

MGM 112

Introduction to Economics

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Lecture 3

The consumer behavior



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Syllabus

**I- Consumer
Preferences, Utility
and Ranking**

**II- Price, Quantity
and Demand**

III- Elasticity

I- Consumer Preferences, Utility and Ranking

I-1- Consumer Preferences and Ranking

I-1-1- Revealed Preference Theory

I-1-2- Basket of goods

I-1-3- Preference Assumptions

I-1-4- Ranking

I. 2 Utility Functions

I-3 Law of Diminishing Marginal Utilit

I-3-1- Utility with one good

I-3-2- Utility With 2 or More Goods

I-4- Indifference Curves

I-5- The Marginal Rates of Substitution

I-1-1- Revealed Preference Theory:

The Revealed Preference Theory in Economics, is a theory, introduced by the American Economist **Paul Samuelson** in 1938, and it holds that *consumers' preferences can be revealed by what they purchase under different circumstances, particularly under different income and price circumstances.*

- It' s represented by a **specific combination of goods and services.**

I-1-2- Basket of goods:

- **The basket of goods** represents the value of a specific group of products and services.
- The basket includes a variety of products from different categories — food and beverages, clothing, housing, transportation, education, medical expenses, and other items.
- Each group of products has its own weight in the basket.

I-1-3- Preference Assumptions

❖ **Preferences are complete**

A consumer can always rank preferences:

a) A is preferred to B: $A > B$

b) B is preferred to A: $B > A$

c) A consumer is indifferent between A and B: $A \approx B$

❖ **Choices are transitive:** If

A is preferred to B: $A > B$

B is preferred to C: $B > C$
C:

A is preferred to

$A > C$

❖ **More is better:**

A consumer always prefers having more of a good Examples

I-1-4- Ranking

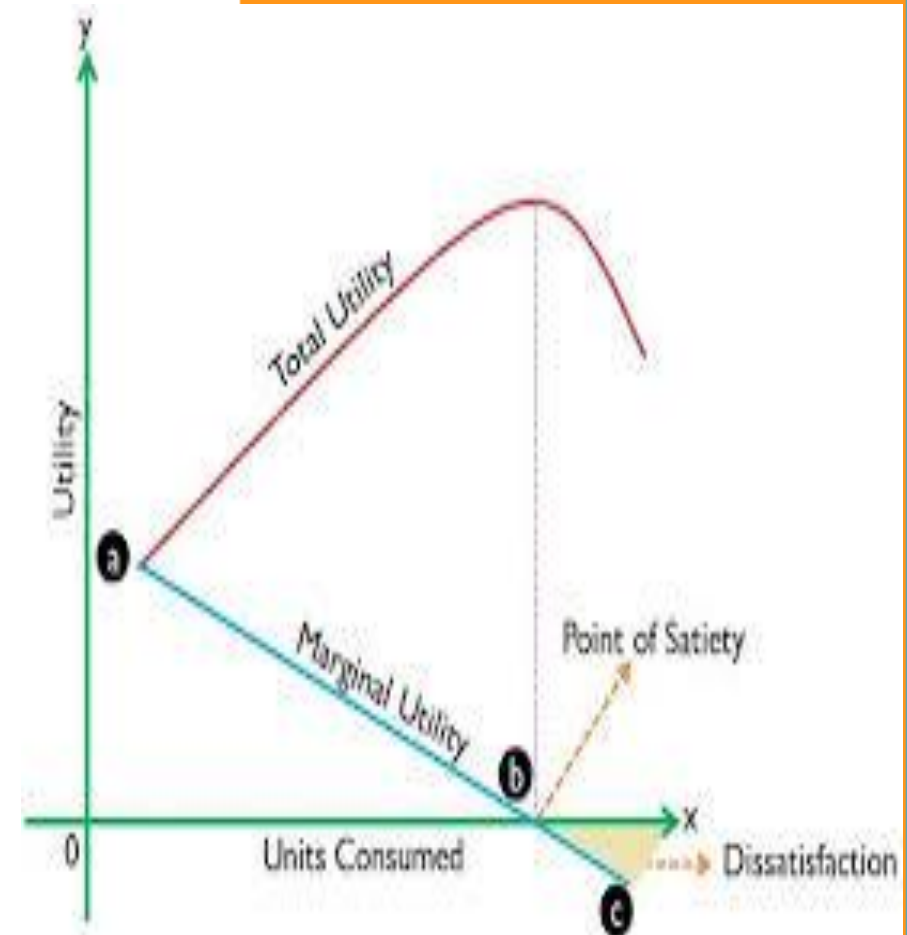
- **Ordinal Ranking:** baskets are ordered or compared to each other without any quantitative information or intensity of preference

ie: I like dogs more than cats.

