Some important definition of ECO401

What is Economics?
"Economics is the study of how we the people engage ourselves in production, distribution and consumption of goods and services in a society."
Normative economics:
Normative economics refers to value judgments, e.g. what "ought" to be the goals, of public policy. Normative statements cannot be tested.
Positive Economics:
The analysis of facts and behavior in an economy OR "the way things are."
Goods
Are the things which are produced to be sold.
Services
Involve doing something for the customers but not producing goods.
Factors of production:
Factors of production are inputs into the production process. The factors of production are:
• **Land** includes the land used for agriculture or industrial purposes as well as
Natural resources taken from above or below the soil
• **Capital** consists of durable producer goods (machines, plants etc.) that are in
Turn used for production of other goods
• **Labor** consists of the manpower used in the process of production.
• **Entrepreneurship** includes the managerial abilities that a person brings to the
Organization Entrepreneurs can be owners or managers of firms.
Scarcity:
Shortage of resources because economic resources are unable to supply all the goods demanded.
Rationing
A process by which we limit the supply or amount of some economic factor which is scarcely available
Economic Systems:
A free market/capitalist economy is a system in which the questions about what to produce, how to produce and for whom to produce are decided primarily by the demand and supply interactions in the market.
Dictatorship:
A system in which economic decisions are taken by the dictator which may be an individual or a group of selected people
Command or planned economy:
A mode of economic organization in which the key economic functions – for whom, what, how to produce are principally determined by government directive.
Optimum:
Producing the best possible results (also optimal)
Equity in economics:
A situation in which every thing is treated fairly or equally, i.e. according to its due share
Nepotism:
Doing unfair favors for near ones when in power

Microeconomics:
The behavior of individual elements in the economy
Macroeconomics:
The economy as whole or on aggregate level
Rational choice:
The choice based on pure reason and without succumbing to one's emotions or whims.
Barter trade:
A non-monetary system of trade in which "goods" not money is exchanged.
Opportunity Cost:
It is what must be given up or sacrificed in making a certain choice or decision.
Marginal Cost:
Marginal cost is the increment to total costs of producing an additional unit of some good or service.
Marginal benefit:
The increment to total benefit derived from consuming an additional unit of good or service.
Production Possibility Frontier (PPF):
The maximum amount of goods and services which the country can produce in a given time with limited resources, given a specific state of technology
Economic growth:
An increase in the total output of a country over time
Perfect competition:
A situation in which no firm or consumer is big enough to affect the market price.
Shortage:
Shortage is a situation in which demand exceeds supply, i.e. producers are unable to meet market demand for the product.
Surplus:
Situation of excess supply, in which market demand falls short of the quantity supplied
Goods market:
Market in which goods are bought and sold for the purpose of consumption
Factors markets:
Markets in which factors of production are bought and sold, for the purpose of production
Normal goods:
Whose quantity demanded goes up as consumer income increases.
Inferior goods:
Whose quantity demanded goes down as consumer income increases.
Giffen goods:
A special case of inferior goods whose quantity demanded increases when the price of the good rises
Price effect:
The sum of income and substitution effects
Income effect:
The effect of a price rise on quantity demanded that works through a decline in the real income (or purchasing power) of the consumer.
Substitution effect:
The effect of a price rise on quantity demanded that works through the consumer switching to substitutes goods.

Substitutes:
Goods that compete with one another or can be substituted for one another, like butter and margarine
Compliments:
Goods that go hand in hand with each another.
Cash crops:
The crops which are not used as food but as a raw material in factories e.g. cotton
Demand:
Demand is the quantity of a good buyer wish to purchase at each conceivable price.
Law of demand:
If the price of a certain commodity rises, its quantity demanded will go down, and vice-versa.
Demand function:
An equational representation of demand as a function of its many determinants
Demand curve:
A graph that obtains when price (one of the determinants of demand) is plotted against quantity demanded.
Supply:
Supply is the quantity of a good seller wish to sell at each conceivable price.
The law of supply:
The quantity supplied will go up as the price goes up and vice versa.
Supply schedule:
A table which shows various combinations of quantity supplied and price.
Supply function:
An equational representation of supply as a function of all its determinants
Supply curve:
When price is plotted against quantity supplied.
Determinants of supply are:
• Costs of production
• Profitability of alternative products (substitutes in supply)
• Profitability of goods in joint supply
• Nature and other random shocks
• Aims of producers
• Expectations of producers
Equilibrium:
Equilibrium is a state in which there are no shortages and surpluses; in other words the quantity demanded is equal to the quantity supplied.
Equilibrium price:
It is the price at which the quantity demanded is equal to the quantity supplied.
Equilibrium quantity:
The quantity at which the quantity demand is equal to the quantity supplied.
Algebraic Representation of Equilibrium:
If we have following demand and supply functions,

