

2 Demand & Supply Analysis

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- III Concept of Supply, Supply Function and Supply Curve.
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I Basic Postulates of Human Behaviour

The micro-analysis on human behaviour begins with the following postulates.

1. Each person desire many goods and goals. He will be satisfied by a **diversity in consumption**.
A good means anything desired by a person and yields satisfaction to the person.
An economic good is a good that a person wants an amount more than what the person now possesses.
The quantity demanded is larger than the quantity supplied at zero price.
A free good refers to any good that no one desires to have more of what is now possessing. There is no problem of scarcity for a free good.
2. Each person must want at least **one** scarce good, i.e. he would not just want free goods.
As a result, to each person, some goods must be scarce. There is an opportunity cost in making choice.

There is no such thing as a free lunch.

3. Each person is willing to get more of some goods or services by foregoing other goods or services.
Each person has the ability to make **substitution in consumption**.
Each person makes substitution based on the valuation of the person. In economics, there is **no absolute measure** of value. All values are **relative**.
All desired entities, e.g. health, beauty, truth, virtue, are **marginally substitutable**.
All goods are competitive and substitutable in degrees of attainability or fulfillment.

The value of any good is measured in terms of an amount of some economic goods or in terms of money.

4. The personal valuation of any good by a person also depends on the amount of goods he already had.
The more he has, the lower the (extra) personal value of the good.
Economists suggest that the marginal rate of substitution of a person always diminishes.

The marginal rate of substitution is defined as the maximum reduction of a good X that a person is willing to give up in order to get one more unit of another good Y, i.e. $\frac{\Delta X}{\Delta Y}$.

In other words, the postulate of diminishing marginal rate of substitution is stated as :

the more of one good A currently consumed by a person, the less willing will the person be to give up another good Y to obtain an extra unit of the currently consumed good A.

5. That all people have identical tastes and preferences is highly impossible.
There is a **diversity in taste and preference** for any person. This postulate is based on the above postulates to a certain extent.
6. People are consistent and innovative. We always want to improve our present position and to raise our benefit. We are able to satisfy according to our preference by consuming other goods and services in case that some goods and services are not available at some moments of time.

II Concept of Demand

Economists assume that each consumer having a **planned** set of choice on goods and services, under a certain condition or constraints (e.g. price, income, wealth, taste, education). This is mainly based on the assumption of rationality.

Accordingly, consumers are logical in making choice on goods and services to seek the maximum level of satisfaction or self-interest.

Demand Function & Demand Curve

Consumer behaviour, **represented** by their quantity demanded (dependent variable), depends on the market price (independent variable), holding other factors constant.

The quantity demanded is a **desirable** quantity of the consumer and is different from the **actual** quantity transacted through the market.

$$Q_D = f (P, P_1 \dots) \quad \text{where } P_1 \dots \text{ are all held constant.}$$

OR :

$$Q_D = f (P)$$

Other independent variables in the function include :

- (1) Price of other related goods (substitutes or complements).
- (2) Income : It affects the consumer attitude.
- (3) Taste : It is a subjective element and is affected by other factors like education, friends, fashion, time and even income.
- (4) Time : The longer the time for a person to consider before the purchase, the more elastic the demand will be - the so-called **second law of demand**.
- (5) Population : It affects the market demand (which is found by horizontal summation of the individual demand curves). Different age groups will have different types of demand on goods and services.

Law of Demand

The higher the price of (or the amount of resources given up in exchange for) a good, the smaller the quantity demanded by a person will be, at a certain time period, vice versa and ceteris paribus.

It implies that a person is willing to get more of a good whenever the value sacrificed per unit of a good (or the resources per unit given up) is smaller within a certain time period, holding other factors constant.

The quantity demanded is inversely related with the price.

The resulting downward-sloping demand curve is called the Alfred Marshall's demand curve.

Properties of A Demand Curve

- 1 It is a graphical representation of the demand function. The variables involved are price and quantity demanded, where the price being a monetary value per unit at a period of time, i.e. a flow variable.
- 2 The curve itself assumes that human behaviour is capable of some **continuous** changes within the price range considered. It represents a **hypothetical** set of choice over the **maximum** quantity demanded (**maximum willingness** to buy).
- 3 The shift of the demand curve denotes a change of the independent variable of the demand function, e.g. an increase in income.
- 4 Given the actual data of price and quantity demanded from the curve, the value of elasticity can be calculated to show the relation between price and quantity demanded.

III Concept of Supply

There is a **planned** set of production activities decided by a firm. A rational supplier will compare its revenues and costs to seek the maximum gain. The principle of **wealth maximization** (instead of profit maximization) is used to describe the situation.

Supply Function & Supply Curve

The behaviour of a supplier or producer, represented by the quantity supplied, depends on the market price, ceteris paribus.

