[Academic Script]

Basic Concepts of Microeconomics

Subject:	Business Economics
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Unit No. & Title:	Unit – 1 Basic Concepts
Lecture No. & Title:	Lecture – 1 Basic Concepts of Microeconomics

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1. Introduction

Economics is a systematic body of knowledge that focuses on various issues of an economy, and tries to find out plausible solutions. The subject matter of economics has evolved over time from being limited to political issues to encompassing various social and behavioral aspects as well. This module aims at introducing various concepts to equip the reader with elementary knowledge of economics. It provides a snapshot of certain key economic issues and methodology used by economics in dealing with complex problems. This module will serve as a base for other more complicated and comprehensive models requiring in-depth study of economics.

2. Positive and Normative Economics

Economic theory relies on some basic principles while defining or explaining a phenomenon. Over the years the coverage of economics has widened significantly. It not only explains the current economic happenings of any economy, but there are provisions for future predictions of such happenings, and suggestions to improve or reduce the impact of any major policy initiative. Thus, it becomes essential to categorize economic theory into plausible and understandable segments, to simplify the understanding of the concepts. Positive and normative economic theory is one such categorization.

Positive Economics

Any economic theory that deals with the current happenings of a phenomenon in its original form is classified under positive

economics. In other words, positive economics deals with the "what is" aspect of any theory. Positive economics is factual and it deals with the cause-effect relationship between different economic variables. Thus, testing of any economic theory is possible under positive economics. The basic objective of positive economics is to establish scientific laws that bring uniformity in economic theory and help in generalizing economic phenomenon.

Normative Economics

In contrast to positive economics, normative economics is more idealistic, and it deals with "what ought to be" aspect of the economic phenomenon. Any economic theory that deals with the happenings of a phenomenon using value judgments is classified under normative economics. As the name suggests, normative means associated with norms. Thus, normative economics involves value judgments which are subjective in nature, and include moral, ethical, philosophical, political and religious beliefs of the people.

Illustration for Positive and Normative Economics

The basic and simplest difference between positive and normative economics is positive economics explains what will happen in the economy if we implement any policy, whereas normative economics discusses whether we should implement the policy or not.For example, while normative economics says that government should be responsible for providing healthcare, positive economics tests whether public expenditure has increased due to government provided healthcare. Similarly, normative economics will judge whether FDI should be allowed in retail sector or not, positive economics can be used to compare

retail FDI in India with China and other developing countries. Whether government should allow inflation to increase or not is discussed in normative economics, positive economics deals with the impact of inflation on money supply in the economy.

3. Constructing a Model

The basic objective of any theory is that it should be testifiable. Since economic theory is scientific in nature, it can be organized in the form of a model describing cause-effect relationship that can be tested using appropriate statistical tools. A model is merely a framework, whereas an economic model is a framework of economic theory.

To construct a model, firstly we need a proper theory that describes cause-effect relation between events. Then, we need to dissect the theory to determine the variables, parameters and constants in the relationship. The events which exhibit cause-effect relation are variables, while other events in the economy affecting the variables are parameters and constants. The variables whose value is determined within the model are called dependent or endogenous variables, while the variables whose value is taken as given are called independent or exogenous variables.

Next step is to arrange the variables, parameters and constants in the form of an equation that describes the theory accurately. The equation can either be:

Types of equation:

a) Definitional - that sets up an identity between the two sides of the "=" sign, eg. Profit = Revenue - Cost;
b) Behavioral - that shows how one variable behaves due to changes in the other, Demand = f(Price);
c) Equilibrium - that shows equilibrium between the two sides of the "=" sign, Savings = Investment.

Illustration of Market Equilibrium Model/Demand-Supply Model

The demand-supply model is written as below:

D = a – bP ..... (1)
S = -c + dP ..... (2)
D = S ..... (3)

Here,

(D = demand, S = Supply & P = Price)

D, S and P are variables while b,d = Parameters

D and S dependent variables while P is the independent variable
The first and second equations are behavioral equations as they describe the behavior of Demand/Supply in response to one unit change in price, while the third equation is an equilibrium equation that shows demand should be equal to supply.

