ECO 101
INTRODUCTION TO MICROECONOMICS

TOPIC THREE

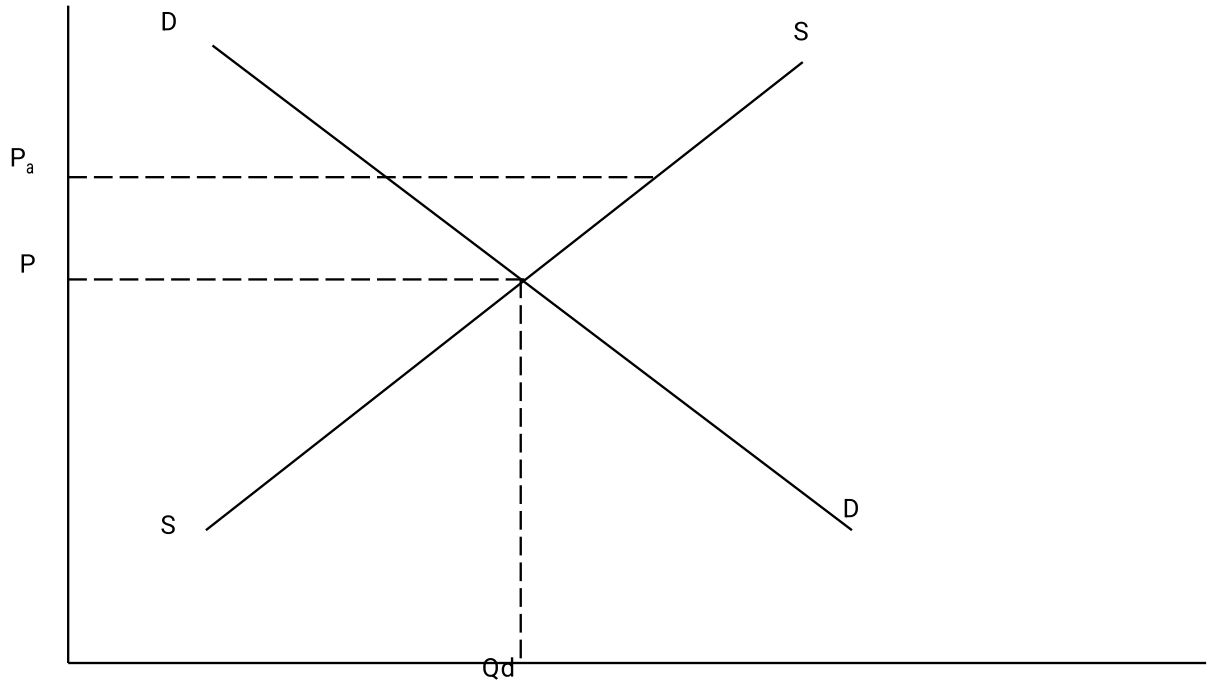
GOVERNMENT AND PRICE DETERMINATION

From the prior knowledge on theory of demand and supply in topic 2.

- We learnt the common law of demand which states that ‘the higher the price, the lower the quantity demanded and vice versa’ and the law of supply which states that ‘the higher the price the higher the quantity supplied’.
- We also learnt that the intersection of demand and supply determines equilibrium price and quantity such that any price above or below is called a surplus or shortage respectively.
- Now let us go further - the government can also intervene in the market and mandate/fix a **maximum price** called price ceiling or **minimum price** called price floor) for a good or service. The government can alter an equilibrium price by changing market demand and/or market supply.