The supply function, compared with the demand function, is relatively more restricted by the condition of technical production, i.e. the cost and state of technology based on a certain time period.

$$Q_s = f(P, P_1 \dots) \text{ where } P_1 \dots \text{ are all held constant.}$$

OR :

$$Q_s = f(P)$$

Other independent variables affecting the supply function include :

- (1) Cost. The cost function and cost curves will be explained later.
- (2) Technology. The production function and product curves are used to analyze the technical aspect of a firm.
- (3) Short Run and Long Run. The terms are used to describe the relation between factor inputs and outputs.

Law of Supply

The higher the price of a good, the greater the quantity supplied by a firm will be, vice versa and ceteris paribus.

Supply Curve

It is a graphical representation of the supply function. Other implications are similar to the properties of a demand curve.

IV Concept of Equilibrium & Elasticity

Equilibrium is a concept referring to a **hypothetical** state in which forces leading to changes in opposing directions are perfectly in balance, so that there is **no** tendency for the variables involved to change.

It is also a concept meaning that the variables in an economic theory (or model) are stable and no outside forces will act on them to cause changes so that a state of stability is maintained.

In a market the quantity demanded is equal to the quantity supplied at a certain price level. There is no tendency to change by both sides at this equilibrium price. The prevailing price becomes the equilibrating mechanism.

A market needs not be in equilibrium both in theory and in practice. The market price is very often not the same as the equilibrium price.

Elasticity

Elasticity refers to the **rate of change** (usually expressed in percentage) of a dependent variable due to a **rate of change** (again in percentage) of an independent variable.

Its value is found by the ratio of the two rates above.

It tells the degree of response of the dependent variable whenever the independent variable changes.

Whenever two quantifiable variables are thought to be related in some ways, the concept of elasticity can be applied to find whether they are closely related or not.

The **price** elasticity of **demand** is just one example of elasticities in economics.

Price Elasticity of Demand

- 1 It is a measure of the response of a consumer in the form of quantity demanded when the price changes.
- 2 Its value can be found by calculating either **arc** elasticity or **point** elasticity of demand. The absolute value ranges from zero to infinity.
- 3 The price elasticity of demand at the mid-point of a **straight-line downward-sloping** demand curve is always equal to -1. The elasticity of any point higher than the mid-point on the demand curve is greater than 1 (i.e. it is elastic in demand), vice versa.
- 4 The value of elasticity is related with the amount of revenue received by a firm facing a straight-line downward-sloping demand curve. The total revenue is greatest if the price elasticity of demand is -1,

i.e. at the mid-point of the curve.

An Example

P	12	11	10	9	8	7	6	5	4	3	2	1
Q	1	2	3	4	5	6	7	8	9	10	11	12
TR	12	22	30	36	40	42	42	40	36	30	22	12

- The second law of demand has to do with elasticity and time. The longer the time for a consumer to consider before any decision on purchase, the more options the consumer can find, as a result, he becomes more elastic in demand.

Income Elasticity of Demand

- It is a measure of the response of a consumer in his quantity demanded when his income changes.
- When the quantity demanded rises with income, the good is classified as a normal good.
When the quantity demanded falls with income, the good is classified as an inferior good.
(The word “inferior” does **not** refer to the quality of the good but the personal attitude on the good of the consumer.)

Cross Elasticity of Demand

- It is a measure of the response of a consumer in the form of quantity demanded when the price of another related good changes.
- Competitive goods will give a **positive** value of cross elasticity.
Complementary goods will give a **negative** value of cross elasticity.
It tells the relation of any two goods from the view of a consumer.

To sum up the three types of elasticities have their own implications to reveal the relation between :

- the price and quantity demanded of the **same** good : price elasticity of demand ;
- the income and quantity demanded of the good : income elasticity of demand ;
- the price of **one** good and quantity demanded of **another** good : cross elasticity.

V Market Intervention & Disequilibrium

When a market is not allowed to function properly by the mechanism of demand and supply forces, market intervention is said to exist. In most cases it results in a state of disequilibrium. There can be many forms of market intervention, mostly being undertaken by the government. Some forms of non-price competition will develop to act as the rules of game.

Price Control : Price Ceiling & Price Floor

- A price ceiling will cause a shortage of goods.
A reduced supply is **not** a shortage, **nor** the cause of a shortage.
Shortages are caused solely by restraints on price changes.
- Restricted pricing will :
 - induce some (resource-wasting) forms of competition ; and
 - increase non-monetary discrimination, e.g. queue, first-come-first-served, ballot, rationing.
- A price floor will cause a surplus of goods.
- Both shortage and surplus are relative concepts also.

Tax & Subsidy

Some taxes affect our purchasing power (e.g. personal income tax) and some affect relative prices

(e.g. sales tax). A sales tax will give rise to tax burden on both the buyers and sellers, depending on the elasticities of demand and supply.

A subsidy will lower the supplying cost and affects the position of the supply curve.

Others

- 1 Quota is a limitation on the quantity supplied of imports.
- 2 Parallel goods will disturb the free market.
- 3 In some cases, a grey or black market will develop.
- 4 Violence is also one form of non-price competition.

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Mega Lecture