utility of money obscured Marshall’s insight into the truly composite character of the unduly simplified price-demand relationship”.

They explained the changes in demand as a result of change in the price of a good on the basis of substitution effect on it. Thus, marginal utility analysis does not tell us about how much quantity demanded increases due to income effect and how much due to substitution effect as a result of the fall in price of a good J R Hicks rightly remarks, “that distinction between income effect and substitution effect of a price change is accordingly left by the cardinal theory as an empty box which is crying out to be filled. In the same way, Tapas Majumdar says, “The efficiency and precision with which the Hicks-Allen approach can distinguish between the income and subsitutuion effects of a price change really leaves the cardinal argument in a very poor state indeed.

**(7) Marshall could not explain Giffen Paradox:**

By not visualizing the price effect as a combination of substitution and income effects and ignoring the income effect of the price change, Marshall could not explain the Giffen Paradox. He treated it merely as an exception to his law of demand. In contrast to it, indifference curve analysis has been able to explain satisfactorily the Giffen good case.

According to indifference curve analysis, in case of a Giffen Paradox or the Giffen good negative income effect of the price change is more powerful than substitution effect so that when the price of a Giffen good falls the negative income effect outweighs the substitution effect with the result that quantity demanded of it falls.

Thus in case of a Giffen good, quantity demanded varies directly with the price and the Marshall’s law of demand does not hold good. It is because of the constant marginal utility of money and therefore the neglect of the income effect of price change that Marshall could not explain why the quantity demanded of the Giffen good falls when its price falls and rises when its price rises. This is a serious lacuna in Marshalllian’s utility analysis of demand.

**(8) Marginal utility analysis assumes too much and explains too little:**

Marginal utility analysis is also criticised on the ground that it takes more assumptions and also more severe ones than those of ordinal utility analysis of indifference curve technique Marginal utility analysis assumes, among others, that utility is cardinally measurable and also that marginal utility of money remains constant. Hicks-Allen’s indifference curve analysis does not take these assumptions and even then it is not only able to deduce all the theorems which cardinal utility analysis can but also deduces a more general theorem of demand.

In other words, indifference curve analysis explains not only that much as cardinal utility analysis does but even goes further and that too with fewer and less severe assumptions. Taking less severe assumption of ordinal utility and without assuming constant marginal utility of money, analysis is able to arrive at the condition of consumer’s equilibrium, namely, equality o marginal rate of substitution (MRS) with the price ratio between the goods, which is similar to the proportionality rule of Marshall. Further, since indifference curve analysis does not assume constant marginal utility of money, it is able to derive a valid demand theorem in a more than one commodity case.

In other words indifference curve analysis dearly explains why in case o Giffen goods quality demanded increases with the rise in price and decreases with the fall in price. Indifference curve analysis explains even the case of ordinary inferior goods (other than Giffen goods) in a more analytical Inner.

It may be noted that even if the valid demand f derived for the Marshallian hypothesis, it would still be rejected because “better hypothesis” of indifference preference analysis was available which can enunciate more general demand theorem (covering the case of Giffen goods) with fewer, less severe and more realistic assumptions.

Because of the above drawbacks, cardinal utility analysis has been given up in modern economic theory and demand is analysed with new approaches to demand theory.

UNIT- IV

FACTORS OF PRODUCTION – LAND & CHARACTERISTICS; LABOUR – QUANTITY AND QUALITY OF LABOUR- - DIVISION OF LABOUR – EFFICIENCY OF LABOUR - MALTHUSIAN

In the theory of production, it is assumed that the entrepreneur aims at maximizing his profits. A profit-maximizing entrepreneur will seek to minimize his cost for producing a given output, or to put it in another way; he will maximize his output for a given level of outlay.

# A. FACTORS OF PRODUCTION

Productive resources used to produce a given produce are called factors of production. These productive resources may be raw materials, services of various categories of labourers, or capital supplied by capitalists or entrepreneurship of an entrepreneur who assembles the other factors of production. These factors or resources are also called inputs. Thus, the factors of production are traditionally classified as land, labour, capital and organization. Production, in economics, is understood as the transformation of inputs (or) factors into outputs.

# Land

Land, as ordinarily understood, refers to earth’s surface. But in economics, the term land is used in a very wider sense. Marshall defined land as “the materials and forces which nature gives freely for man’s aid in land and water, in air and light and heat”. Land refers to those natural resources that are useful and scarce. In other words, land stands for all natural resources, which yield an income or have an exchange value.