Minimum Price legislation

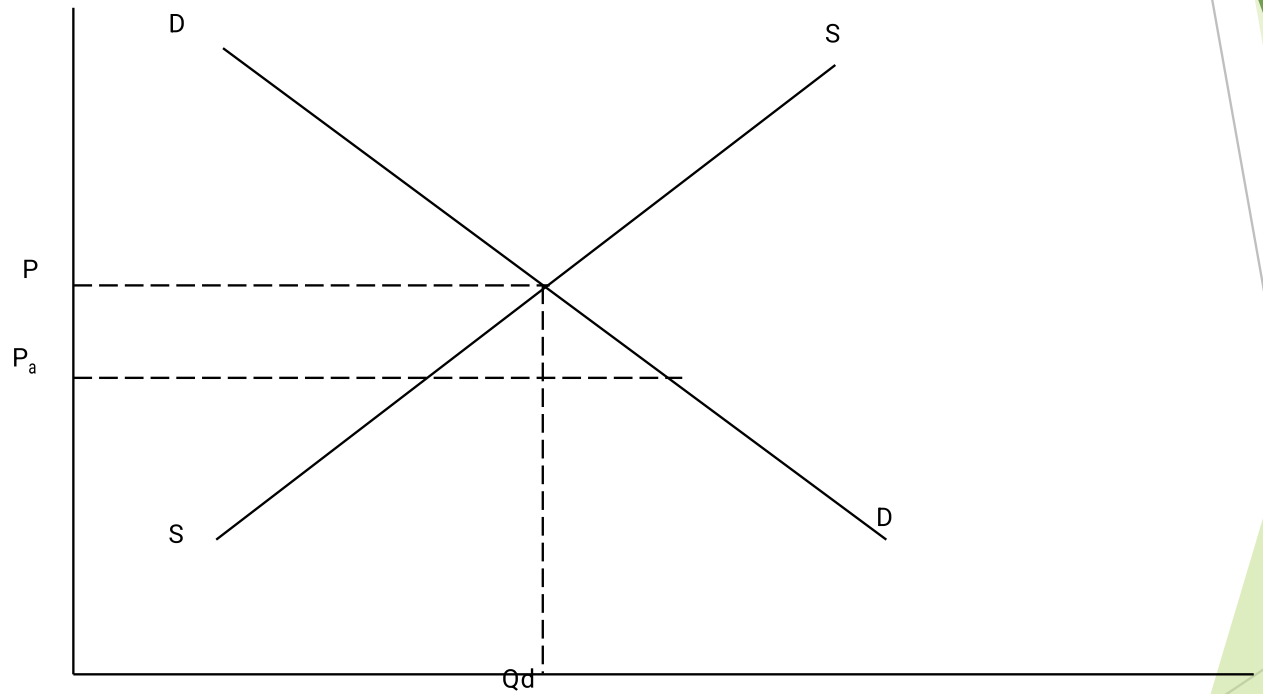
- This is also referred to as price floor. This is when a legal minimum price is set for a good. Once a minimum price is set for a particular good by law, the good can only be bought or sold at that price.
- Minimum price arises in order to encourage producer to produce more.
- The minimum price is always above the equilibrium price which makes it to be binding since the equilibrium price may not be encouraging to produce on the part of the producer..
- When the minimum price is fixed which is higher than the equilibrium price, it means the prevailing price at which the commodity is sold is too low to encourage producers produce more of the commodity.


D
S
P_a
P
S
D
Qd

- From the above diagram, the government agency will fix the minimum price to be P_a which is above equilibrium price which will engender a surplus. With time, the price will find its way back to the equilibrium price since there is a surplus in the quantity supplied in to the market.

Maximum Price Legislation

- This is referred to as price ceiling which is the usually the legal maximum price at which a good can be sold or bought.
- Price are ceil when the government perceive that the equilibrium price is exorbitant on the part of the consumer.
- It is an avenue for government to improve the welfare of the people thereby reducing their cost of living which leads to increase in the standard of living.
- Maximum price are usually ceil below the equilibrium price which leads to excess demand over supply which causes shortage of goods in the market.
- This shortage will naturally bring about rationing and hoarding of the


D
S
P
P_a
S
D
Qd

- From this diagram, the government agency fixes the price below the equilibrium price at Pa. This will cause excess demand over supply which will lead to hoarding and rationing that will cause the price to fall back to its equilibrium price.

