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session

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A2 – ECONOMICS (9708)

MICRO

CHAPTER 1

Utility and Consumer Choice

Topics

Topic 1: Marginal Utility

Topic 2: Budget Line and Indifference Curve

TOPIC 1: UTILITY AND MARGINAL UTILITY

Lecture 1

Definition | Utility: It is the satisfaction gained from the consumption of a good or service. It helps to satisfy a human need.

Definition | Total Utility: It is the total satisfaction gained from the consumption of given amount of goods and services.

Definition | Marginal Utility: It is the extra utility gained from consumption of one more unit of good or service. In other words it is the change in the total utility.

$$\text{Marginal Utility} = \frac{\Delta TU}{\Delta Q}$$

1. LAW OF DIMINISHING MARGINAL UTILITY

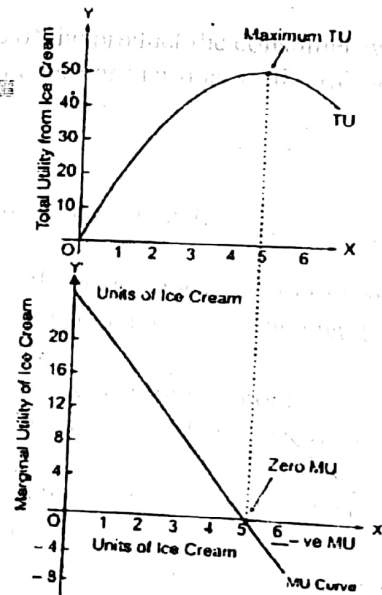
Definition: This states that the more units of a good are consumed, the lower the utility from consuming those additional units. Example: If a person consumes ice cream bars the first bar will give him more utility and as the consumption goes on the second would give lesser satisfaction.

In order to understand the concept let's look at an example:

No. of Ice Cream Bars	Total Utility	Marginal Utility
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5

the exam in
in MCQ's
will either give
total or Marginal.

Find out the
other
To calculate
marginal, subtract to get
Total. to get to total,
add Marginal



Conclusion from the diagram above:

1. Until marginal utility is positive total utility raises but at a decreasing rate
2. The point where marginal utility is positive total utility is maximum.
3. Total utility falls when marginal utility gets negative.

Demand
w. given ability
MC

the

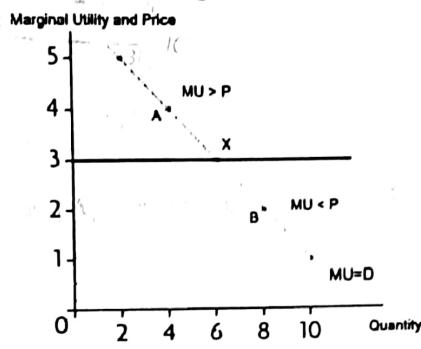
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1. Marginal utility and derivation of an individual demand schedule

If marginal utility were measured in terms of money then the MU curve would be the persons demand curve. A rational consumer will tend to maximize their utility from consumption and in order to do so will try to consume at a point where marginal utility equals price. As long this is maintained the individual demand curve would be the same as the marginal utility curve.

$MU = P$

In order to understand this let's look at the diagram below:



- 1) Consume a product successively
- 2) MU declines with every single consumption
- 3) Consumer equilibrium exists where Price intersects MU
- 4) Point of intersection are points of effective demand and used to derive the demand curve.

- **MU > P:** If the marginal utility is greater than the price of the product the consumer would tend to increase the consumption of the product because the benefit or marginal utility is higher than the asking price.

- **MU < P:** If marginal utility is less than the price of the product the consumer would tend to decrease consumption of the product because the benefit or marginal utility of the product is lower than the asking price.

Conditions of Diminishing Marginal Utility / Assumptions

In order for the law to hold the following conditions should be met:

after starting question

Condition	Description
1. Quality	The quality of the goods should remain constant otherwise if the quality improves people might consume more of it or if the quality drops they might discontinue the product.
2. Quantity	A reasonable quantity must be decided for the product. Example: If utility of chocolate is being measured then a bar should be considered than a small piece.
3. Ceteris Paribus	This law only holds while assuming everything else like taste, fashion weather etc. are held constant.
4. Continuous use <i>Successive</i>	There should be a continuous use of the good which a consumer is consuming.

2. LAW OF EQUI-MARGINAL UTILITY

In diminishing marginal utility, we were only looking at the impact of a price change on one good. The marginal theory can also be used to explain how the consumers will allocate expenditure across all goods. This is called the equi-marginal principle.