- **Cardinal Ranking:** baskets are quantitatively compared

ie: "I like dogs ten times more than cat

- **Utility** is the pleasure or satisfaction obtained from a good or service.
- **Utility**: a number that represents the level of satisfaction that the consumer derives from consuming a specific quantity of a good



I-2-1- The total utility:

Total Utility (TU) is the total amount of satisfaction that you get from consuming a product.

I-2-2- The marginal utility:

Marginal Utility (MU) is the change in total utility obtained by consuming one additional (marginal) unit of a good or service.

$$\text{Marginal utility} = \frac{\text{change in total utility}}{\text{change in quantity}}$$

- Example

Tickets Bought	Total utility	Marginal utility
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0
7	28	-2
8	18	-10

I-3-1- Utility with one good

The marginal utility of a good declines as more of it is consumed in a given time period.

Burger 1

Eating the first burger gives the consumer a lot of *satisfaction*

(*utility*)



Satisfaction thermometer

Burger 2

Eating a second burger will not give as much *extra satisfaction* as the first did (*marginal utility*)



Burger 3

Eating a third burger will give even *less extra satisfaction* than eating the second one (*diminishing marginal utility*)



I-3-2- Utility With 2 or More Goods

- Utility and 1 good can be measured on a 2 dimensional graph,
- Utility and 2 goods must be measured on a 3 dimensional graph
- Here Marginal Utility uses the ceteris paribus assumption: how does utility change when 1 good changes, everything else held constant?

I-3 Law of Diminishing Marginal Utility -3-

- As long as the marginal utility is positive, the consumer receives additional satisfaction and total utility increases.
- Additional quantities of a good yield increasingly smaller increments of satisfaction.

I-3 Law of Diminishing Marginal Utility -4-

- An absolute measure of utility is not possible because the perception of satisfaction differs among individuals.
- Diminishing marginal utility is a common experience.
- It is a sufficient basis for economic predictions of consumer behavior.

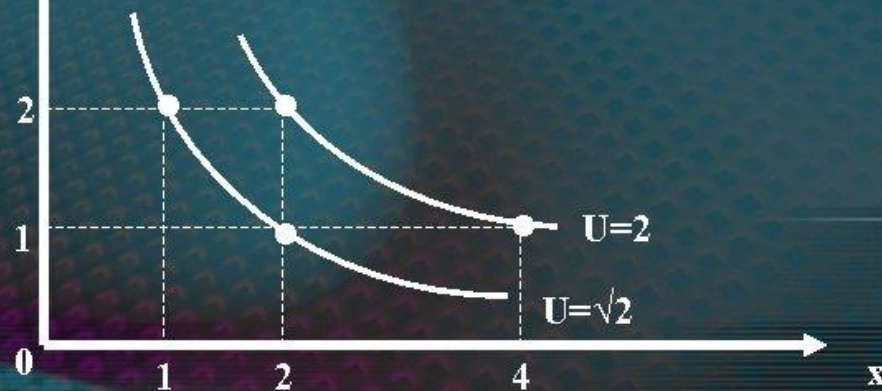
- 1 Positive Marginal Utility
- 2 Negative Marginal Utility
- 3 Zero Marginal Utility

- **Indifference curve**: points connected on a graph representing different quantities of two goods, points between which a consumer is indifferent
- **Indifference curve** is the locus of various points showing different combinations of two goods providing equal utility to the consumer.

Example:

Indifference Curves

Consider the utility function $U=(xy)^{1/2}$.
Each indifference curve below shows all the baskets of a given utility level. Consumers are indifferent between baskets along the same curve.