REVIEW QUESTIONS

1. A minimum price set by the government is also known as a _____.

(A). Price ceiling (B). Price floor (C). Subsidy (D). Market equilibrium

2. A price floor is usually set _____ the equilibrium price.

(A). Below (B). Above (C). Equal to (D). Far away from

3. The main purpose of fixing a minimum price is to _____.

(A). Protect consumers (B). Discourage production (C). Encourage producers to supply more (D). Reduce government revenue

4. When a minimum price is set above the equilibrium price, the market experiences _____.

(A). Shortage (B). Excessive demand (C). Surplus (D). Rationing

5. A maximum price legislation is also referred to as a _____.

(A). Price ceiling (B). Price floor (C). Price stabilization (D). Tax on production

6. Maximum price is usually fixed _____ the equilibrium price.

(A). Above (B). Below (C). Equal to (D). With no relation to

7. Which of the following is a consequence of price ceiling?

(A). Surplus of goods (B). Excess supply (C). Shortage due to excess demand (D). Increased producer profits

8. Shortage arising from maximum price control can lead to _____.

(A). Increased supply (B). Hoarding and rationing (C). Government surplus (D). Higher production cost

9. When the government intervenes to fix minimum or maximum prices, the natural equilibrium is _____.

(A). Strengthened (B). Distorted (C). Unchanged (D). Ignored by producers

10. In both price ceiling and price floor situations, the market eventually tends to move back toward _____.

(A). Government-fixed price (B). Producer-preferred price (C). Consumer-preferred price
(D). Equilibrium price.

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TOPIC FOUR

ELASTICITY AND ITS APPLICATION

- Elasticity is the measure of the degree of responsiveness of quantity demanded or quantity supplied to one of its determinants.

- i.e How much/fast quantity demanded or supplied respond to changes in its determinants

- Recall the determinants to be: Price of the commodity, income of the consumer, price of other related commodity … etc.

We will look at 3 major types of demand elasticities:

1. Price Elasticity of Demand

Price elasticity of demand is the measure of how much the quantity demanded of a good responds to a change in the price of that good. Measured as:

$$\text{Price Elasticity of Demand} = \frac{\%\Delta in Qd}{\%\Delta in P}$$

Demand for a good is said to be **ELASTIC** if the quantity demanded responds substantially/largely to changes in the price. Demand is said to be **INELASTIC** if the quantity demanded responds only slightly to changes in the price.

What determines whether the demand for a good is elastic or inelastic?

- Necessities and Luxuries
- Availability of close substitutes
- Definition of the market
- Time horizon

TYPES OF PRICE ELASTICITY OF DEMAND

- **Perfectly Inelastic:** occurs when a change in price leaves the quantity demanded unchanged. Here: Ed = 0
- **Perfectly Elastic:** occurs when the change in price leads to an infinite change in the quantity demanded. Here: Ed = ∞
- **Unitary Elastic:** occurs when the price and quantity demanded changes by the same magnitude. Here: Ed = 1
- **Elastic Demand:** occurs when a small change in price leads to a larger change in the quantity demanded. Here: Ed > 1
- **Inelastic Demand:** Inelastic demand occurs when a change in price leads to a small change in the quantity demanded. Here: Ed < 1

NUMERICAL EXAMPLE 1 & 2

1. At price **N45, 20 units** of apple was purchased. When the price rose to **N50, 16 units** was purchased. Calculate the price elasticity of demand.

2. Given the demand function **Qd = 20 – 0.4p** calculate the price elasticity of demand when price is **N10**.

2. Income Elasticity of Demand

This is a measure of how much the quantity demanded of a good responds to a change in consumers' income. Computed as:

$$\text{Income Elasticity of Demand} = \frac{\%\Delta in Qd}{\%\Delta in Y}$$

- Income elasticity of demand is POSITIVE for a NORMAL GOODS because income and quantity demanded move in the same direction.
- Income elasticity of demand is NEGATIVE for an INFERIOR GOODS because income and demand for such goods move in opposite direction.

Among normal goods, luxuries tend to have a larger income elasticity of demand than necessities goods which elasticity is low.

