

# **Household Behavior and Consumer Choice**

A Presentation by

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# Goals of Economic Decision Makers

## Consumers

- Maximize their individual *well-being*, subject to their choices being feasible.

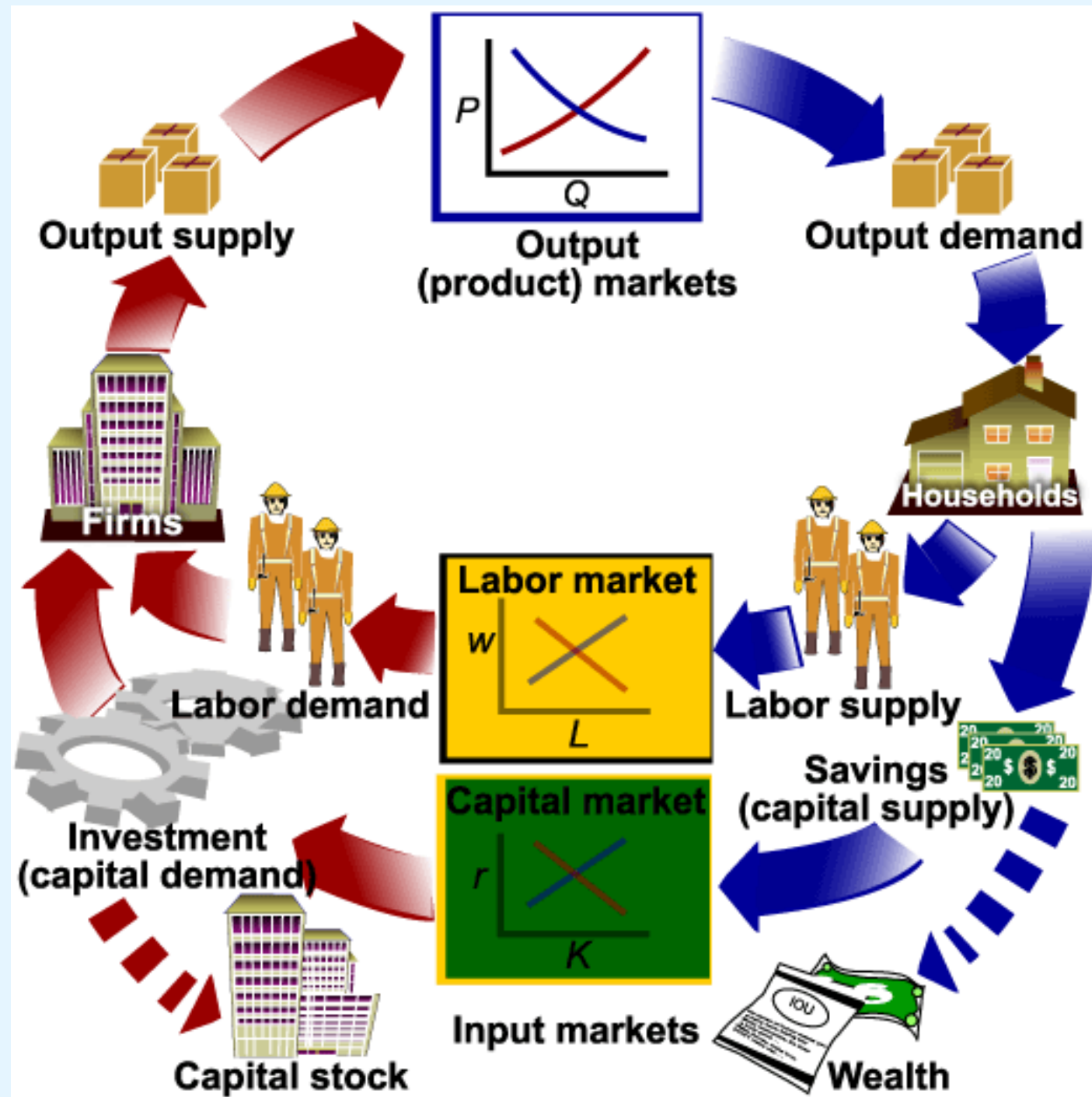
## Firms

- Maximize their profits, subject to being able to sell what they produce at the price they charge.

## Governments

- Maximize social welfare, subject to the responses (consumption, labor supply, investment and production) of individuals and firms.