# Characteristics Features of Land

Land as a factor of production has the following characteristic features:

* 1. Land is fixed in quantity. It is said that land has no supply price. That is, price of land prevailing in the market cannot affect its supply; the price may be high or low, its supply remains the same.
	2. Land has original and indestructible properties.
	3. Land lacks mobility in the geographical sense.
	4. Land differs in fertility.

# Labour

Labour would mean any work, manual or mental, which is done for a reward. Marshall defined labour as “any exertion of mind or body undergone partly or wholly with a view to some good other than the pleasure derived directly from the work”. A person who is working in his rose-garden as a hobby is not a labourer. But, if he works in rose garden, which is cultivated for sales, then he is a labourer.

# Characteristics of Labour

* 1. Labour cannot be separated from the labourer. Hence, a labourer has to sell his labour in person.
	2. Labour is highly perishable. A labourer cannot preserve his labour and deliver it in the future. A day without work in a worker’s life is lost forever.
	3. Labourer has a weak bargaining power. As labour is perishable, it has no reserve price. Hence, labourers have to accept low wages rather than being idle or unemployed.
	4. The supply of labour changes slowly. Supply of labour cannot be curtailed immediately, even if wages fall. This is due to the fact that labourers must earn their subsistence, somehow. Conversely, increase in labour supply depends on new births and a long period of training.
	5. Labour is not so mobile as capital due to differences in language, environment, habits, etc in different localities.

# The amount of labour available in a country depends on two factors:

* 1. Quality of labour and 2) Quantity of labour

# Qualitative Aspect of Labour

Qualitative aspects of labour refer to the efficiency of labour. Efficiency of labour means the amount of work, which a labourer can do with minimum cost and minimum time. Efficiency of labourer refers to the work turned out by a labourer per unit cost and per unit time. The following are some of the important factors, which influence efficiency of labour:

* + 1. **Race:** Hereditary and racial characters influence the efficiency of labour. The efficiency of Japanese is higher than that of other human races.
		2. **Climate:** Cool climate is more conducive for hard work than the hot climate.
		3. **Education:** A higher educated or technically trained man has more efficiency than an uneducated or untrained person.
		4. **Personal Qualities:** If a person has a strong physique, mental alertness and intelligence, his efficiency will be greater.
		5. **Organization and equipment:** A well-organized labour combined with sophisticated equipments would improve labour efficiency.
		6. **Environment:** Good lighting, ventilation and recreation facilities would improve labour efficiency.
		7. **Working hours:** Long working hours without sufficient intervals will reduce the efficiency of labour.
		8. **Fair and prompt payment:** High and prompt payment to a labourer would increase his efficiency.
		9. **Labour organization:** If labourers are properly organized in the form of strong trade union, their efficiency will go up.
		10. **Welfare activities:** Welfare activities like provision of housing, transport and educational facilities, insurance benefits, social security scheme etc. would increase labour efficiency.

# Division of Labour

When the making of an article is split up into several processes and each process is entrusted to a separate set of workers, it is called division of labour. Division of labour is associated with the labour efficiency and it helps in large- scale production. For instance, making the number of chairs will be more, if the process is split up into different parts like making seat, back-rest, and legs and then assembling the parts instead of making the chairs individually.

# Advantages of Division of Labour

1. **Increases productivity:** As the individual worker concentrates on only one process of the work, he is able to do it quickly and thus, the productivity of labour increases.
2. **Increases dexterity and skill:** The worker becomes an expert due to repetitive performance of the same work (process).
3. **Large scale production:** Division of labour improves production not only in terms of quantity but also in quality since goods are made by specialists.
4. **Right man in the right place:** Under division of labour, workers are so distributed among various works that each worker is put according to his ability.

# 2. Disadvantages of Division of Labour

1. **Monotony:** As the worker repeats the same work for a long time, it becomes monotonous to the worker and soon he lacks interest in his work.
2. **Risk of unemployment:** If a worker (specialist) happens to lose his present job, he may not be able to get similar job elsewhere immediately.

# Mobility of Labour

Since the labour has to be delivered by labourer himself, he has to move from one place to another in order to get employment. There are different kinds of mobility of labour.