NUMERICAL EXAMPLE 3

1. The demand for a commodity was 750 units when the weekly income was N12,000. When the weekly income rises to N15,000, 800 units of the commodity was purchased.

a. Find the income elasticity of demand
b. What type of good is it and Why?

3. Cross Price Elasticity of Demand

This is a measure of how much the quantity demanded of one good responds to a change in the price of another good, computed as:

$$\text{Cross Price Elasticity of Demand} = \frac{\%\Delta in Qd\ of\ A}{\%\Delta in P\ of\ B}$$

- Whether the cross-price elasticity is a positive or negative number depends on whether the two goods are substitutes or complements.

- The cross-price elasticity of demand for a competitive goods is positive while for a complementary goods is negative.

NUMERICAL EXAMPLE 4

The following information relates to three commodities; A, B and C between WEEK 1 and WEEK 2:

COMMODITY (PRICE/QTY)	WEEK 1	WEEK 2
Commodity A (Qty)	20	28
Commodity B (Price)	12	22
Commodity C (Price)	15	10

Calculate the cross price elasticity of demand between:

a. Commodity A and B

b. Commodity A and C

c. Explain the relationship between commodity A and B & Commodity A and C

ELASTICITY OF SUPPLY

- Price elasticity of supply is a measure of how much the quantity supplied of a good responds to a change in the price of that good. Computed as:

$$\text{Price Elasticity of Supply} = \frac{\%\Delta in Qs}{\%\Delta in P}$$

- Supply of a good is said to be **ELASTIC** if the quantity supplied responds substantially to changes in the price. Supply is said to be **INELASTIC** if the quantity supplied responds only slightly to changes in the price.

TOTAL REVENUE AND ELASTICITY

- Total revenue is the amount paid by buyers and received by sellers of a good, In any market;

- TR = P X Q

- Now how does total revenue change as one moves along the demand curve? The answer depends on the price elasticity of demand.

ELASTICITY OF DEMAND	PRICE	TOTAL REVENUE
Elastic	Increase Decrease	Decreases Increase
Inelastic	Increase Decrease	Decreases Increases
Unitary	Increase Decrease	Constant Constant

PRATICE QUESTIONS

1. **Price elasticity of demand is best defined as the ratio of**
   (a) Change in price to change in quantity demanded (b) Percentage change in price to percentage change in quantity supplied (c) Percentage change in quantity demanded to percentage change in price (d) Change in quantity supplied to change in price (e) Total revenue to price

2. **Demand for a good is said to be elastic if**
   (a) Price changes do not affect quantity demanded (b) Quantity demanded responds slightly to price changes (c) Quantity demanded responds substantially to price changes (d) Price and quantity demanded change in the same proportion (e) Total revenue remains constant

3. **Which of the following goods is most likely to have inelastic demand?**
   (a) Luxury wristwatch (b) Ice cream (c) Salt (d) Private jet (e) Imported wine

4. **Using the data below, calculate the price elasticity of demand**
   Price increases from ₦2 to ₦3 while quantity demanded falls from 20 units to 16 units.

   (a) 0.5 (b) 0.8 (c) 1.0 (d) 2.0 (e) 4.0

5. **The midpoint method of calculating elasticity is preferred because it**

6. **If the price of a good rises by 10% and quantity demanded falls by 20%, the demand is**
   (a) Perfectly inelastic (b) Inelastic (c) Unit elastic (d) Elastic (e) Perfectly elastic
7. **If price elasticity of demand is greater than 1, an increase in price will**
   (a) Increase total revenue (b) Decrease total revenue (c) Leave total revenue unchanged (d) Have no effect on revenue (e) Increase quantity demanded
8. **Using the data below, calculate the price elasticity of supply**

Price increases from ₦3 to ₦4 while quantity supplied increases from 15 units to 20 units.

(a) 0.33 (b) 0.67 (c) 1.0 (d) 1.5 (e) 2.0

9. **If income elasticity of demand for a good is negative, the good is**
   (a) A luxury good (b) A substitute good (c) A complementary good (d) A normal good (e) An inferior good

LECTURE FIVE

UTILITY THEORY

Utility can simply be defined as the satisfaction derived from the consumption of a particular good or services consumer derives from the consumption of a good or service. It is the pleasure or satisfaction obtained from consuming goods and services.