# Firms and Household Decisions



# Household Choice in Output Markets

**Every household must make *three basic decisions*:**

- 1. How much of each product, or output, to demand?**
- 2. How much labor to supply?**
- 3. How much to spend today and how much to save for the future?**

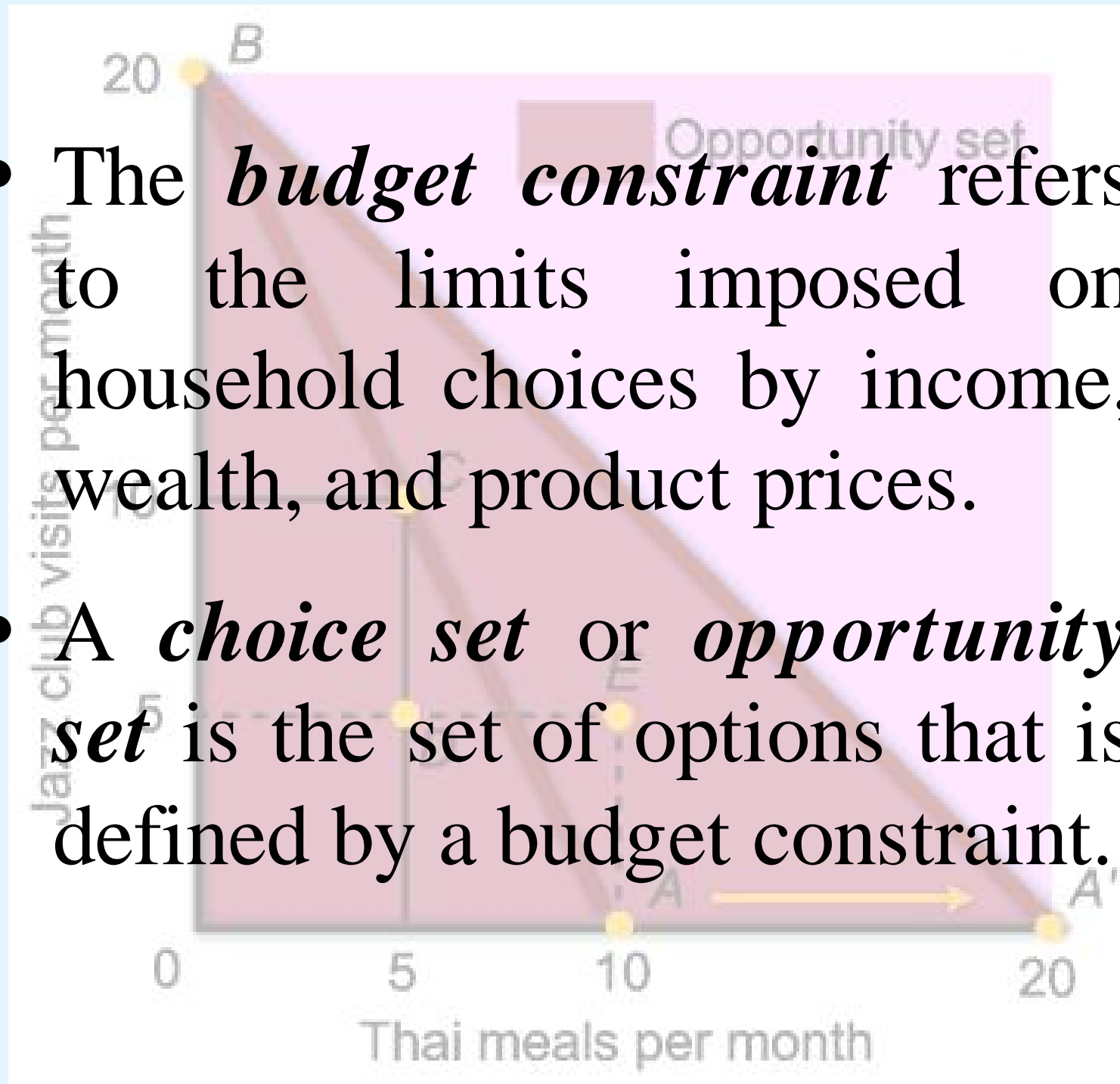
# Determinants of Household Demand

Factors that influence the quantity of a given good or service demanded by a single household include:

- The *price of the product* in question.
- The *income* available to the household.
- The household's amount of *accumulated wealth*.
- The *prices of related products* available to the household.
- The household's *tastes and preferences*.
- The household's *expectations* about future income, wealth, and prices.