$$\mathbf{Qd = 100 - 10\ P}$$
$$\mathbf{Qs = 40 + 20\ P}$$

In equilibrium,

$$\mathbf{Qd = Qs}$$

Therefore

$100 - 10P = 40 + 20P$

$20P + 10P = 100 - 40$

$30P = 60$

$P = 60/30$

P = 2

Putting the value of price in any of demand and supply equation,

$Q = 100 – 10x2$ (or $40 + 20x2$)

$Q = 100 – 20$

Q = 80

The equilibrium price is 2 and the equilibrium quantity is 80.

Government and Price-Determination:

The government may intervene in the market and mandate a maximum price (price ceiling) or minimum price (price floor) for a good or service.

Price ceiling:

The maximum price limit that the government sets to ensure that prices don't rise above that limit (medicines for e.g.).

Price floor:

The minimum price that a Government sets to support a desired commodity or service in a society (wages for e.g.).

Social cost:

The cost of an economic decision, whether private or public, borne by the society as a whole.

Marginal social cost:

The change in social costs caused by a unit change in output

ELASTICITIES

Elasticity is a term widely used in economics to denote the "responsiveness of one variable to changes in another."

Types of Elasticity:

There are four major types of elasticity:

- Price Elasticity of Demand.
- Price Elasticity of Supply.
- Income Elasticity of Demand.
- Cross-Price Elasticity of Demand.

Price Elasticity of Demand:

Price elasticity of demand is the percentage change in quantity demanded with respect to the percentage change in price.

PЄd = Percentage change in Quantity demanded / Percentage change in Price

Where Є = Epsilon; universal notation for elasticity.

Price Elasticity of Supply:

Price elasticity of supply is the percentage change in quantity supplied with respect to the percentage change in price.

PЄs = Percentage change in Quantity Supplied / Percentage change in Price

Income Elasticity of Demand:

Income elasticity of demand is the percentage change in quantity demanded with respect to the percentage change in income of the consumer.

YЄd = Percentage change in Quantity demanded / Percentage change in Income

Cross-Price Elasticity of Demand:
Cross price elasticity of demand is the percentage change in quantity demanded of a specific good, with respect to the percentage change in the price of another related good.
PbЄda = Percentage change in Demand for good a / Percentage change in Price of good b
Point Elasticity:
Point elasticity is used when the change in price is very small, i.e. the two points between
The formula for point elasticity can be illustrated as:

$$Є = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Or this formula can also be written as:

$$Є = \frac{dQ}{dP} \times \frac{P}{Q}$$

Where d = infinitely small change in price.
Arc Elasticity:
Arc elasticity measures the "average" elasticity between two points on the demand curve.

$$Є = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$$

To measure arc elasticity we take average values for Q and P respectively.
Elastic and Inelastic Demand:
Slope and elasticity of demand have an inverse relationship. When slope is high elasticity of demand is low and vice versa.
Perfectly inelastic demand:
When the slope of a demand curve is infinity, elasticity is zero
Perfectly elastic demand:
When the slope of a demand curve is zero, elasticity is infinite.
Unit elasticity:
A 1% change in price will result in an exact 1% change in quantity demanded. Thus elasticity will be equal to one. A unit elastic demand curve plots as a rectangular hyperbola.
Note that a straight line demand curve cannot have unit elasticity as the value of elasticity changes along the straight line demand curve.
Total revenue and Elasticity:
Total revenue (TR) = Price x Quantity; when the demand curve is inelastic, TR increases as the price goes up, and vice versa; when the demand curve is elastic, TR falls as the price goes up, and vice versa.
Determinants of price elasticity of demand:
Number of close substitutes within the market - The more (and closer) substitutes available in the market the more elastic demand will be in response to a change in price. In this case, the substitution effect will be quite strong.
Percentage of income spent on a good - It may be the case that the smaller the proportion of income spent taken up with purchasing the good or service the more inelastic demand will be.
Time period under consideration –
Demand tends to be more elastic in the long run rather than in the short run.
Effects of Advertising on Demand Curve:
Advertising aims to:

• Change the slope of the demand curve – make it more inelastic. This is done by generating brand loyalty;
• Shift the demand curve to the right by tempting the people's want for that specific product.