The quantity chosen of one good affects the demand for the other, given a limited budget to spend it is not a simple question of setting $MU=P$, as decision of one good affects the position of the MU curve for other goods due to the linkage of budget constraint.

Definition | Equi-Marginal Principle: A rational consumer is in equilibrium when he spends his fixed income on different goods with given prices in such a way that MU of the last unit of money spent on each good is equal.

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$$

- MU_x = Marginal utility of Good X
- MU_y = Marginal utility of Good Y
- P_x = Price of Good X
- P_y = Price of Good Y

MU/P > MU/P
increase consumption in equilibrium

Situation 1: Price of Product X Falls

If the price of Product X falls the equation would be structured as follows:

$$\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$$

This shows that the last unit of money spend on X is greater than Y. Hence the consumer would tend to consume more of X. However the law of diminishing marginal utility would come in and with every unit consumed the MU_x will fall until the equality is restored.

Note: This also explains the reasons that when Price ↓ Quantity Demanded ↑

Situation 2: Price of Product Y Falls

If the price of Product Y falls the equation would be structured as follows:

$$\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$$

This shows that the last unit of money spend on Y is greater than X. Hence the consumer would tend to consume more of Y. However the law of diminishing marginal utility would come in and with every unit consumed the MU_y will fall until the equality is restored.

Consumer strategy to maximize utility

Situation 1	Situation 2	Situation 3
$\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$	$\frac{MU_x}{P_x} < \frac{MU_y}{P_y}$	$\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$
- Consume More X - Consume Less Y	- Consumer More Y - Consumer Less X	- Quantity X unchanged - Quantity Y unchanged

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MCQ: The MU utility of the last dollar spent on good X is 3, the price of Y is 3. Calculate the MU of Y

MU/P = 3

end of exam

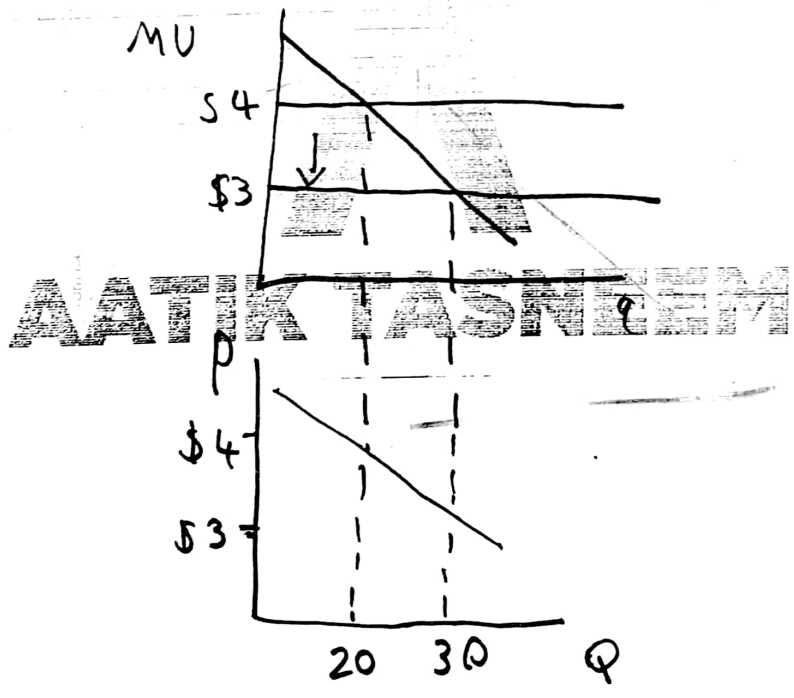
Derived from consumer's utility

Limitation of Marginal Utility Theory

Factor	Description
1. Utility cannot be measured	It is difficult to measure utility because there is no method to do that. Further utility can neither be added nor it can be compared physically.
2. Ceteris paribus	In reality things don't remain constant and consumer preference, incomes, etc. changes with time. This can lead to new consumption habits which might have an impact on consumer satisfaction
3. For some goods utility goes up	For some goods an increase in consumption actually leads to an increase in utility. Examples include money, collections, land in some cases an owning a collection tends to increase value.
4. Durable Goods	This is difficult to apply to durable goods as they are not continuously used. Specially for diminishing marginal utility this law is important.
5. Consistency of goods	The assumption holds that all the goods are similar in nature, however that might not be true. Example: If the consumer is eating an apple, the quality might be different in successive units and depending on that the utility may be more or less than the previous one.
6. Consumers are not rational	Sometimes consumers are not rational as they buy goods on basis of impulse or even indulge in conspicuous consumption. Hence they are not basing their decision on marginal utility.