1. **Geographical mobility:** It is the movement of labourer from one place to another. This is also called migration. If labourers move out of the country (India), it is called emigration. If they enter in to the country (India), it is called immigration.
2. **Vertical mobility:** This implies a change in occupation from a lower to a higher order. (E.g.) An Assistant Professor is promoted as Associate Professor.
3. **Horizontal mobility:** This means mobility from one occupation to another without any change in the occupational status. (E.g.) A stenographer shifting from one department/firm to another without any promotion or change in his/her occupational status.

# Quantitative Aspect of Labour

Quantitative aspect of labour refers to the size of working population in a country. There are certain theories of population, which explain why and how population increases and they also indicate the optimum size of population. Theories of population can be classified into two categories on the basis of

(i) food supply (Malthusian theory) and (ii) per capita output (optimum theory).

* 1. **Malthusian Theory of Population:** Thomas Robert Malthus (1766-1834), an English clergyman, propounded this theory in his famous book entitled “An

Essay on the Principles of Population”(1798). He deplored the strange contrast between over-care in breeding animals and carelessness in breeding men. The fundamental propositions of the Malthusian theory are given below:

* + 1. The size of population in a country is dependent on the production of food grains. If food supply is large, the country can support a large population. If food supply is small, the country can support only a small population. In other words, population is necessarily limited by the means of subsistence (food).
		2. Population tends to grow in geometric progression, viz., 1,2,4,8,16 and so on. In short, population gets doubled every 25 years.
		3. Food production tends to grow in arithmetic progression, viz., 1,2,3,4,5 and so on. In short, there will be a constant addition to food supply every 25 years. He thought that there is no limit to fertility of human beings. He said, “ Men multiply like mice in the barn-yard”. But the power of land to produce food is limited.
		4. Population increases at a faster rate than food production. Population always increases when the means of subsistence increases, unless prevented by some powerful and obvious checks.
		5. There are two types of checks, which can keep population at a level with the means of subsistence. They are the preventive and positive checks. Preventive checks would reduce the size of population by bringing down the birth rate. They are applied by man himself voluntarily. They include (a) celibacy, (b) late marriage and (c) self control in married life. Positive checks reduce the growth of population by increasing the death rate. If people do not adopt preventive checks, nature will tend to be furious and impose certain checks to arrest the growth rate of population and they are known as positive checks. The positive checks are famines, epidemics, wars, earthquakes, floods, etc. Malthus recommended the use of preventive checks, if mankind was to escape from the nature’s positive checks i.e., misery.

# Criticism of Malthusian Theory

* 1. In later editions of his book, Malthus dropped the expressions of geometric and arithmetic progressions but still maintained that the increase in population would exceed the growth in food supply. However, in many Western countries, through the use of more capital and technology, food grain production

was increased tremendously. In fact, the rate of increase of food production has been much greater than the rate of population growth in these countries.

* 1. Malthus said that the population would increase, if the means of subsistence increase. However, when the standard of living of people increases in a country, the size of family gets reduced.
	2. Malthus compared population only with food production. He should have compared the growth of population with total production of all commodities. For example, Great Britain is able to export industrial products to other countries in exchange for food grains.
	3. Along with the expansion of population, it is not only the demand, but also the supply of food grains, which increases with the increase in the labour power of the country. It is argued that a child, on being born, has not only a mouth to be fed, but also has two hands to work.
	4. According to professor Seligman, the problem of population is not merely one of size, but of efficient production and equitable distribution. If with the expansion of population, production also increases and the increased production and national income are equitably distributed, then increase in population may do no harm to the country.

# Does the Malthusian Theory Apply to India?

The Malthusian Theory is applicable to India to some extent. The population growth rate was 2.14 per cent per annum (1981-91) and the food grain production growth rate was 2.52 per cent (1949-50 to 1995-96). However, birth rate and death rate are very high in India. This is a symptom of over population. The average expectation of life is still very low. Standard of living in India is also very low. The country is being suffered by natural calamities like flood, drought, epidemics, and so on. Finally, there is a very heavy toll of human life due to communal clashes in India. Thus, except food grain production, all other development indicators are not favourable for the development of the country.

# ii) Optimum Theory of Population

The optimum theory attempts to define what would economically be the ideal size of population for a particular country. According to the optimum theory, there is a particular size of population, which along with the existing natural resources and a given state of technology yields the highest income per capita in a country.