Normal Goods:

If the sign of income elasticity of demand is positive, the good is normal.

Inferior Goods:

If sign is negative, the good is inferior.

Determinants of Income Elasticity of Demand:

The determinants of income elasticity of demand are:
• Degree of necessity of good.
• The rate at which the desire for good is satisfied as consumption increases
• The level of income of consumer.

Short Run:

Short run is a period in which not all factors can adjust fully and therefore adjustment to shocks can only be partial.

Long run:

A period over which all factors can be changed and full adjustment to shocks can take place.

Rational Choice:

Rational choice consists in evaluating the costs and benefits of different decisions and then choosing the decision that gives the highest benefit relative to cost.

Ignorance and Irrationality:

There is a difference between "ignorance" and "irrationality." A person operating under uncertainty and thus at least partial ignorance can still make rational decisions by taking into account all the information she has at her disposal. Rationality is an ex-ante concept.

CONSUMER BEHAVIOR:

There are two approaches to analyzing consumer behavior;
• Marginal utility analysis
• Indifference curve approach.

Utility is the usefulness, benefit or satisfaction derived from the consumption of goods and services.

Total utility is the entire satisfaction one derives from consuming a good or service.

Marginal utility is the additional utility derived from the consumption of one or more unit of the good.

The Law of Diminishing Marginal Utility:

The law of diminishing marginal utility states that as you consume more and more of a particular good, the satisfaction or utility that you derive from each additional unit falls.

The marginal utility curve slopes downwards in a MU-Q graph showing the principle of diminishing marginal utility.

Consumer Surplus and Optimal Point of Consumption:

Consumer surplus is the difference between willingness to pay and what the consumer actually has to pay: i.e. CS= MU-P.

The optimal point of consumption:

That point where consumer surplus becomes zero. If marginal utility is greater than price, consumption will increase causing MU to fall until it equals price, and vice versa.

The Equi-marginal Principle:

In the case of more than two goods, optimum consumption point can be arrived at by using the equi-marginal principle. This state that a person will derive a maximum level of TU from consuming a particular bundle of goods when the utility derived from the last dollar spent on each good is the same:

$$\frac{MUa}{Pa} = \frac{MUb}{Pb} = \frac{MUc}{PC} \ldots\ldots\ldots\ldots\ldots$$

The Problem of Uncertainty:

The problem of uncertainty is integral to consumption decisions especially in the matter of purchasing durable goods. Uncertainty means assigning probabilities to the outcomes.

A consumer's response to uncertainty depends upon her attitude to risk: whether she is:

Risk averse.
Risk-loving.
Risk neutral.

Risk means to take a chance after the probabilities have been assigned.

The odds ratio (OR) is the ratio of the probability of success to the probability of failure. It can be equal to 1, less than 1 or greater than 1. If it is equal to 1 we call it fair odds, if less then 1 unfavorable odds, and if greater 1 then favorable odds.

A risk neutral person is one who buys a good when OR > 1. He is indifferent when OR = 1 and will not buy when OR < 1.

A risk averse person will not buy if OR < 1. He will also not buy if OR = 1. He might also not decide to buy if OR > 1.

A risk loving person will buy if OR > 1 or = 1, but he might also buy when OR is < 1.The degree of risk aversion increases as your income level falls, due to diminishing marginal utility of income.

Risk hedging:

Can be used to reduce the extent to which concerns about uncertainty affect our daily lives.

An indifference curve:

A line which charts out all the different points on which the consumer is indifferent with respect to the utility he derives.

Marginal rate of substitution (MRS):

The indifference curve between any two points is given by the change in the quantity of good Y divided by change in the quantity of good X. This is called the.