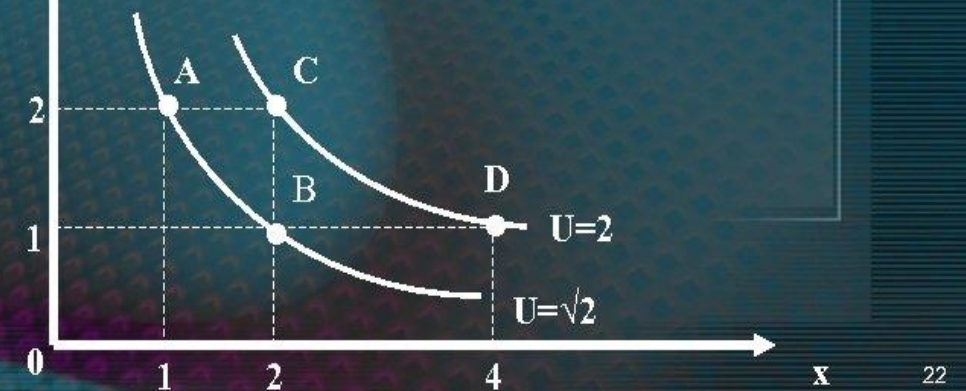


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Indifference Curves

From the indifference curves, we know that: $A \approx B$, $C \approx D$

$$\begin{array}{l} C \succ A \quad \& \quad C \succ B, \\ D \succ A \quad \& \quad D \succ B \end{array}$$



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I-4-1- Properties of Indifference curves:

- **Completeness** => each basket lies on only one indifference curve
- **Transitivity** => indifference curves **do not cross**
- **Negative Slope** => when a consumer likes both goods (MU_a and MU_b are positive), the indifference curve is downward sloping
- **Thin curves** => indifference curves are not “thick”

I-5- The Marginal Rate of Substitution -1-

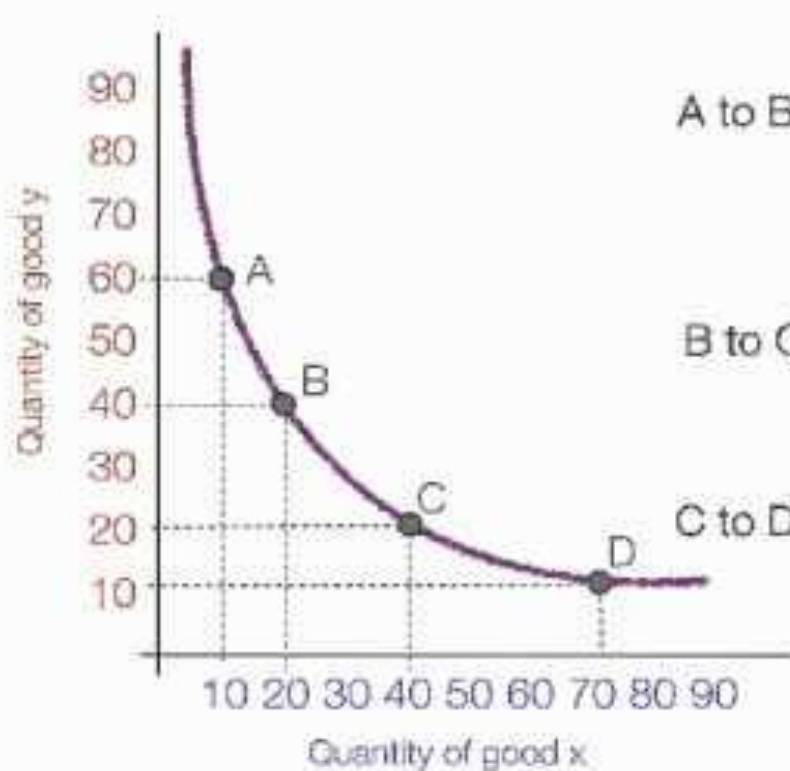
MRS is the change (loss) in one good needed to offset the change (gain) in another good,

In this case, MRS is the trade-off (loss) of **y** for a small increase in **x**

Example:

Indifference Curves

Marginal Rate of Substitution



A to B

$$\frac{\Delta y}{\Delta x} = \frac{\text{change in } y}{\text{change in } x} = \frac{60 - 40}{10 - 20} = \frac{20}{-10} = -\frac{2}{1}$$

B to C

$$\frac{\Delta y}{\Delta x} = \frac{40 - 20}{20 - 40} = \frac{20}{-20} = -\frac{1}{1}$$

C to D

$$\frac{\Delta y}{\Delta x} = \frac{20 - 10}{40 - 70} = \frac{10}{-30} = -\frac{1}{3}$$

- **"The Marginal Rate of Substitution of x for y":**
x is gained, so how much y must be given up alternately,
if x is given up, how much y can we get?
- The MRS is equal to the **SLOPE** of the indifference curve (slope of the tangent to the indifference curve).