SCHOOLS OF CONSUMER BEHAVIOUR

There are basically two schools, that is:

1. Cardinalist School
2. Ordinal School

The Cardinalist School

The cardinal utility believes that satisfaction (utility) can be measured in util. That is, when a consumer consumes a particular commodity or service, he can measure the number of pleasure or satisfaction he derives in util. If a person consumes a good, he can conclude that the total utility he derives is 5 utils. This school was spearheaded by Alfred

Assumption of Cardinalist school

i. The consumer is rational i.e consumers always try to maximize.

ii. That utility(satisfaction) is measurable using the measuring tool called utils.

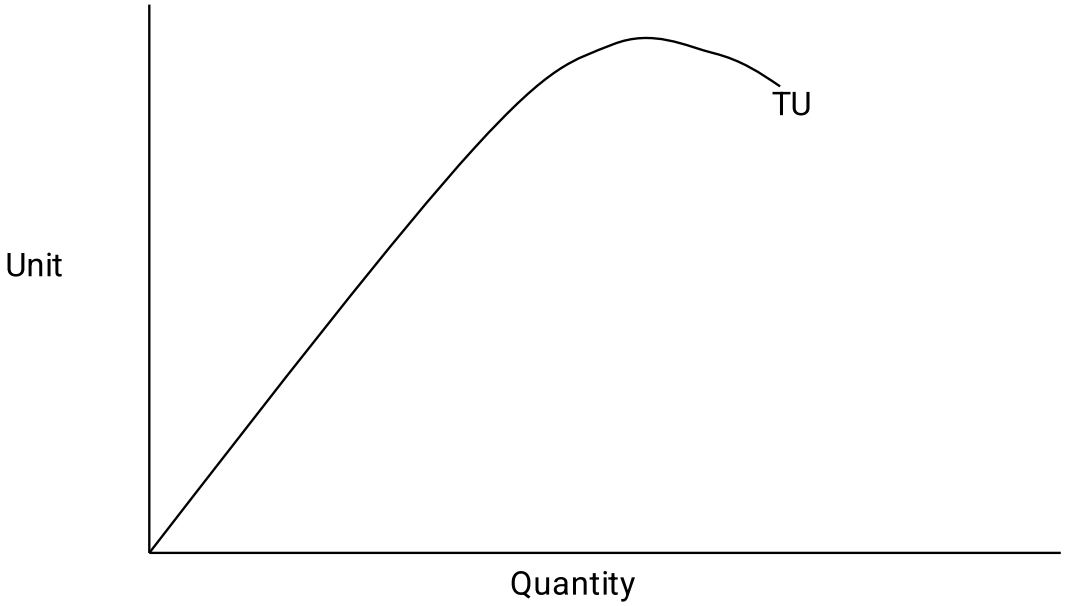
iii. That total utility is the total bundle of goods the consumer consumes. The more the varieties of goods consume, the more the total utility. This implies that Utility is additive.

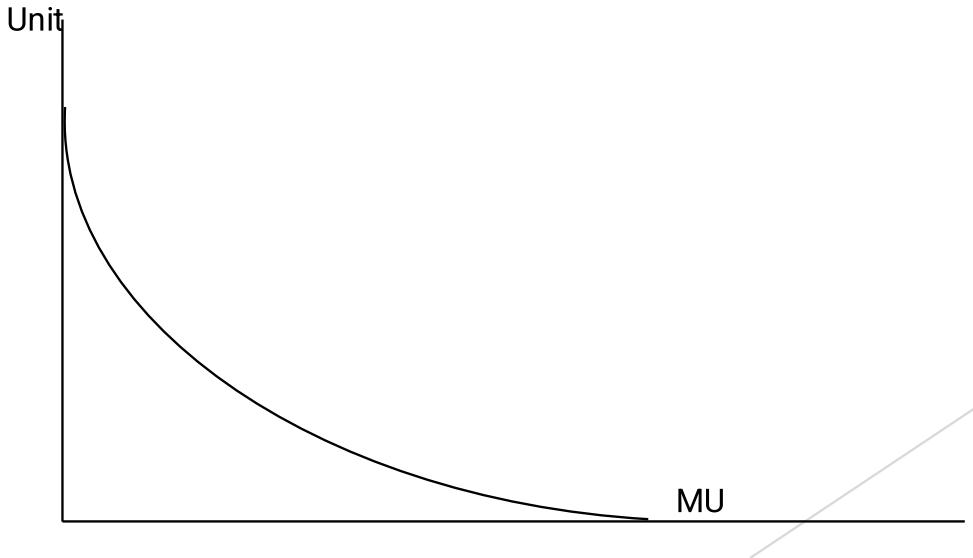
iv. Law of diminishing marginal utility.