A diminishing marginal rate of substitution (MRS) is related to the principle of diminishing marginal utility. MRS is equal to the ratio of the marginal utility of X to the marginal utility of Y.

$$\frac{dY}{dX} = \frac{MUX}{MUY} = MRS$$

The indifference curve for **perfect substitutes** is a straight line, while it is L-shaped for **perfect compliments**.

The Budget Line:

The budget line shows various combinations of 2 goods X & Y that can be purchased.

Input price ratio:

Budget line's slope –Px/PY is called input price ratio.

The optimum consumption point for the consumer:

Where the budget line is tangent (intersect) to the highest possible indifference curve at such a point, the slopes of the indifference curve and the budget line are equal. In other words:

$$MRS = Px/Py = \Delta Y/\Delta X = MUx/MUy.$$

Just as we can use indifference analysis to show the combination of goods that maximizes utility for a given budget, so too we can show the least-cost combination of goods that yields a given level of utility.

The Income Consumption Curve (ICC):
Change in curve due to change in income

Price Consumption Curve (PPC):
Change in curve due to change in Price

When the price of one good change, two things happen:
• **One** the purchasing power of consumer changes i.e., the budget line shifts (leads to income effect).
• **Secondly**, the slope of budget line changes due to a change in the relative price ratio (leads to substitution effect).

Income & Substitute Effect:
The substitution effect of a price rise is always negative, while the **income effect** of a price rise on the consumption of a normal good is negative. **The income effect** for an inferior good is positive. The income effect of a Giffen good is so positive that it offsets the negative substitution effect, therefore.

Limitation of Indifference Approach:
The indifference curves approach has the following limitations:

Indifference curve analysis is only possible for 2 or at best for 3 goods.
It is almost impossible to practically derive indifference curves.
The consumer may not always behave rationally.
The consumer may not always realize the level of utility (ex-post) from consumption, that she originally expected (ex-ante).
Indifference curve analysis can not help when one of the goods (X or Y) is a durable good.

Firm:
A firm is any organized form of production, in which someone or a collection of individuals are involved in the production of goods and services. A firm can be sole proprietorship (one

person ownership), partnership (a limited number of owners) or a limited company (a large number of changing shareholders).

Production Function:

A production function is simply the relationship between inputs & outputs.
Mathematically it can be written as:

$$Q = f(K, L, N, E, T, P\ldots\ldots\ldots)$$

Where,
Q = Output = Total product produced
K = Capital
L = Labor
N = Natural resources
E = Entrepreneurship
T = Technology
P = Power

Cobb Douglas production function:

$$Q = A K^{\alpha} L^{1-\alpha}$$

Where:
Q = output
L = labor input
K = capital input
A, α and 1 – α are constants determined by technology.

Short run:

Short run is a period of time in which at least one of the factors of production is fixed or Unchangeable

Long run:

Long run is a period of time in which all the factors of production used in the production are flexible. The actual length of the short run and long-run can vary considerably from industry to industry.

The Law of Diminishing Marginal Returns:

The law of diminishing marginal returns states that as you increase the quantity of a variable factor together with a fixed factor, the returns (in terms of output) become less and less.

The total physical product (TPP)

A factor (F) is the latter's total contribution to output measured in units of output produced.

Average physical product (APP):

Is the TPP per unit of the variable factor

$$APP = TPPF/QF$$

Marginal physical product (MPP)

Is the addition to TPP brought by employing an extra unit of the variable factor More generally,

$$MPPF = \Delta TPPF/\Delta QF$$

Relationship between APP and MPP:

• If the marginal physical product equals the average physical product, the average physical product will not change.
• If the marginal physical product is above the average physical product, the average physical product will rise.

• If the marginal physical product is below the average physical product the average physical product will fall.

If population is increasing and output remains constant:
Then diminishing returns set in and therefore average per capita production/consumption can be expected to fall ceteris paribus(all factor effect demand should remain constant).
A firm is confronted with three more decisions;

Scale of production,
Location, size of industry
Optimum combination of inputs.