I-5- The Marginal Rate of Substitution -3-

- All along an individual's indifference curve, an individual consumes different baskets of goods while remaining at the same utility •
- The individual is willing to **SUBSTITUTE** one good for another •
- An individual must be compensated by an increase in one good if the other good decreases

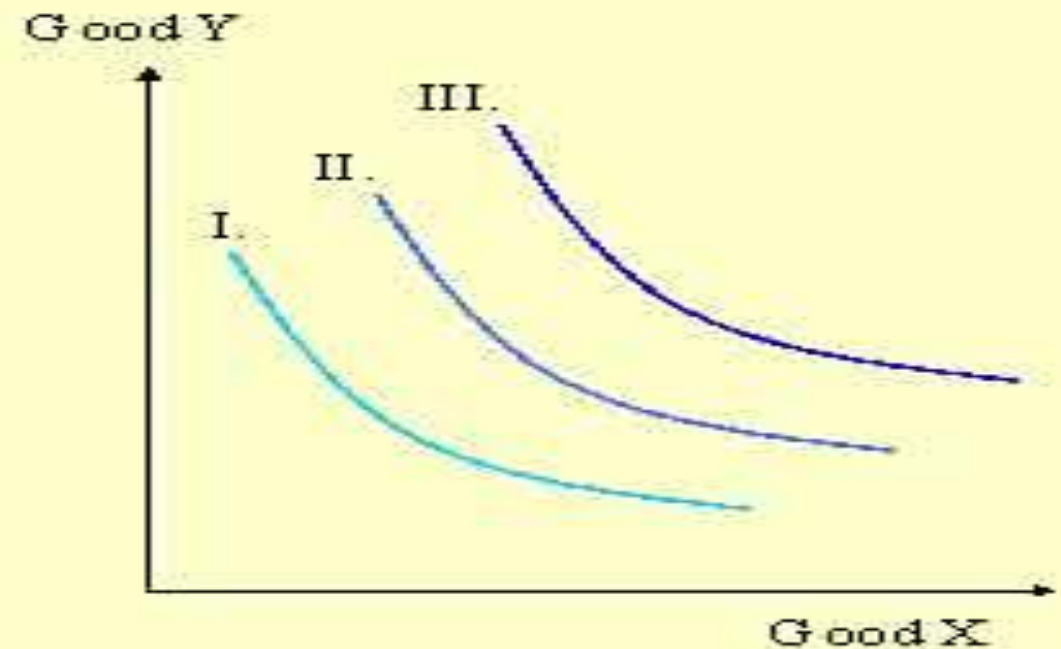
Indifference Curve Analysis

Indifference Curve

- A curve that defines the combinations of 2 or more goods that give a consumer the same level of satisfaction.

Marginal Rate of Substitution

- The rate at which a consumer is willing to substitute one good for another and stay at the same satisfaction level.



Lecture

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Example:

Combination	Oranges	Apples	Substitution
1	20	1	-
2	15	2	5:1
3	11	3	4:1
4	8	4	3:1
5	6	5	2:1