4. Scientific Method

Economics is a behavioral science, and like any science, it also follows a methodology for testing its theory. Positive economic

theory can be tested, and it requires a scientific methodology to be able to give meaningful explanations and derive logical predictions. By methodology, we mean a sensible flow of arguments, beginning with some assumptions and proceeding to setting up of hypothesis, testing the relationship between variables using different tools and drawing systematic and generalizable conclusions. There are two major scientific methods that economists make use of to test their theories and give logical explanations of any economic phenomenon, namely deductive method and inductive method.

Deductive Method

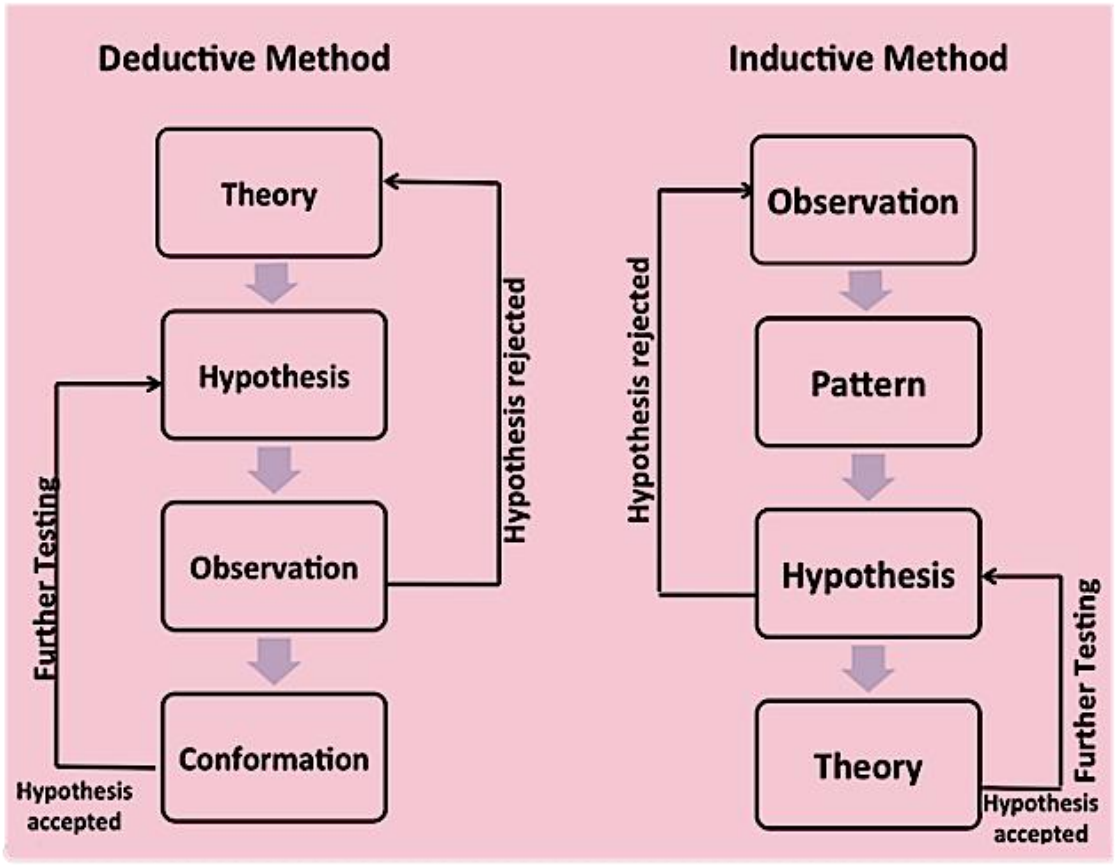
Deductive method, as the name suggests, is associated with deducing any argument or generalization. In other words, deductive method of reasoning proceeds from universal to particular, i.e. from a generalized economic situation to an individual problem. It starts with a set of axioms about how the economy works, and it uses these principles to explain a particular event or economic situation. The principal steps in the process of deriving economic generalizations through deductive logic are: (a) Perception of the problem to be enquired into; (b) Defining precisely the technical terms and making appropriate assumptions, often called postulates or premises; (c) Deducing hypotheses, that is, deriving conclusions from the premises through the process of logical reasoning; and (d) Testing of hypothesis deduced.