The Scale of Production:
Change in production or increasing, decreasing return if due to the change in scale of production.
The location, size of Decision:
The location decision depends upon both the location of raw material suppliers and the location of the market. The nature of the product, transportation costs, availability of suitable land for production, stable power supply and good communications network, availability of qualified and skilled workers, level of wages, the cost of local services and availability of banking and financial facilities are among some other important factors. The size of an industry can lead to external economies and diseconomies of scale.
External Economies and Diseconomies of Scale:
External economies are benefits accruing to any one firm due to actions or the presence of other firms. For example, advertising by a rival industry, setting up of credit information bureaus by banks.
The Optimum Combination of Factors:
The optimum combination of factors will obtain at the point where the marginal physical product of the last dollar spent on all inputs is equal, i.e.:

$$\frac{MPPK}{PK} = \frac{MPPL}{PL}$$

Isoquant:
An isoquant represents different combinations of factors of production that a firm can employ to produce the same level of output.
Marginal Rate of Technical Substitution (MRTS):
The slope of an isoquant is called marginal rate of technical substitution (MRTS).

Budget Line:
Amount of money needed or available
COST:
Expense incurred in production.
Variable Cost:
Costs which vary with the level of activity (or output) are called variable costs.

Fixed Costs:
Costs which do not vary with the level of activity or output are called fixed costs. In long run there are no fixed costs.

Relationship between costs and productivity:
There is an **inverse** relationship between costs and productivity, i.e. as productivity rises, costs fall and vice versa.

Total Cost:
Total cost (TC) is the sum of all fixed and variable costs.

Average Cost:
Average cost (AC) is the vertical summation of the AFC & AVC, where

$$\mathbf{AC = AFC + AVC}$$

AFC = TFC/Q and
AVC = TVC/Q.

Marginal Cost:
Marginal cost is the addition to TC caused by a unit increase in output. More generally:

$$\mathbf{MC = \Delta TC/\Delta Q.}$$

The Long-Run Average Cost Curve (LRAC):
The long-run average cost (LRAC) curve for a typical firm is U shaped.
As a firm expands, it initially experiences economies of scale (due to productive efficiency, better utilization of resources etc.); in other words it faces a downward sloping LRAC curve. After the scale of operation is increased further, however, the firm achieve constant costs i.e., LRAC become flat.
If the firm further increases its scale of operation, diseconomies of scale set in (due to problems with managing a very large organization etc.) and the LRAC assumes a positive slope.

Long-run marginal cost (LRMC):
In case a firm is enjoying economies of scale, each incremental unit will cost less than the preceding one i.e., LRMC will be falling. The opposite will be true for diseconomies of scale. In case of constant costs, each incremental unit will cost the same, i.e., the LRMC will be constant.

Envelope curve:
The LRAC curve for a firm is actually derived from its SRAC curves. The exact shape of the LRAC is a wave connecting the least cost parts of the SRAC curves. In practice however, LRAC is shown as a smooth U-shaped curve drawn tangent to the SRAC. This is also called an envelope curve.

REVENUES
Revenues are the sale proceeds that accrue to a firm when it sells the goods it produces.

Total Revenue (TR):
Total revenue (TR), average revenue (AR) and marginal revenue (MR) concepts apply in the same way as they did to TC, AC and MC.

$$\mathbf{TR = P \times Q}$$

Average Revenue (AR)

$$AR = TR/Q$$

AR is almost always equal to price unless the firm is engaged in price discrimination.

Marginal Revenue (MR):

$$MR = \Delta TR/\Delta Q.$$

Price-taker:
A firm that does not have the ability to influence market price is a price-taker.
For a price taker, **AR=MR=P**. In this case TR is a straight line from the origin. The demand (or AR) curve the firm faces is a horizontal line.

Price-maker Firm:
A firm that influences the market price by how much it produces can be called a price-maker or price-setter.

Normal economic profit:
Economists say that when firms earn zero accounting profits, they actually earn normal economic profits.

Positive profits (supernormal profits):
Positive profits are, for this reason, called supernormal profits as they are over and above what the owners normally require as a return for their entrepreneurship.