II- Price, Quantity and Demand

II-1- Price and Quantity

II-2- Law of Demand

II-3- Demand Curve

II-4- Changes in Income

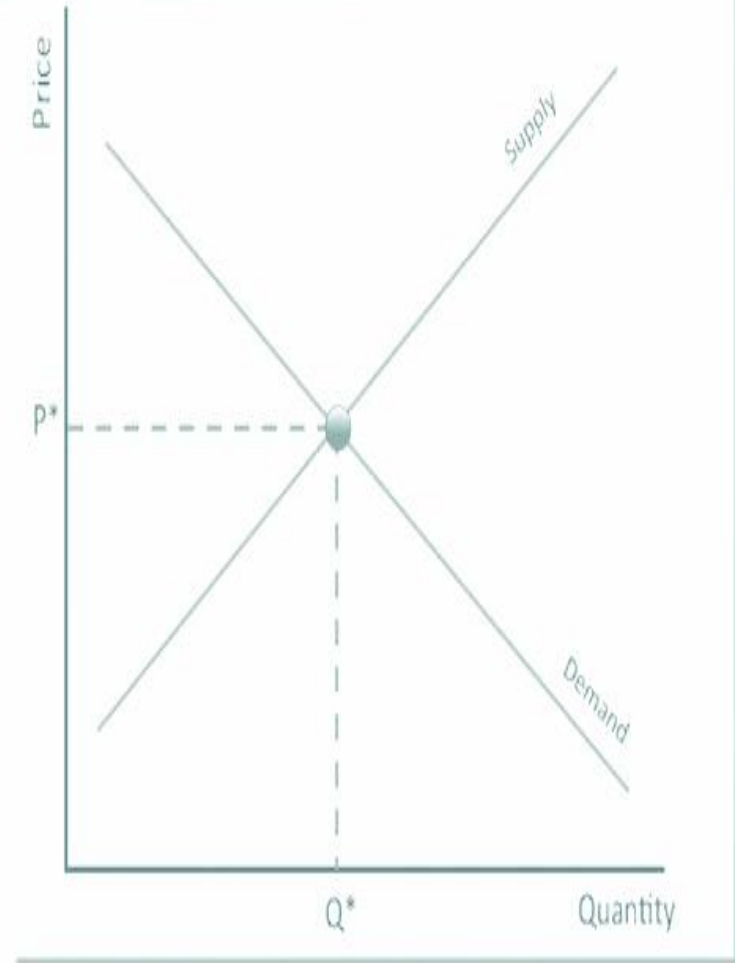
II- 1- Price and Quantity

Many forces determine how much we are willing to buy.

Economists focus on the relationship between **price** and **quantity** rather than trying to explain all the forces at once.

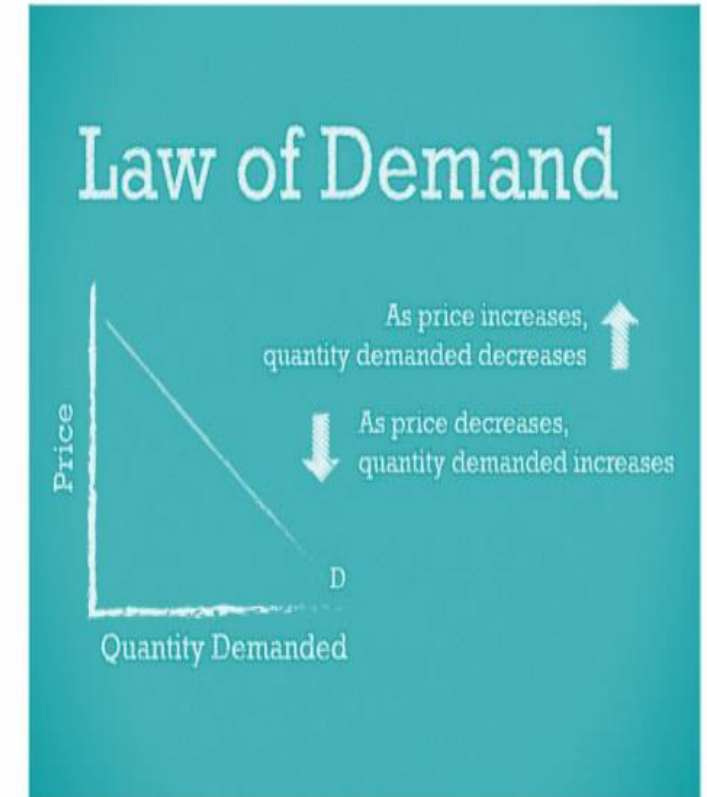
This is the *ceteris paribus* (all other things equal) assumption.

DEFINITION



II-2- Law of Demand

- The concepts of marginal utility and *ceteris paribus* explain the downward slope of the demand curve.
- With given income, tastes, expectations, and prices of other goods and services, people are willing to buy additional quantities of a good only if its price falls.