1. **Under population:** If population of a country is below the optimum size, the country is said to be under-populated. In under populated country, the natural and capital resources are not fully exploited (utilized).
2. **Over population:** If the population is in excess of optimum size, the country is said to be over populated. Following are some of the problems to be faced by over-populated country.
	1. Average productivity will decrease.
	2. Per capita income will be very low.
	3. Standard of living will fall.

If the quantity of labour is small relative to the natural resources, then even the actually available resources remain under-utilized. If the population increases and more labourers become available to be combined with the given stock of the natural resources and capital equipments, out put per capita or per capita income will rise. As population continues to increase, a point will finally be reached when capital and natural resources are fully utilized and, therefore,

P

P’

P

**Output Per capita**

# Optimum Population

0 M

# Size of Population

## Fig.4.1 Optimum Population

P’’

**Output Per capita**

0 M M’M’’

# Size of Population

## Fig.4.2 Shifts in Optimum

***Population***

output per capita is the highest. The level of population at which per capita output (income) is the maximum is called the optimum population. If population still goes on increasing, that is, crosses the optimum point, out put per capita will start declining. The country would then become over-populated. In the figure 4.1, at OM level of population, the output per capita (MP) is the highest. If the population increases beyond OM, output per capita falls. Therefore, OM is the optimum population. If the population of the country is less than OM, it will be under-populated and if the population is more than OM, it will be a case of over population. The per capita out put curve may change (M’P’ and M” P”) as a result of an increase in resources or progress in technology and their effects on optimum population are shown in the figure 4.2. That is, the size of optimum population also increases. Dalton has given a formula with which we can judge the extent to which the actual population of a country deviates from the optimum

population. The extent of deviation is called mal-adjustment. The formula is M = A-O / O. Where M is maladjustment, A is actual population and O is optimum population. If M is negative, the country is under-populated. If M is zero, the country has optimum population and if M is positive, the country is over populated. For instance, if the actual population is 80 crores and the optimum population is 40 crores, then M=80-40 / 40 =1. This indicates that the country is over populated.

# Criticism on Optimum Theory of Population

* 1. It is almost impossible to determine the optimum size of population, as it is very difficult to estimate the level of capital stock available in a country.
	2. As the natural and capital resources continuously change, the size of optimum population is also subject to change.

# Malthusian Theory and Optimum Theory of Population

* 1. Malthus focused his attention on food production, whereas the optimum theory takes into consideration of economic development in all its aspects.
	2. Malthus seemed to be thinking of maximum number for a country, which, if exceeded, would bring misery. According to the optimum theory, there is no rigidly fixed maximum population.
	3. According to Malthus, famine, war and disease were the indicators of over population. But the declining trend of per capita output would indicate the over population as per the optimum theory.

 UNIT – V

**Inflation**

**Inflation: Types, Causes and Effects (With Diagram)**

**1. Meaning of Inflation:**

Inflation is often defined in terms of its supposed causes. Inflation exists when money supply exceeds available goods and services. Or inflation is attributed to budget deficit financing. A deficit budget may be financed by the additional money creation. But the situation of monetary expansion or budget deficit may not cause price level to rise. Hence the difficulty of defining ‘inflation’.

Inflation may be defined as ‘a sustained upward trend in the general level of prices’ and not the price of only one or two goods. G. Ackley defined inflation as ‘a persistent and appreciable rise in the general level or average of prices’. In other words, inflation is a state of rising prices, but not high prices.

It is not high prices but rising price level that constitute inflation. It constitutes, thus, an overall increase in price level. It can, thus, be viewed as the devaluing of the worth of money. In other words, inflation reduces the purchasing power of money. A unit of money now buys less. Inflation can also be seen as a recurring phenomenon.

While measuring inflation, we take into account a large number of goods and services used by the people of a country and then calculate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short term workings of the market.

It is to be pointed out here that inflation is a state of disequilibrium when there occurs a sustained rise in price level. It is inflation if the prices of most goods go up. Such rate of increases in prices may be both slow and rapid. However, it is difficult to detect whether there is an upward trend in prices and whether this trend is sustained. That is why inflation is difficult to define in an unambiguous sense.