at least 3 limitations

Lecture 1

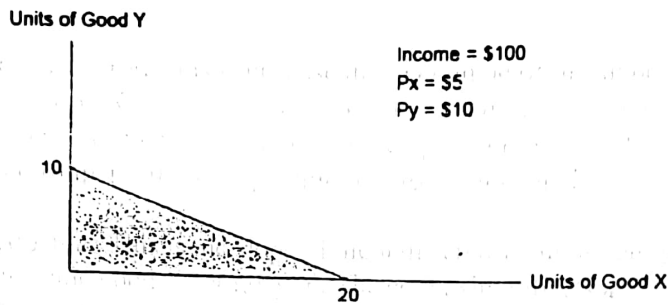


TOPIC 2: BUDGET LINE AND INDIFFERENCE CURVES *(ability)*

Lecture 2

1. BUDGET CONSTRAINT / BUDGET LINE

Definition: A budget constraint is constructed on the basis of consumer income and prices. It can be shown graphically through a line called the budget line which shows all possible combinations of two goods that a consumer can consume with the given income. Any point within the budget line is affordable and any point outside the budget is not affordable with the given income and prices.



1. Shifts in the Budget Line

The budget line can shift due to the following **TWO** reasons:

Income Changes – Parallel Shift	Price of a Good Changes – Pivotal Shift
<p>Income Increases Due to an increase in income the budget line shifts parallel outwards. [20Y & 40X]</p> <p>Income Decreases Due to a decrease in income the budget line shifts parallel inwards. [5Y & 20X]</p>	<p>Price of Good X Increases Since the good is more expensive, less of it would be consumed with the given income, hence inward pivotal shift. [10Y & 10X]</p> <p>Price of Good X Decreases Since the good is cheaper now, more of it would be consumed with the given income, hence outward pivotal shift. [10Y & 40X]</p>

2. INDIFFERENCE CURVE *(willingness)*

Definition: It is a curve that represents the combinations of two goods that give equal utility to a consumer. The indifference curve has several properties:

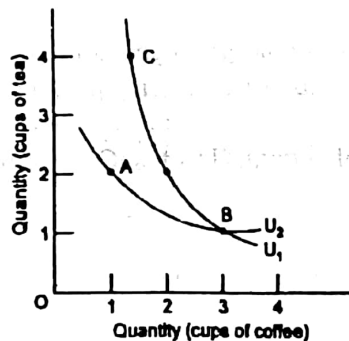
1. Indifference curve for two goods slope downwards: This is because the a consumer can trade off the satisfaction received from one of the goods against the other. In other words if he consumers less of Good X then he needs to consumer more of good Y to maintain the same level utility.

MRS \rightarrow drops $\frac{1}{2}$ gives out

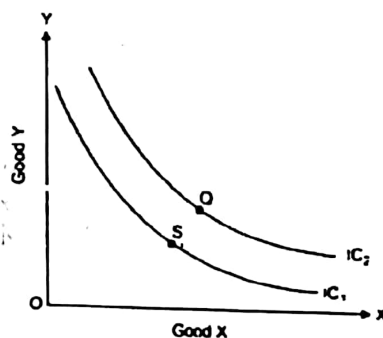
2. Indifference curves are convex to the origin: This is because the magnitude of the slope decreases as we move towards more of Good X and less of Good Y. This can be seen from the diagram below initially as in the start the consumer was willing to give up 1 unit of Y for 1 unit of X, however as we move down the consumer will give up 1 unit of Y for 2 units of X.

Definition | Marginal Rate of Substitution: This is the slope of the indifference curve, the rate at which consumer would be willing to trade good X for good Y. The convexity reflects a diminishing marginal rate of substitution. This suggests that when consumers has more a good and less of the other he is willing to give more of the good he has just for one extra unit of other he lacks.

3. Indifference curves cannot intersect: This can be explain through the diagram below. As we see that there are two indifference curves U_1 and U_2 . If we consider point B, the utility at point B $U(B)$ equals to $U(A)$ and $U(C)$. Based on this $U(A) = U(C)$ however this cannot be true because point C has more bundles of goods has greater utility than Point A. Hence curves cannot cross.