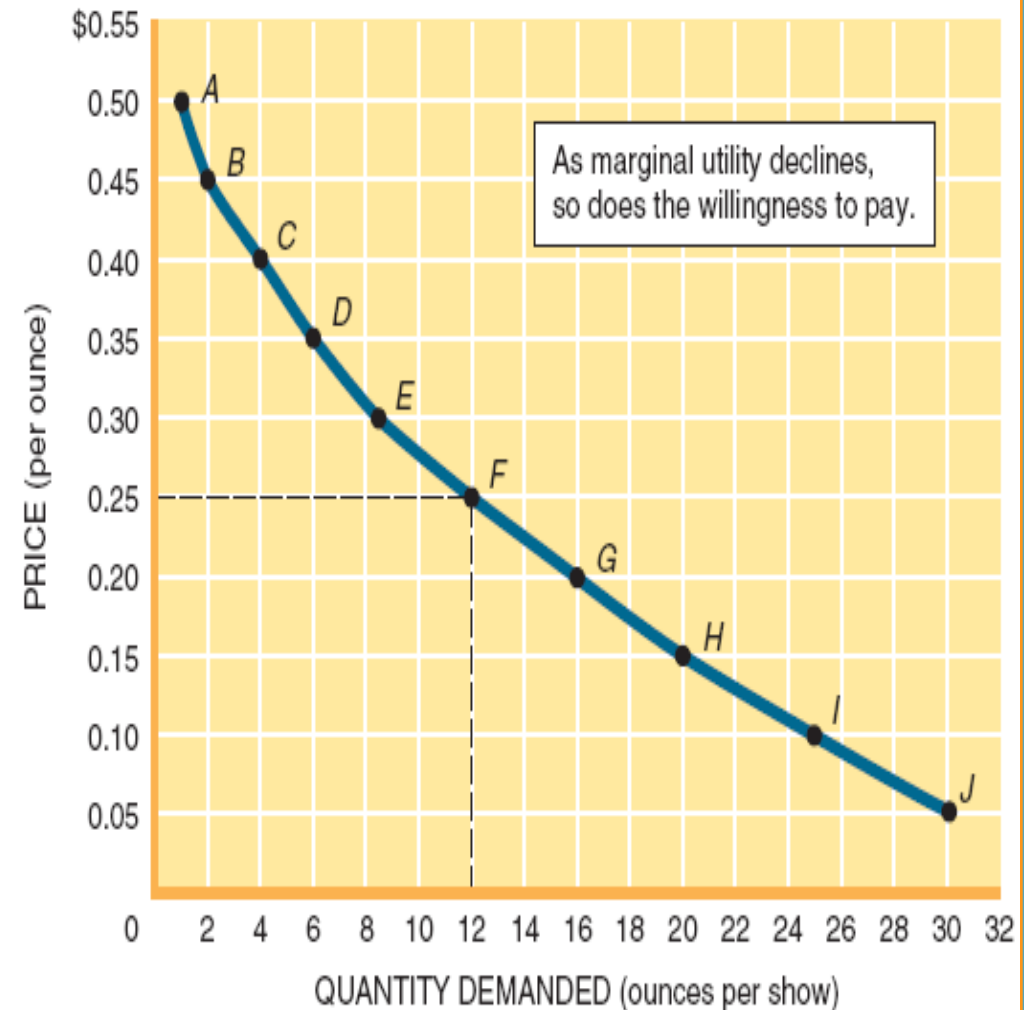


II-2- Law of Demand

- The higher the marginal utility, the more you are willing to pay.
- Diminishing marginal utility explains why price must decrease in order for you to continue to buy a good or service.
- According to the **law of demand**, the quantity of a good demanded in a given time period increases as its price falls, ceteris paribus.