Total Utility: This is the total satisfaction a consumer derives from the consumption of all the available bundles of goods.

Marginal Utility: Marginal utility is the change in utility an individual enjoys from consuming an additional unit of a good. Satisfaction derived from the consumption of additional unit of a good.

Law of diminishing marginal utility: The law states that as a consumer consume more and more units of a particular goods or service, utility will increase up to a level where any additional consumption yields no satisfaction to the consumer. **As a person consumes more units of a specific good or service, the additional satisfaction derived from additional units of that commodity decreases and eventually reaches zero and then become negative.**


TU
Unit
Quantity


Unit
MU
Quanti

MATHEMATICAL CALCULATION OF MARGINAL UTILITY

Marginal Utility is calculated as MUx = $\frac{TU2-TU1}{U2-U1}$

That is, the ratio of changes in total utility to changes in the unit cor

EXAMPLE

UNIT	TOTAL UTILITY	MARGINAL UTILITY
0	0	-
1	30	30
2	50	20
3	60	10
4	65	5
5	68	3
6	68	0

CONDITION FOR UTILITY MAXIMISATION

The Cardinalist believes that at the point where the marginal utility of a commodity equals the price for the commodity, utility is believed to be maximized.

That is, MUx = Px (For a single commodity consumption)

THE ORDINALIST SCHOOL

The ordinalists spearheaded by J. R. Hicks believes that utility cannot be measured in numbers but utility can only be rank in order of preference by the consumer.

ASSUMPTION OF ORDINALIST

i. The consumer is rational i.e consumers always try to maximize.

ii. utility cannot be measured but can only be rank in order of preference by the consumer

iii. Consistency: This assumption states that if a consumer prefers good A to B in a particular period, good A must stay preferred in another period.

iv. Transitivity: The assumption of transitivity states that if a consumer prefer good A to B and prefer B to C, logically he prefers A to C.

v. Diminishing Marginal Rate of Substitution: The measurement of how many units of good Y a consumer would be willing to give up to get one additional unit of good X while the consumer keeps his or