# The Budget Constraint

- The *budget constraint* refers to the limits imposed on household choices by income, wealth, and product prices.
- A *choice set* or *opportunity set* is the set of options that is defined by a budget constraint.



# Choice Set or Opportunity Set

Possible Budget Choices of a Person Earning \$1,000 Per Month After Taxes

		MONTHLY			OTHER			
OPTION			RENT	FOOD		EXPENSES	TOTAL	AVAILABLE?
A	\$	400	\$250			\$350	\$1,000	Yes
B		600	200			200	1,000	Yes
C		700	150			150	1,000	Yes
D		1,000	100			100	1,200	No

- The real cost of a good or service is its *opportunity cost*, and opportunity cost is determined by relative prices.

# The Budget Constraint

- When a consumer's income is allocated entirely towards the purchase of only two goods,  $X$  and  $Y$ , the consumer's income equals:

$$I = X \cdot P_X + Y \cdot P_Y$$

where:

$I$  = consumer's income

$X$  = quantity of good  $X$  purchased

$Y$  = quantity of good  $Y$  purchased

$P_X$  = price of good  $X$

$P_Y$  = price of good  $Y$



# The Budget Line

- The budget line shows the maximum quantity of two goods,  $X$  and  $Y$ , that can be purchased with a fixed amount of income, expressed as  $Y = f(X)$ .
- We can derive the budget line by rearranging the terms in the income equation, as follows:

$$I = X \cdot P_X + Y \cdot P_Y$$

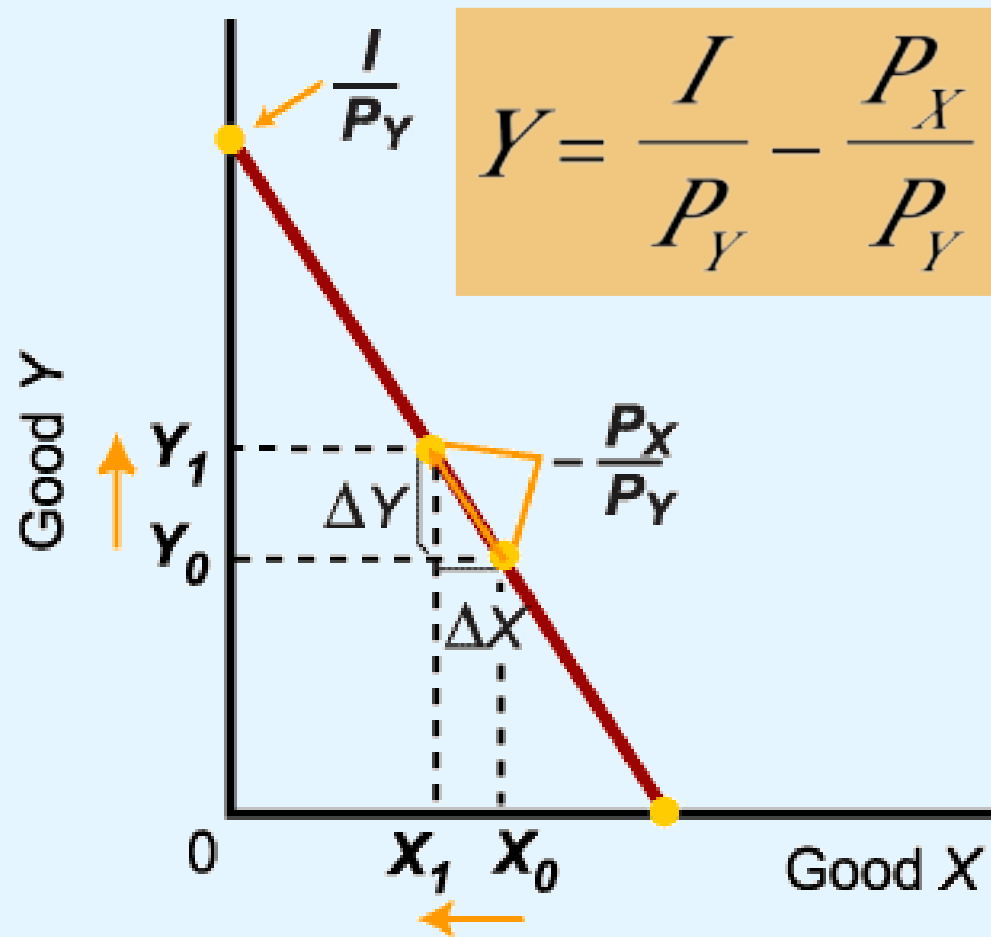
$$I - X \cdot P_X = Y \cdot P_Y$$

$$\frac{I}{P_Y} - \frac{X \cdot P_X}{P_Y} = Y$$

Budget Line

$$Y = \frac{I}{P_Y} - \frac{P_X}{P_Y} X$$

# The Budget Line



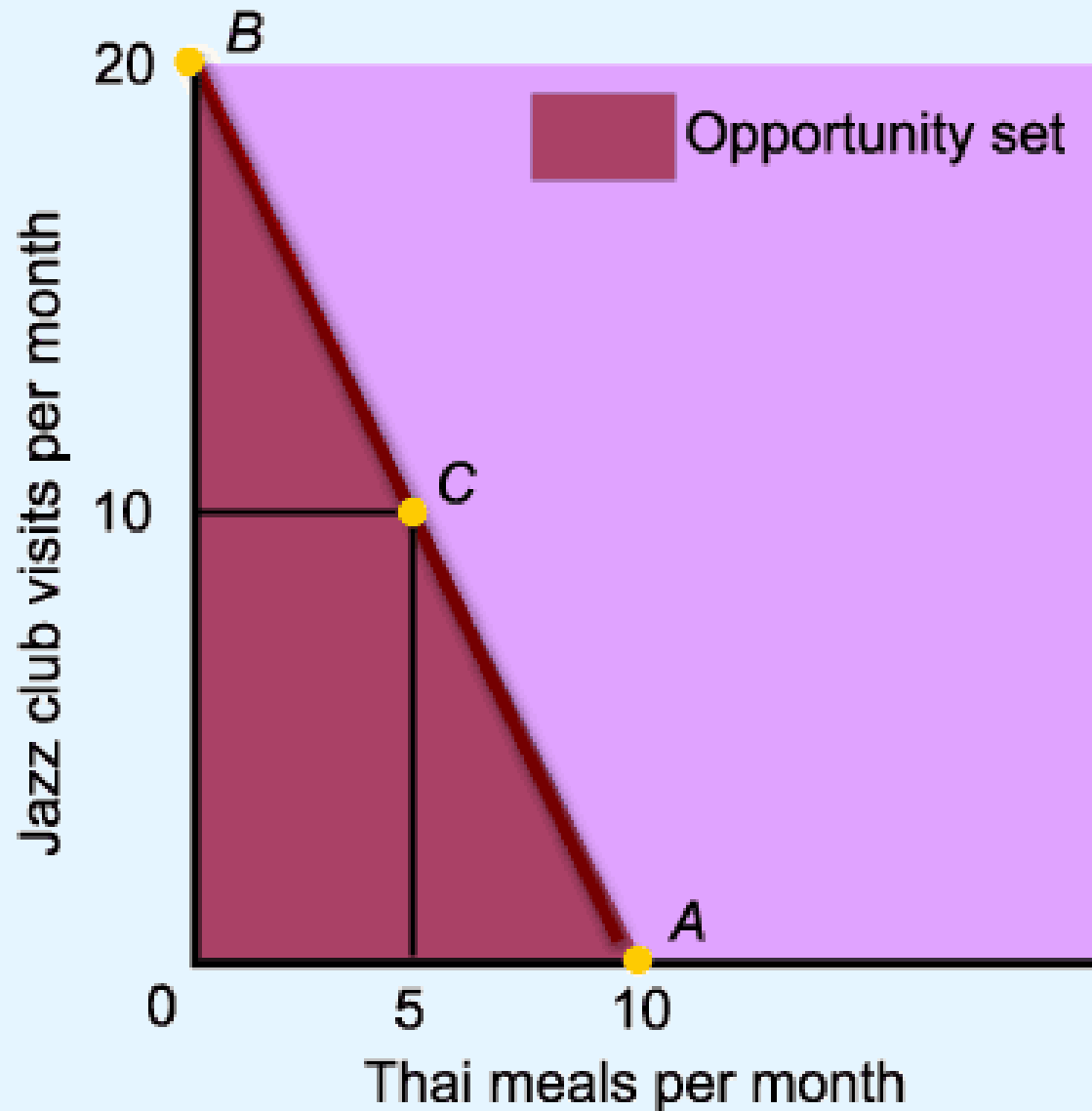
$$Y = \frac{I}{P_Y} - \frac{P_X}{P_Y} X$$