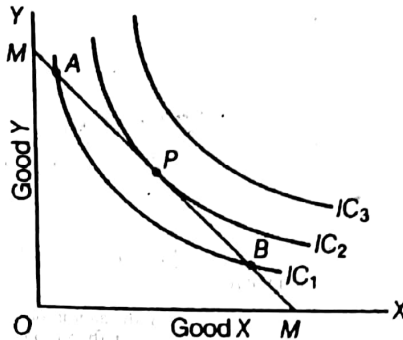
4. Higher the indifference curve higher the utility: The consumers always prefer more to less and based on that he would maximize this utility by reaching the highest possible curve that he can reach. As we see from the diagram below that IC_2 brings higher level of satisfaction than IC_1 .



Deriving demand curve
 1) Draw general equilibrium and label it
 2) Shift the BL by looking at change in price of a substitute or complement
 3) Show movement on IC (Cheaper good) by moving towards the origin

3. CONSUMER EQUILIBRIUM BUNDLE OF GOODS

Definition: In order to identify the equilibrium, we need to define the possible affordable consumption bundles (Budget Line) and then identify the most preferred bundle (Indifference Curves) among all the affordable bundles.



- At IC₁ – The reason IC₁ is not chosen because even though it can afford bundles they are less preferred to the bundles on IC₂.

- At IC₃ – Even though the satisfaction is higher on IC₃, however none of the bundles are affordable.

At IC₂ – As we see from the diagram that the equilibrium is at point P which is the most preferred affordable combination of goods. This is a point where the highest attainable indifference curve is tangent to the budget line.

Lecture 2

Lecture 3

4. SUBSTITUTION AND INCOME EFFECT

Definition | Substitution Effect: This is the effect that states when the price of good falls, the consumer tends to shift consumption from the expensive good towards the cheaper good.

Example: If the price of Good X decreases, an individual would shift consumption from Good Y to Good X. Substitution Effect always acts to INCREASE the consumption of the product

Definition | Income Effect: This is an effect that states that when consumer changes his consumption of a good with increase or decrease in their real income. As when the price of a good falls the total expenditure on the original bundle decreases hence there is an income effect. Income effect can entirely INCREASE or DECREASE consumption when price falls.

Note: The combined effect for Substitution and Income effect is known as Price Effect.

There are THREE types of changes:

1. Changes in Price
2. Changes in Income
3. Changes in Non-Price Factors (Advertising)

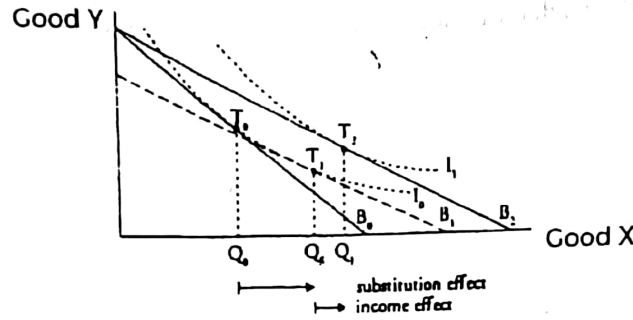
1. Change in Price

1. Normal Goods – SE is Positive and Income Effect is Positive [Quantity of Good X ↑]
2. Inferior Goods – SE is Positive > Income Effect is Negative [Quantity of Good X ↑]
3. Giffen Goods – SE is Positive < Income Effect is Negative [Quantity of Good X ↓]

Normal good SG } move in same direction } final placement after b →
 inferior good SG } move in opp. direction } final IC b/w a-b placed
 giffin good SG } move in opp. direction } final IC placed before c
 good LG }

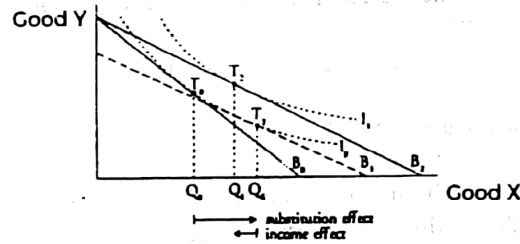
1. Normal Goods – SE is Positive and Income Effect is Positive [Quantity of Good X ↑]

Definition | Normal Good: This is a type of good in which the income effect is positive. As the income goes, the demand for the good increase.



2. Inferior Goods – SE is Positive > Income Effect is Negative [Quantity of Good X ↑]

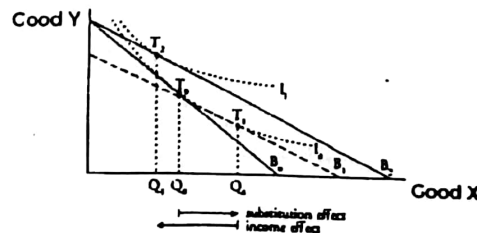
Definition | Inferior Good: This is a type of good in which the income effect is negative. As the income goes, the demand for the good decreases. However it does not out way the positive substitution effect.