Profit maximization using calculus:
If total revenue (TR) and total cost equation are given as follows:

$$TR = 48q - q2$$

$$TC = 12 + 16q + 3Q2$$

Then we can find out the value of output at which profit is maximized as under:
Solution:
Profit is maximized at the point where

$$MC = MR$$

MC function can be found by taking derivative of total cost function. i.e.:
MC = d TC / dQ
MC = 16 + 6Q
MR function can be found by taking derivative of total revenue (TR) function i.e.:
MR = d TR / dQ
= 48 – 2Q
As profit is maximized at the point where MR = MC, so by equating values of MC and MR function, we get,
MR =MC
16 + 6Q = 48 – 2Q
6Q + 2Q = 48 – 16
8Q = 32
Q = 4
The equation for total profit is,
Tñ = TR – TC

= 48Q – Q2 - (12 + 16Q + 3Q2)
= 48Q – Q2 – 12 – 16Q – 3Q2
= -4Q2 + 32Q – 12
Putting Q = 4, we get,
Tñ = - 4(4)2 + 32 (4) – 12
= -64 + 128 - 12
Tñ = 52
So profit is maximized where output is 4 and the maximum profit is 52.

MARKET STRUCTURES

Market structure refers to how an industry (broadly called market) that a firm is operating in is structured or organized.

The key ingredients of any market structure are:

• Number of firms in the market/industry
• Extent of barriers to entry
• Nature of product
• Degree of control over price.

Four broad market structures have been identified by economists:

• Perfect competition
• Monopoly
• Monopolistic competition
• Oligopoly.

PERFECT COMPETITION

The main assumptions of perfect competition are:
Large number of buyers and sellers, therefore firms price-takers.
No barriers to entry (also implies free mobility of factors of production).
Identical/homogeneous products Perfect information/knowledge
Perfect competition can be thought of as an **extreme form of capitalism**, i.e. all the firms are fully subject to the market forces of demand and supply.

Concentration ratio:

Is used to assess the level of competition in an industry It is simply the percentage of total industry output that is produced by the 5 largest firms in the industry.

The Short Run and Long Run under Perfect Competition:

The short run is the period where at least one factor of production is fixed. In perfect competition, it also means that no new firms can enter the market. In the long run, all the factors of production are variable.

Allocative efficiency: (the point of maximum allocative efficiency)
The optimal point of production for any individual firm is where
MR=MC. The optimal point of production for any society is where price is equal to marginal cost. This is called the point of maximum allocative efficiency

Productive efficiency:

This is attained when firms produce at the bottom of their AC curves, that is, goods are produced in the most cost efficient manner. Perfectly competitive firms also achieve this in the long run because they produce at P=MC

MONOPOLY

A situation where there is a single producer in the market.

PRICE DISCRIMINATION

Price discrimination (PD) happens when a producer charges different prices for the same product to different customers.

Types of Price Discrimination:

PD can be of three types:
1st degree (everyone charged according to what he can pay),
2nd degree (different prices charged to customers who purchase different quantities) and
3rd degree (different prices to customers in different markets)

MONOPOLISTIC COMPETITION

Monopolistic competition is also characterized by a large number of buyers and sellers and absence of entry barriers.

OLIGOPOLY

Similar to monopoly in the sense that there are a small number of firms (about 2-20) in the market and, as such, barriers to entry exist.

Collusion:

Collusion occurs when two or more firms decide to cooperate with each other in the setting of prices and/or quantities.

Cartel:

A cartel is most likely to survive when the number of firms is small, there is openness among firms regarding their production processes.

Break down of Collusive Oligopoly:

A collusive oligopoly (say based on production quotas) is likely to break down when the incentive to cheat is very high. This can arise, for instance, in a situation where there is a lure of very high profits so that individual firms cheat on their quota and try to increase output and profits.

Prisoner's Dilemma Situation:

A prisoner's dilemma situation for oligopolistic firms arises when 2 or more firms by attempting independently to choose the best strategy anticipation of whatever the others are likely to do, all end up in a worse position than if they had cooperated in the first place.

Maximin:

Maximin strategy is a cautious (pessimistic) approach in which firms try to maximize the worst payoff they can make.

Maximax strategies:

A maximax strategy involves choosing the strategy which maximizes the maximum payoff (optimistic).

Kinked Demand Curve:

A kinked demand curve explains the "stickiness" of the prices in oligopolistic markets.

Non Price Competition:

Non price competition means competition amongst the firms based on factors other than price, e.g. advertising expenditures.

<u>Composed By:</u>

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