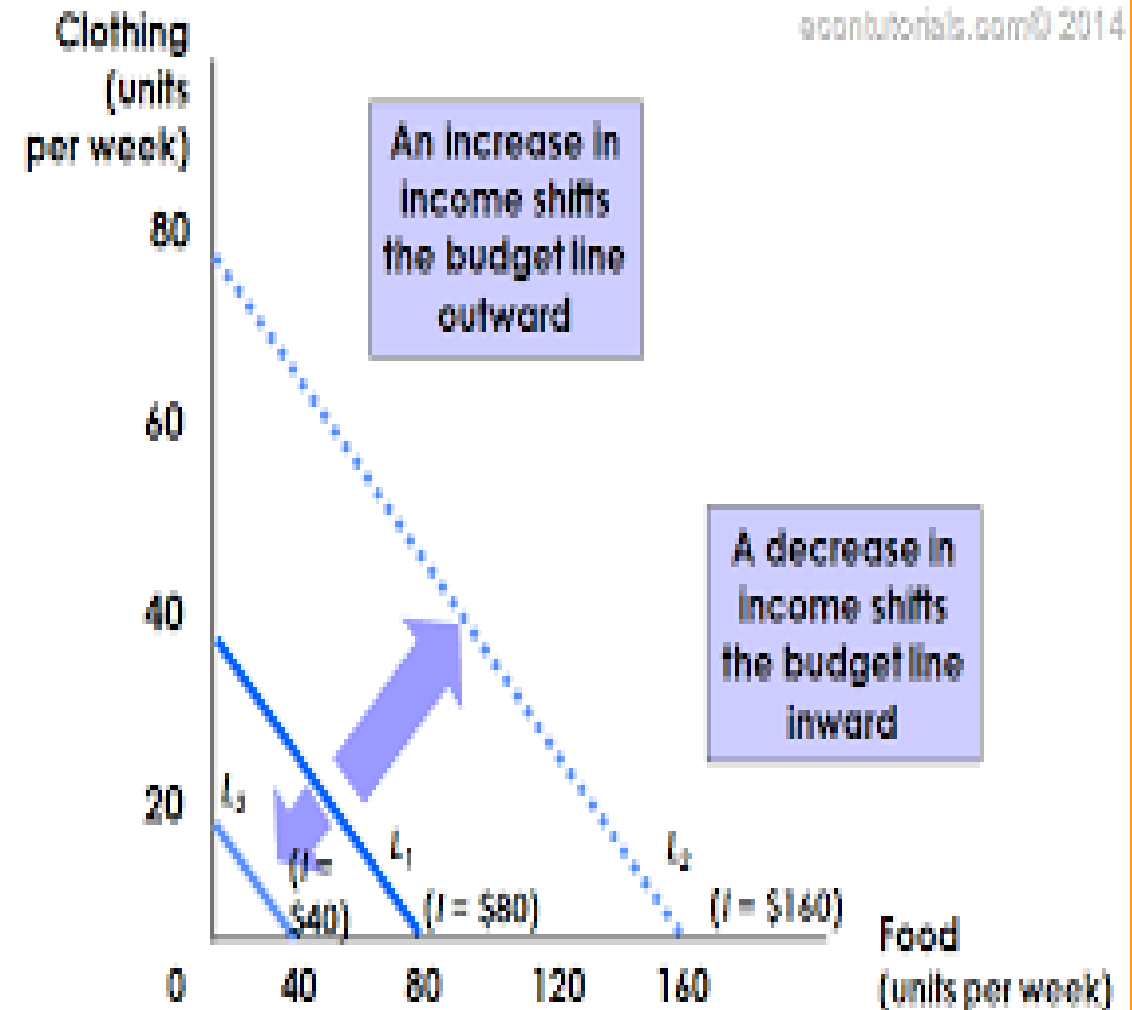
II-3- Demand Curve

- The quantities of a good a consumer is willing and able to buy at alternative prices in a given time period, *ceteris paribus*.



II-4- Changes in Income

- Income is a determinant of demand.
- We illustrate income changes with shifts of the demand curve.



III- Elasticity

III-1- Price Elasticity

III-2- Elastic versus Inelastic Demand

III-2-1- Elastic Demand

III-2-2- Inelastic Demand

III-2-3- Unitary Elastic Demand:

III-3- Price Elasticity & Total Revenue

III-3-1- Price elasticity

III-3-2- Total revenue

III-4- Determinants of Price Elasticity

III- Elasticity

III-1- Price Elasticity

The response of consumers to a change in price is measured by the price elasticity of demand.