3. Giffen Goods – SE is Positive < Income Effect is Negative [Quantity of Good X ↓]

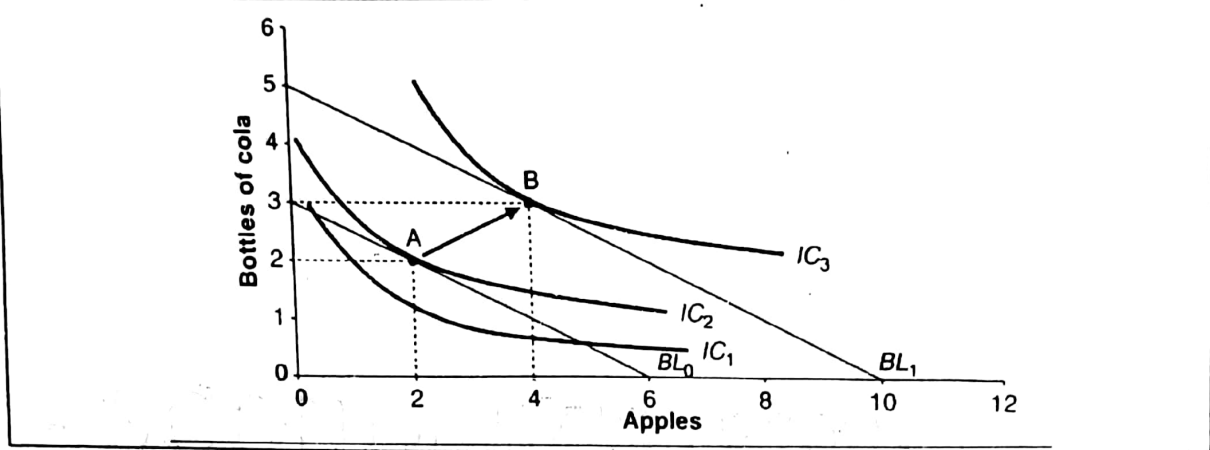
Definition | Giffen Good: This is a type of inferior good that has a negative income effect that does out ways the positive substitution effect. These are special type of inferior goods (Example Bajra is a giffen good compared to wheat) which have a very expensive substitute and consumers major proportion of income is spent on them. It has a positive relationship with price. [Violates the law of demand]

Definition | Veblen Goods: These are goods that have a positive relationship with price. A price increase marks higher quality and therefore higher utility. Example: Luxury cars, clothing etc.