Let’s measure inflation rate. Suppose, in December 2007, the consumer price index was 193.6 and, in December 2008, it was 223.8. Thus, the inflation rate during the last one year was

223.8- 193.6/ 193.6 x 100 = 15.6

As inflation is a state of rising prices, deflation may be defined as a state of falling prices but not fall in prices. Deflation is, thus, the opposite of inflation, i.e., a rise in the value of money or purchasing power of money. Disinflation is a slowing down of the rate of inflation.

**2. Types of Inflation:**

As the nature of inflation is not uniform in an economy for all the time, it is wise to distinguish between different types of inflation. Such analysis is useful to study the distributional and other effects of inflation as well as to recommend anti-inflationary policies. Inflation may be caused by a variety of factors. Its intensity or pace may be different at different times. It may also be classified in accordance with the reactions of the government toward inflation.

**Thus, one may observe different types of inflation in the contemporary society:**

***A. On the Basis of Causes:***

**(i) Currency inflation:**

This type of inflation is caused by the printing of currency notes.

**(ii) Credit inflation:**

Being profit-making institutions, commercial banks sanction more loans and advances to the public than what the economy needs. Such credit expansion leads to a rise in price level.

**(iii) Deficit-induced inflation:**

The budget of the government reflects a deficit when expenditure exceeds revenue. To meet this gap, the government may ask the central bank to print additional money. Since pumping of additional money is required to meet the budget deficit, any price rise may the be called the deficit-induced inflation.

**(iv) Demand-pull inflation:**

An increase in aggregate demand over the available output leads to a rise in the price level. Such inflation is called demand-pull inflation (henceforth DPI). But why does aggregate demand rise? Classical economists attribute this rise in aggre-

gate demand to money supply. If the supply of money in an economy exceeds the available goods and services, DPI appears. It has been described by Coulborn as a situation of “too much money chasing too few goods.”

Keynesians hold a different argument. They argue that there can be an autonomous increase in aggregate demand or spending, such as a rise in con-sumption demand or investment or government spending or a tax cut or a net increase in exports (i.e., C + I + G + X – M) with no increase in money supply. This would prompt upward adjustment in price. Thus, DPI is caused by monetary factors (classical adjustment) and non-monetary factors (Keynesian argument).

DPI can be explained in terms of Fig. 4.2, where we measure output on the horizontal axis and price level on the vertical axis. In Range 1, total spending is too short of full employment output, YF. There is little or no rise in the price level. As demand now rises, output will rise. The economy enters Range 2, where output approaches towards full employment situation. Note that in this region price level begins to rise. Ultimately, the economy reaches full employment situation, i.e., Range 3, where output does not rise but price level is pulled upward. This is demand-pull inflation. The essence of this type of inflation is that “too much spending chasing too few goods.”

**(v) Cost-push inflation:**

Inflation in an economy may arise from the overall increase in the cost of production. This type of inflation is known as cost-push inflation (henceforth CPI). Cost of production may rise due to an increase in the prices of raw materials, wages, etc. Often trade unions are blamed for wage rise since wage rate is not completely market-determinded. Higher wage means high cost of production. Prices of commodities are thereby increased.

A wage-price spiral comes into operation. But, at the same time, firms are to be blamed also for the price rise since they simply raise prices to expand their profit margins. Thus, we have two important variants of CPI wage-push inflation and profit-push inflation.

**Causes of Inflation**

 Primary Causes

 Increase in Public Spending

 Deficit Financing of Government Spending

 Increased Velocity of Circulation

 Population Growth

 Hoarding

 Genuine Shortage

 Exports

 Trade Unions

 Tax Reduction

 The imposition of Indirect Taxes

 Price-rise in the International Markets

Having understood the inflation meaning, let’s take a quick look at the factors that cause inflation.

Primary Causes

In an economy, when the demand for a commodity exceeds its supply, then the excess demand pushes the price up. On the other hand, when the factor prices increase, the cost of production rises too. This leads to an increase in the price level as well.

Increase in Public Spending

In any modern economy, Government spending is an important element of the total spending. It is also an important determinant of aggregate demand.

Usually, in lesser developed economies, the Govt. spending increases which invariably creates inflationary pressure on the economy.

Deficit Financing of Government Spending

There are times when the spending of Government increases beyond what taxation can finance. Therefore, in order to incur the extra expenditure, the Government resorts to deficit financing.