CONDITION FOR UTILITY MAXIMISATION

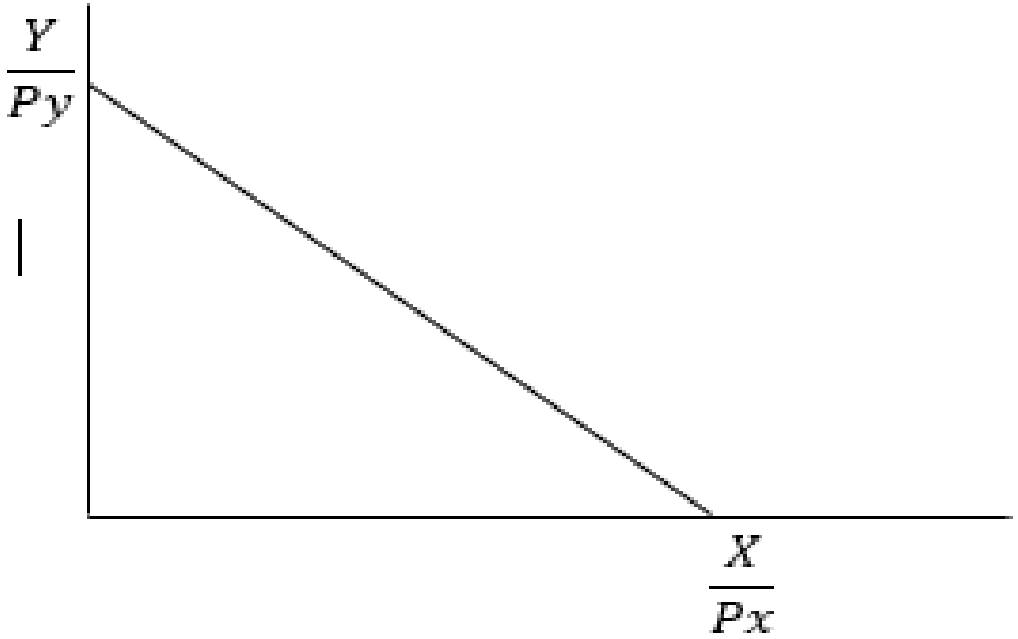
The Ordinalist believes that utility is maximized at the point of tangency of the budget constraint of the consumer to his indifference curve.

Budget Constraint

A consumer's budget constraint identifies the combinations of good and services the consumer can afford with a given income and given prices. The general formula for a budget constraint is $I = X\ Px + Y\ Py$

Where: I = income, X is the quantity of X and Px is the price of X where Y is the quantity of Y and Py is the price of good y.

Graphically, the budget line can be drawn as:



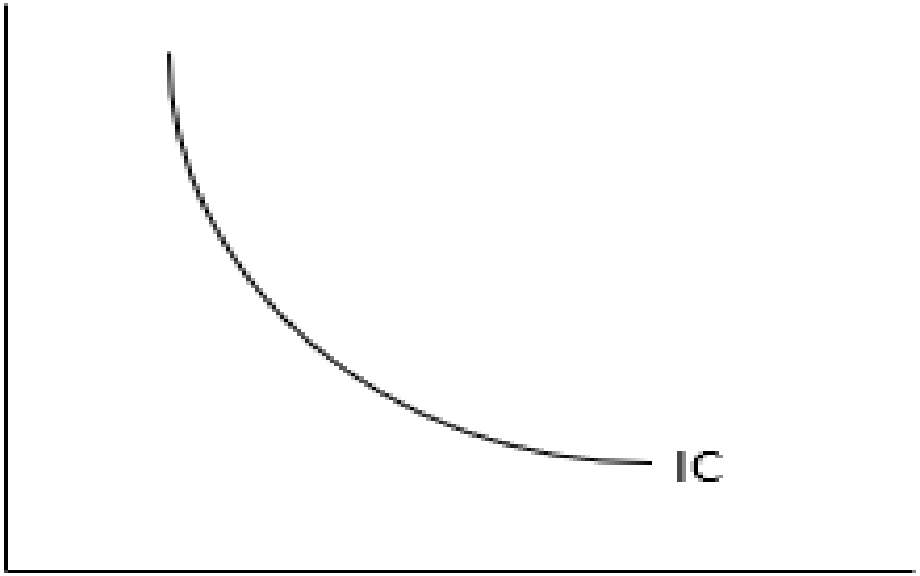
The endpoints are the y-intercept and the x-intercept. They correspond to the maximum quantities of each good that could be bought.

When there is an increase in income, there will be a shift in the budget line but when there is a change in the price, the budget

THE INDIFFERENCE CURVE

The indifference curve is the tool used by the Ordinalist to explain the choice of consumer in his consumption of two commodities.