Inductive Method

Inductive method of reasoning follows the reverse process of deductive method. Inductive methodology follows from individual to general, or particular to universal. Inductive method is based on inducing and is empirical in nature. Thus, an individual event or problem is selected; detailed data are collected for the same and generalizations are formulated using appropriate statistical tools on the collected data. The inductive method has the following principal steps: a) Identify the problem; b) Collection of data; c) Observations; and d) Generalizations.

Neither of the two methods is independent and best by itself. They are complimentary to each other, and both have their advantages and disadvantages. An appropriate combination of the two can be used to arrive at more logical and reliable conclusions.

Logical Process under Deductive and Inductive Method



5. Various concepts of economics

A. Opportunity Cost

Economic theory deals with human behavior as a relationship between unlimited wants and limited resources which can be put to alternate uses, hence there arises a problem of choice. Whenever any economic decision is taken, one of many alternatives is chosen taking many aspects into consideration. The economist or the choice-maker assumes that given his constraints, he chooses the best option out of available alternatives. However, it needs to be decided whether the chosen alternative is best and economically optimal even at a macro level. The concept of opportunity cost can be useful in such decisions. Opportunity cost is defined as "value of the next best

alternative sacrificed or forgone”. The New Oxford American Dictionary defines it as "the loss of potential gain from other alternatives when one alternative is chosen".

This concept is extremely useful in economics as resources are scarce and need to be optimally utilized to minimize wastage. It helps to determine whether the current combination of resources is best or whether a re-allocation would be required to achieve economic optimality. For eg., the opportunity cost of an investment would be the benefit forgone from the next best alternative investment. Suppose a firm has Rs. 10 million and it can use it for two purposes, either it can expand its current plant or it can diversify and open a new plant or factory. Suppose the expected long run income from expanding is Rs. 50 million and from diversifying is Rs. 30 million, and if the firm chooses to expand, then opportunity cost of this decision would be the earnings forgone from not diversifying, i.e. Rs. 30 million.

B. Rate of Growth

The study of economics, in its basic form, focuses on quantitative measures of the event or phenomenon under study to draw relevant conclusions and also aid future predictions. One of the ways to develop a quantitative framework of any phenomenon is to measure the changes that have occurred over time. These changes can be positive or negative. In simple term, we can call this change as growth. Growth can be defined as a positive change in size measured over a period of time. This change is in absolute numbers, if we convert it into percentage form, we call it rate of growth. This concept is widely used to calculate percentage changes in quantitative measures of economic theory

over time, which can be used for comparison or decision making at the macro level. Rate of growth is used to calculate the changes in national income, population, per capita income, savings, investment, profits of a company, unemployment and poverty over time. In mathematical terms, if we have data for X variable for n years, we can calculate the rate of growth of X using the following formula:

$$\text{Growth Rate} = \frac{X_{present} - X_{past}}{X_{past}} * 100$$

Where $X_{present}$ =value of X variable in the present period

X_{past} =value of X variable in the previous period

C. Elasticity

In general terms, elasticity implies the extent of responsiveness or change in any variable due to other variable. In economics, the concept of elasticity is used to understand the relationship between variables exhibiting causal relationship, like price and demand, price and supply, income and demand. There are three concepts of demand elasticity, namely a) Price Elasticity; b) Income Elasticity and c) Cross Elasticity. Price Elasticity of Demand can be defined as "ratio of percentage change in quantity demanded of a commodity to a percentage change in price" (Modern Microeconomics –H. L. Ahuja, 2009). In other words, it measures the extent of change in quantity demanded due to a one unit change in price. In mathematical terms,