For example, it prints more money and spends it. This, in turn, adds to inflationary pressure.

Increased Velocity of Circulation

In an economy, the total use of money = the money supply by the Government x the velocity of circulation of money.

When an economy is going through a booming phase, people tend to spend money at a faster rate increasing the velocity of circulation of money.

Population Growth

As the population grows, it increases the total demand in the market. Further, excessive demand creates inflation.

Hoarding

Hoarders are people or entities who stockpile commodities and do not release them to the market. Therefore, there is an artificially created demand excess in the economy. This also leads to inflation.

Genuine Shortage

It is possible that at certain times, the factors of production are short in supply. This affects production. Therefore, supply is less than the demand, leading to an increase in prices and inflation.

Exports

In an economy, the total production must fulfill the domestic as well as foreign demand. If it fails to meet these demands, then exports create inflation in the domestic economy.

Trade Unions

Trade union work in favor of the employees. As the prices increase, these unions demand an increase in wages for workers. This invariably increases the cost of production and leads to a further increase in prices.

Tax Reduction

While taxes are known to increase with time, sometimes, Governments reduce taxes to gain popularity among people. The people are happy because they have more money in their hands.

However, if the rate of production does not increase with a corresponding rate, then the excess cash in hand leads to inflation.

The imposition of Indirect Taxes

Taxes are the primary source of revenue for a Government. Sometimes, Governments impose indirect taxes like excise duty, VAT, etc. on businesses.

As these indirect taxes increase the total cost for the manufacturers and/or sellers, they increase the price of the product to have a minimal impact on their profits.

Price-rise in the International Markets

Some products require to import commodities or factors of production from the international markets like the United States. If these markets raise prices of these commodities or factors of production, then the overall production cost in India increases too. This leads to inflation in the domestic market.

Non-economic Reasons

There are several non-economic factors which can cause inflation in an economy. For example, if there is a flood, then crops are destroyed. This reduces the supply of agricultural products leading to an increase in the prices of the commodities.

Investment in Gold, Real estate, stocks, mutual funds, and other assets are some of the ways to deal with Inflation.

**Inflationary Gap:**

We have so far used the theory of aggregate demand to explain the emergence of DPI in an economy. This theory can now be used to analyse the concept of **‘inflationary gap’**—a concept introduced first by Keynes. This concept may be used to measure the pressure of inflation.

If aggregate demand exceeds the aggregate value of output at the full employment level, there will exist an inflationary gap in the economy. Aggregate demand or aggregate expenditure is composed of consumption expenditure (C), investment expenditure (I), government expenditure (G) and the trade balance or the value of exports minus the value of imports (X – M).

Let us denote aggregate value of output at the full employment by Yf. This inflationary gap is given by C + I + G + (X – M) > Yf. The consequence of such gap is price rise. Prices continue to rise so long as this gap persists. Inflationary gap thus describes disequilibrium situation.

Inflationary gap is thus the result of excess demand. It may be defined as the excess of planned levels of expenditure over the available output at base prices. An example will help us to clear the meaning of the concept of inflationary gap.

Suppose, the aggregate value of output at current price is Rs. 600 crore. The government now takes away output worth Rs. 100 crore for its own requirements, leaving thus Rs. 500 crore for civilian consumption. National income analysis says that the value of aggregate money income equals the net value of aggregate output.

Here also the total money income of the people (Rs. 500 crore) is equal to the net value of aggregate output (i.e., Rs. 600 crore – Rs. 100 crore = Rs. 500 crore). Thus, prices will remain stable since aggregate expenditure is equal to aggregate output. Let us further

assume that the money income of the community is increased to Rs. 800 crore by creating additional purchasing power.

Let the government takes away Rs. 50 crore as taxes. A part of the increased income, say Rs. 100 crore, may now be saved. So the net disposal income available for spending becomes Rs. (800 – 50 – 100 =) 650 crore. Since the aggregate demand at old prices is Rs. 500 crore, an excess of Rs. 150 crore appears.

This excess represents inflationary gap that pulls up prices. If there is no corresponding increase in aggregate output, prices will continue to rise until aggregate output becomes equal to aggregate expenditure.

Keynes’ demand inflation is often couched in terms of the concept of inflationary gap. We now graphically explain this gap with the help of the Keynesian cross that we use in connection with the determination of equilibrium national income. In Fig. 11.5, aggregate expenditure is measured on the vertical axis and national income or aggregate output is measured on the horizontal axis.