The price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in price.

$$\text{Price elasticity (E)} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

III- Elasticity

Example:

- The price of popcorn goes up 20% and the quantity demanded goes down 10%.
- The price elasticity of demand is:

$$(E) = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}} = \frac{-10\%}{20\%} = -0.5$$

III- Elasticity

III-2- Elastic versus Inelastic Demand

- Demand can be elastic, inelastic, or unitary elastic

III-2-1- Elastic Demand: Consumer response is large relative to the change in price.

III-2-2- Inelastic Demand: Demand is inelastic if the absolute value of E is less than 1.

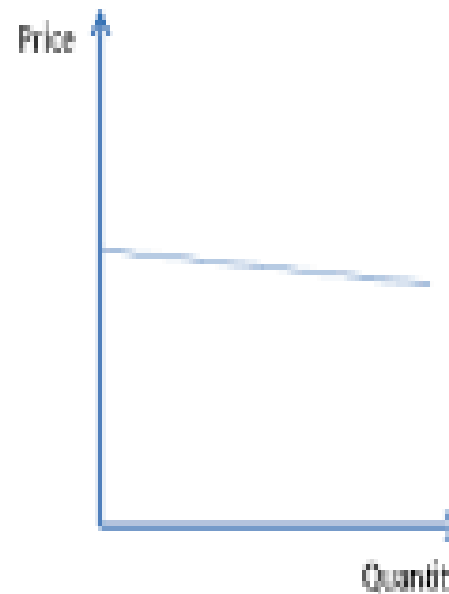
Consumers are not very responsive to price changes

III- Elasticity

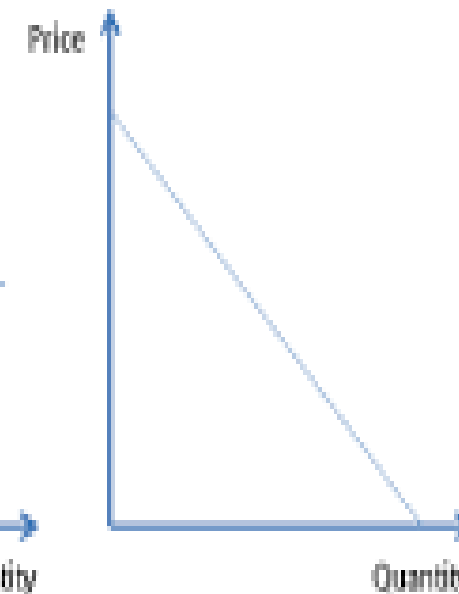
III-2-3- Unitary Elastic Demand: Demand is unitary elastic if the absolute value of E *equals* 1.

- The percentage change in quantity demanded is *equal* to
- the percentage change in price.

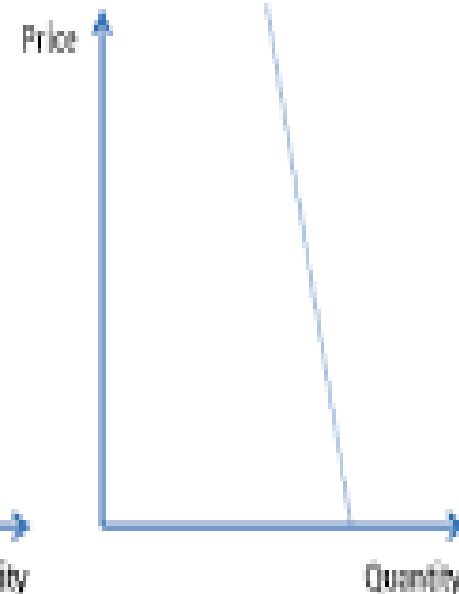
Elastic Demand



Unitary Elasticity



Inelastic Demand



III- Elasticity

III-3- Price Elasticity & Total Revenue

III-3-1- Price elasticity

It explains why producers cannot charge the highest possible price.

- Although one would think otherwise, higher prices may actually reduce total sales revenue.

III- Elasticity

III-3-2- Total revenue:

The price of a product multiplied by the quantity sold in a given time period.

$$\text{Total revenue} = \text{price} \times \text{quantity sold}$$

III- Elasticity

- A price cut increases total revenue if demand is price elastic.
- A price cut decreases total revenue if demand is price inelastic.
- A price cut does not change total revenue if demand is unitary elastic.