$$e_p = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

The value of elasticity (e_p) ranges from 0 to ∞. As such, there are five main types of elasticity:

i. Relative Elastic Demand (e_p>1): when demand changes more than proportionately to one unit change in price, eg. Refrigerators, Acs, TVs.
ii. Relative Inelastic Demand (e_p<1): when demand changes less than proportionately to one unit change in price, eg. Salt, wheat, rice.
iii. Unitary Elastic Demand (e_p=1): when demand changes in exact proportion to one unit change in price
iv. Perfectly Elastic Demand (e_p=∞): A small change in price causes extreme changes in the quantity demanded
v. Perfectly Inelastic Demand (e_p=0): Whatever the price of the commodity, quantity demanded remains unchanged

D. Total, Average and Marginal Functions

A function is a mathematical expression that describes the relation between two or more variables. The variables can have a one-to-one relation or one-to-many relation, and a function can be used to express this relationship in proper mathematical form that is computable. In economics, we can define any function using the simple notation Y=*f*(x), which means Y is a function of X or Y depends on X. Based on this simple notation, we can create the cost function, revenue function, production function,

employment function, income function, consumption function and so on.

Total Function

Total function represents the relationship between two or more variables in its original form, i.e. based on their theoretical formulation. Following are some illustrations of total function:

i. C = a + bY – Consumption function, Consumption depends on income

ii. R = P x Q – Total Revenue function, Revenue depends on (price per unit) x (total number of units sold)

iii. C = s + tQ – Total Cost function, Total Cost depends on fixed cost, variable cost and number of units of output

iv. ∏ = R – C – Profit function, Profit is the difference between total revenue earned and total cost incurred

Average Function

Average function shows the average or per unit value. Average function can be obtained by dividing the total function with the number of units. It is similar to calculation of mean in statistics. Following are some illustrations of average function:

a) R/Q = P x Q/Q – Average Revenue Function, obtained by dividing total revenue by number of units of output sold

b) C/Q = s + tQ/Q – Average Cost Function, obtained by dividing total cost by number of units of output sold

Marginal Function

Marginal function shows the change in total function due to change in the units. It is also called net function. Marginal

function can be calculated by dividing the change in total function by the change in units. In simple terms,

$$\text{Marginal Function} = \frac{\Delta \text{ Total Function}}{\Delta \text{ Quantity/ unit}}$$

(Δ=change)

6. Mathematical Illustration of Revenue Function

Suppose a firm produces 10000 pens in a month and sells each pen at the rate of Rs. 5 per pen. We can calculate the total and average revenue functions from this:

P = 5, Q = 10000, TR = ?, AR = ?

Total Revenue Function = P **x** Q

Total Revenue = 5 **x** 10000

Total Revenue = 50000

Thus, Total Revenue or earnings of the firm is Rs. 50000

Average Revenue Function = P **x** Q / Q

Average Revenue = 50000/ 10000

Average Revenue = 5

Thus, Average revenue or price per unit of the pen is Rs. 5

Now, suppose the firm produces 10050 units, and the total revenue of the firm increases to Rs. 50300, then we can calculate marginal revenue from this:

Marginal Revenue Function = Δ TR / Δ Q

Marginal Revenue = TR_{10050} – TR_{10000} / 10050 – 10000

Marginal Revenue = 50300-50000 / 10050 – 10000

Marginal Revenue = 300 / 50

Marginal Revenue = 6

Thus, the firm earns additional revenue of Rs. 6 per pen by producing additional 50 pens.