Let us assume that Yf is the full employment level of national income. If C + I + G + (X – M) is the aggregate demand (AD) curve that cuts the 45° line at point A then an equilibrium income is determinded at Yf. There will not be any price rise since aggregate demand equals aggregate supply. Now if the AD curve shifts up to AD’, equilibrium output will not increase since output cannot be increased beyond the full employment level.

In other words, because of full employment, output cannot increase to Y\*. Thus at Yf level of full employment output, there occurs an inflationary gap to the extent

of AB. The vertical distance between the aggregate demand and the 45° line at the full employment level of national income is termed the inflationary gap. Or at full employment, there is an excess demand of AB that pulls up prices.

To describe inflationary gap in a simple way, we use Fig. 11.6. In this figure, we weigh aggregate demand (i.e., C + I + G + X-M) and aggregate supply. Since the former exceeds the latter, an inflationary gap emerges.

Inflationary gap can be eliminated/ minimized by using monetary policy and or fiscal policy instruments. Under the monetary policy, money supply is reduced and/or interest rates are increased. This gap, however, can be reduced either by reducing money income through reduction in government expenditure, or by increasing output of goods and services, or by increasing taxes.

**Deflationary Gap:**

If the equilibrium level of income is estimated to be below the full employment level of income then emerges deflationary gap. If in the economy there arises insufficient aggregate demand, equilibrium in the economy will occur to the left of the full employment income (Yf).

In other words, a deflationary gap shows the amount by which aggregate demand must be increased so that equilibrium level of income is increased to the full employment level. Fig 11.7 shows that equilibrium level of income is OY\* while full employment output is Yf.

Thus, the economy faces unemployment situation. The distance between the 45° line and the AD line at the full employment output situation is referred as the deflationary gap. It is AB in Fig. 11.7. Since aggregate demand is less than the country’s potential output, the economy suffers from unemployment of labour and other resources.

 **Demand for Money:**

The old idea about the demand for money was that money was demanded for completing the business transactions. In other words, the demand for money depended on the volume of trade or transactions. As such the demand for money increased during boom period or when the trade was brisk and it decreased during depression or slackening of trade.

The modern idea about the demand for money was put forward by the late Lord Keynes, the famous English economist, who gave birth to what has been called the Keynesian Economics. According to Keynes, the demand for money, or liquidity preference as he called it, means the demand for money to hold.

**Broadly speaking, there are three main motives on account of which money is wanted by the people by the people, viz:**

(i) Transactions motive

(ii) Precautionary motive

(iii) Speculative motive

Now a word about each one of them.

***(i) Transactions Motive:***

**This motive can be looked at:**

(a) From the point of consumers who want income to meet the household expenditure which may be termed the income motive, and

(b) From the point of view of the businessmen, who require money and want to hold it in order to carry on their business, i.e., the business motive.

**(a) Income Motive:**

The transactions motive relates to the demand for money or the need for cash for the current transactions of individual and business exchanges. Individuals hold cash in order “to bridge the interval between the receipt of income and its expenditure.” This is called the income Motive’.

Most of the people receive their incomes by the week or the month, while the expenditure goes on day by day. A certain amount of ready money, therefore, is kept in hand to make current payments. This amount will depend upon the size of

the individual’s income, the interval at which the income is received and the methods of payments current in the locality.

**(b) Business Motive:**

The businessmen and the entrepreneurs also have to keep a proportion of their resources in ready cash in order to meet current needs of various kinds. They need money all the time in order to pay for raw materials and transport, to pay wages and salaries and to meet all other current expenses incurred by any business of exchange.

Keynes calls it the ‘Business Motive’ for keeping money. It is clear that the amount of money held, under this business motive, will depend to a very large extent on the turnover (i.e., the volume of trade of the firm in question). The larger the turnover, the larger in general, will be the amount of money needed to cover current expenses.

***(ii) Precautionary Motive:***

Precautionary motive for holding money refers to the desire of the people to hold cash balances for unforeseen contingencies People hold a certain amount of money to provide tor the risk of unemployment, sickness, accidents and other more uncertain perils. The amount of money held under this motive will depend on the nature of the individual and on the conditions in which he lives.