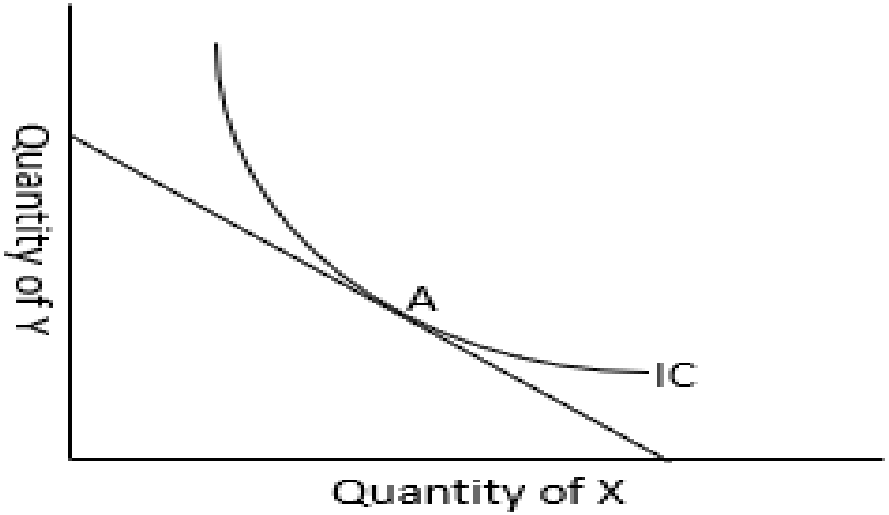
The indifference curve is the locus of all point of consumption that gives the consumer the same level of utility. Graph



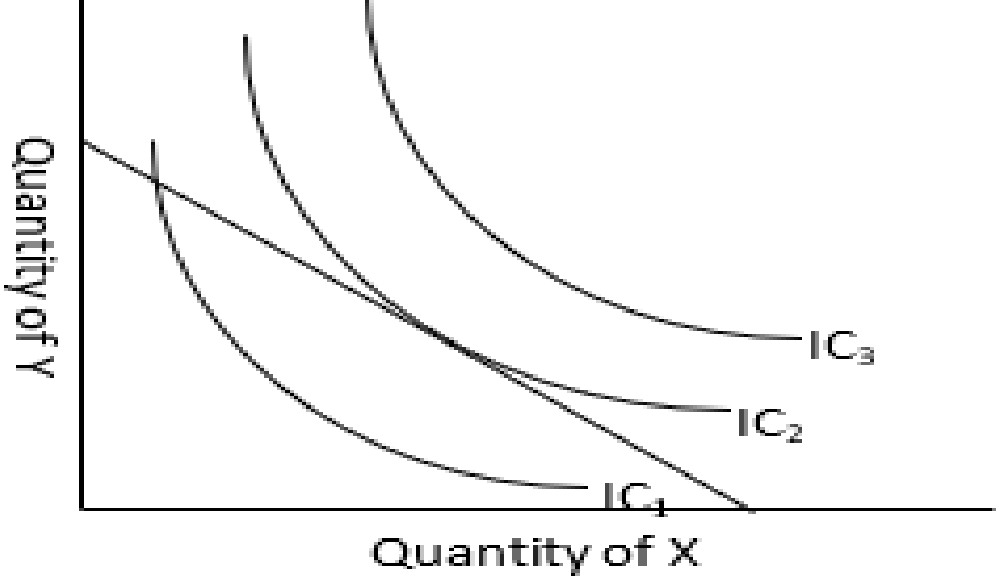
Characteristics of Indifference curve

1. It is downward sloping and convex to the origin
2. The higher the indifference curve from the origin, the higher the level of utility
3. Indifference curves does not intersect each other
4. It is negatively sloped and the slope of the indifference curve is the marginal rate of commodity substitution.

UTILITY MAXIMISATION



The consumer will maximize his utility at the point of tangency of the indifference curve and the budget line. That is, the consumer can consume more than his budget line. So the indifference curve that tangent the budget line, that is the equilibrium point that the consumer will stay on. Therefore, the consumer will be at equilibrium at point A where the indifference curve is tangential to the budget line.



From the above diagram, it is seen that IC_3 is higher than IC_2 but the consumer can't consume on it because his budget line limited him to consume on IC_2 and he cannot consume on IC_1 because his budget line is higher than IC_1. Therefore, the consumer will be in equilibrium where his indifference curve is tangential to the budget line.

THANK YOU!