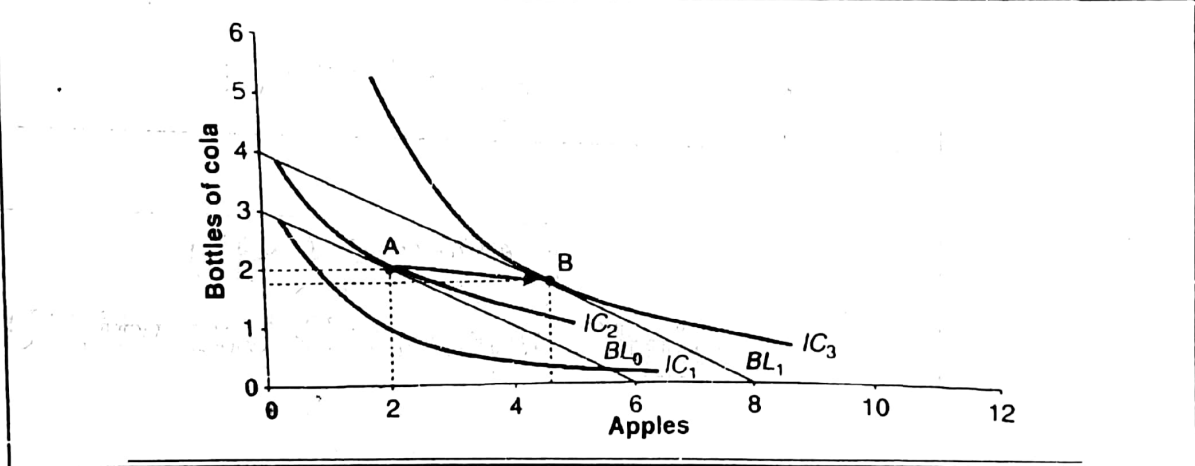


2. Change in Income

1. Normal Goods – When income increases | Both Cola and Apples are Normal

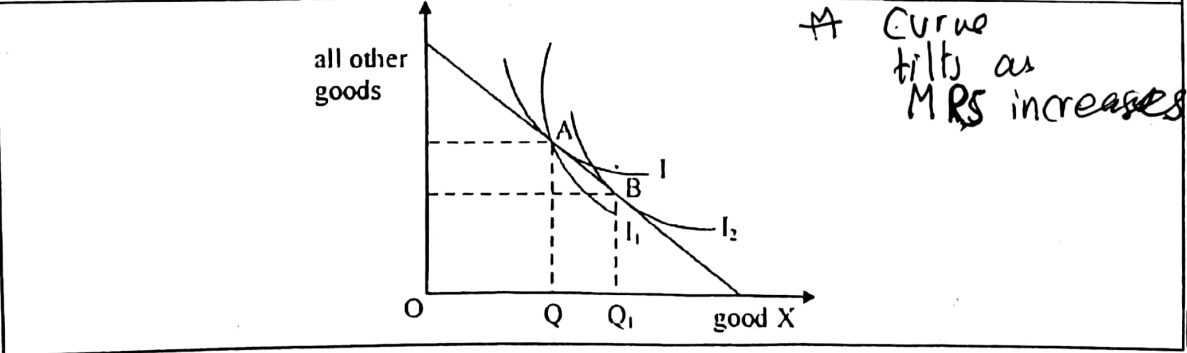


2. Inferior Goods – When income increases | Apples are normal and Cola is inferior



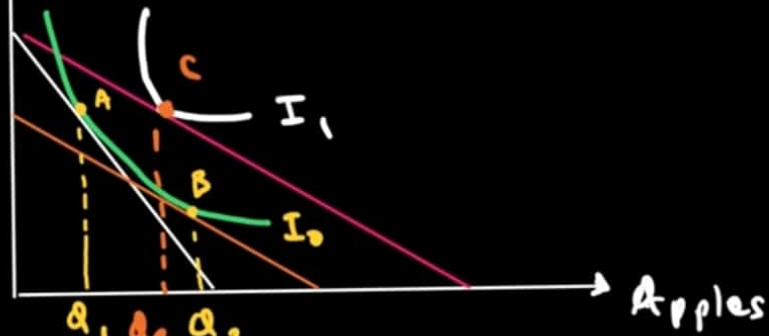
3. Change in Advertising

Increase in Advertising of Good X

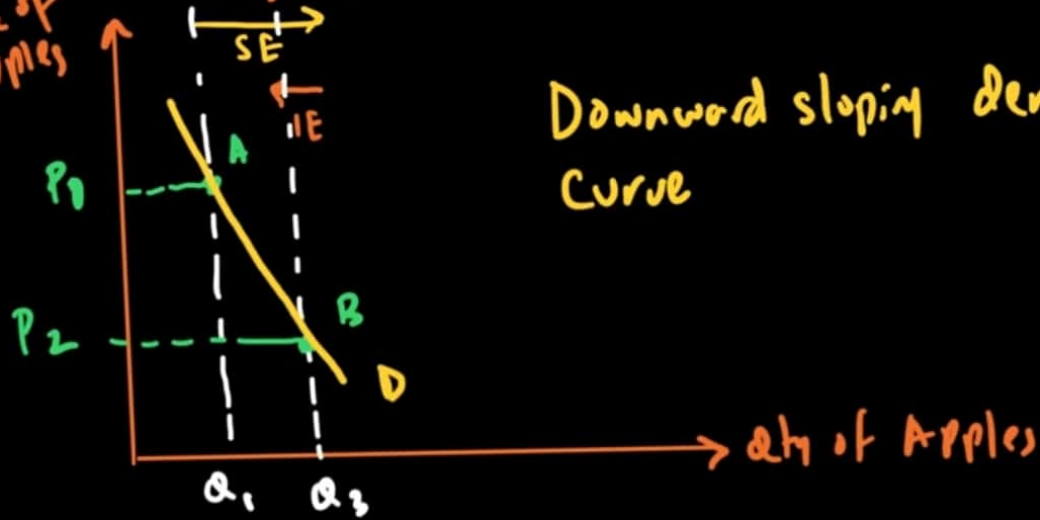


Lecture 3

$SE > IE \rightarrow Q \uparrow$



Price of Apples



Downward sloping demand curve