***(iii) Speculative Motive:***

The speculative motive relates to the desire to hold one’s resources in liquid form in order to take advantage of market movements regarding the future changes in the rate of interest (or bond-prices). The notion of holding money for speculative motive is a new typically keynesian idea. Money held under the speculative motive serves as a store of value as money held under the precautionary motive does. But it is a store of money meant for a different purpose.

The cash held under this motive is used to make speculative gains by dealing in bonds whose prices fluctuate. If bond prices are expected to rise, which in other words means that the rate of interest is expected to fall, businessmen will buy bonds to sell when the price actually rises.

If however, bond prices are expected to fall, i.e., the rate of interest is expected to rise, businessmen will sell bonds to avoid capital losses. Nothing being certain in this dynamic world, where guesses about the future course of events are made on

precarious bases, businessmen keep cash to speculate on the probable further changes in bond prices (or the rate of interest) with a view to making profits.

Given the expectations about the changes in the rate of interest in future, less money will be held under the speculative motive at a higher current or prevailing rate of interest and more money will be held under this motive at a lower current rate of interest.

The reason for this inverse correlation between money held for speculative motive and the prevailing rate of interest is that at a lower rate of interest less is lost by not lending money or investing it, that is by holding on to money; while at a higher rate, holders of cash balances would lose more by not lending or investing.

***Conclusion:***

Thus, the amount of money required to be held under the various motives constitutes the demand for money. It may be borne in mind that, in economic analysis, demand for money is the demand for the existing stock of money which is available to be held. It is stock of money not a flow of it over time.

**Supply of Money:**

We have described the demand for money as the demand for the stock (not flow) of money to be held. The flow is over a period of time and not at a given moment. In the case of commodity, it is a flow. Goods are being continually produced and disposed of. This is the essential difference between the demand for money and the demand for a commodity.

Similarly, the supply of money conforms to the ‘stock’ concept and not the ‘flow’ concept. Just as the demand for money is the demand for money to hold, similarly, the supply of money means the supply of money to hold. Money must always be held by someone, otherwise it cannot exist. Hence, the supply of money means the sum total of all the forms of money which are held by a community at any given moment.

The stock of money, which constitutes the supply of it, consists of (a) metallic money or coins, (b) currency notes issued by the currency authority of the country whether the Central bank or the government, and (chequable bank deposits. In old times, the coins formed the bulk of money supply of the country. Later, the currency notes eclipsed the metallic currency and now the bank

deposits in current account withdraw-able by cheques have overwhelmed all other forms of money.

Thus, money supply means total volume of monetary media of exchange available to the community for use in connection with the economic activity of the country. Broadly speaking, money supply in a country is composed of two main elements, viz., (a) currency with the public; and (b) deposit money with the public.

In order to arrive at the total amount of currency with the public, we add: (i) currency notes in circulation; (ii) circulation of rupee notes and coins; and (iii) circulation of small coins; and from the total deduct- ‘Cash in hand with banks’ The bulk of the currency with the public (over 95 per cent) is in the form of currency notes issued by the Reserve Bank of India. Next in importance are the rupee notes issued by the Government of India.

Besides currency, money supply with the public includes the deposit money, i.e., the bank balances held in current accounts of the banks. In underdeveloped countries, the currency, and not the bank deposits, occupies a dominant position, because in such countries the bulk of commercial dealings are done through cash as a medium of exchange and not through cheques as in advanced countries. Deposit money with the public in India consists of two items, viz., net demand deposits of bank and ‘other deposits’ with the Reserve Bank of India.

By adding total currency with the public and the total demand deposits, we get the total money supply with the public.

It is also worth nothing here that in India the deposit money with the public has now come to exceed, albeit slightly, the total currency money with the public. Compare with it the position in 1950-51, when deposit money with the public was not even one-half of the currency in circulation among the public.

This shows that the banking habit has steadily been growing in the country and the time will not be far off when deposit money will far outstrip the currency money.

The total amount of bank deposits in the country is determined by the monetary policy of the central bank of the country. When the central bank wants to give a boost to the economy of the country, it follows a cheap money policy, lowers the bank rate, which is followed by lower rates of interest charged by the commercial banks, thus helping credit creation by the banks.

There are times, however, when in the interest of economic stability, the central bank follows a policy of credit squeeze by raising the bank rate and purchasing securities through open market operations and adopting other credit control measures.