- The  $Y$ -intercept of the budget line shows the amount of good  $Y$  that can be purchased when all income is spent on good  $Y$ .
- The slope of the budget line equals the ratio of the goods' prices.

$$\frac{I}{P_Y}$$

$$- \frac{P_X}{P_Y}$$

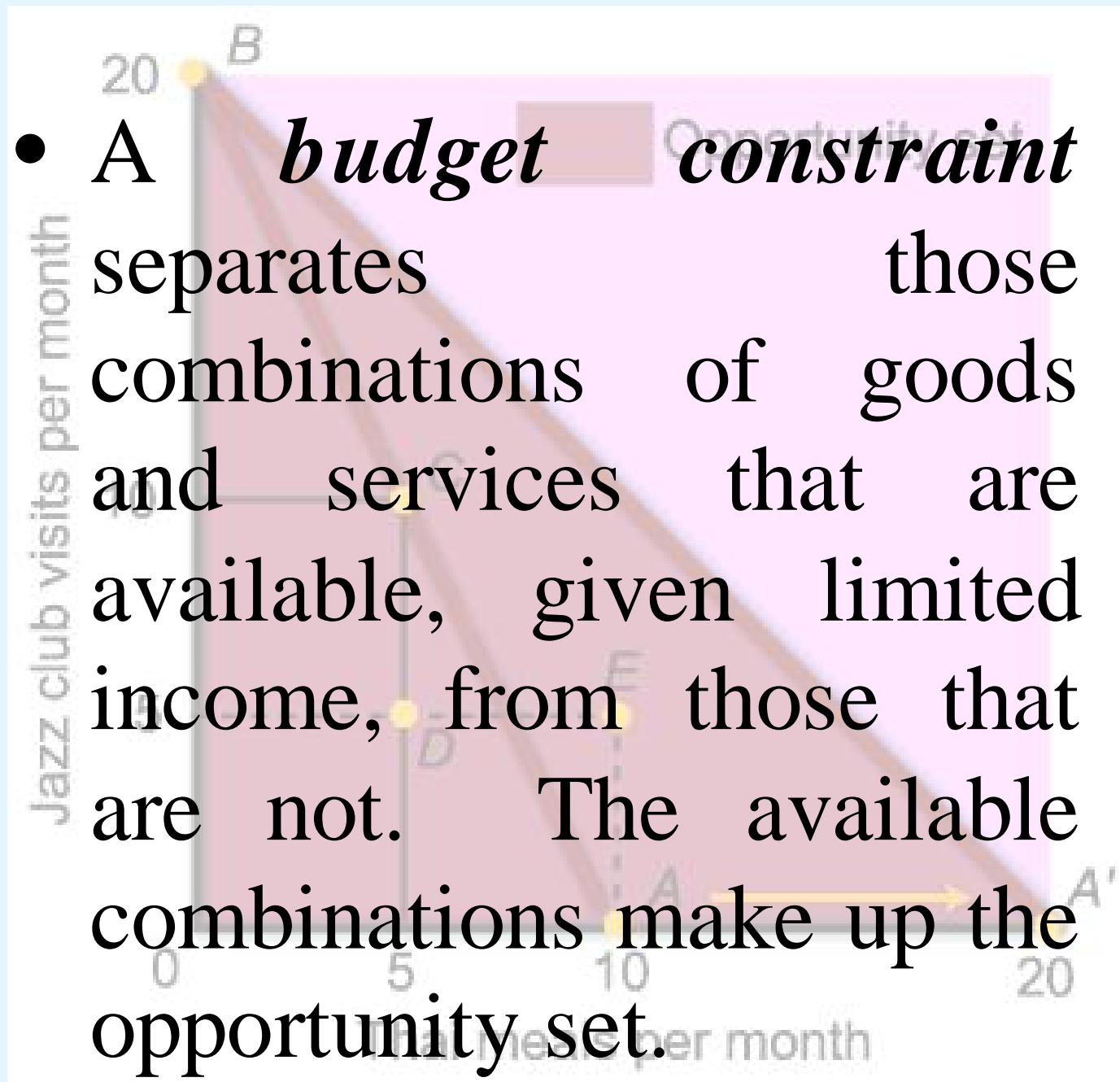
# The Budget Line



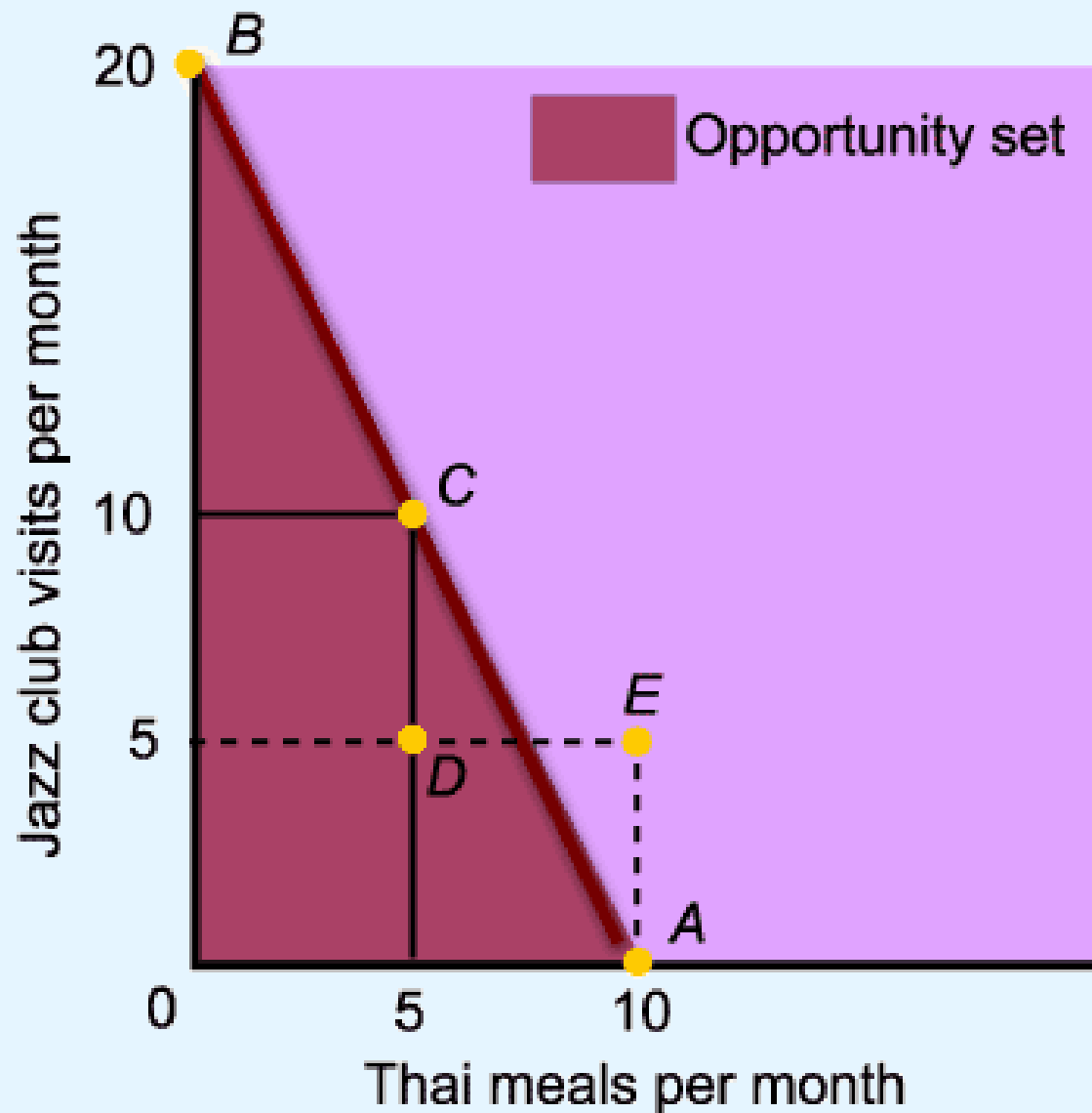
- This is the budget constraint when income equals \$200 dollars per month, the price of a jazz club visit is \$10 each, and the price of a Thai meal is \$20.
- One of the possible combinations is 5 Thai meals and 10 Jazz club visits per month.

# The Budget Constraint

- A *budget constraint* separates those combinations of goods and services that are available, given limited income, from those that are not. The available combinations make up the opportunity set.

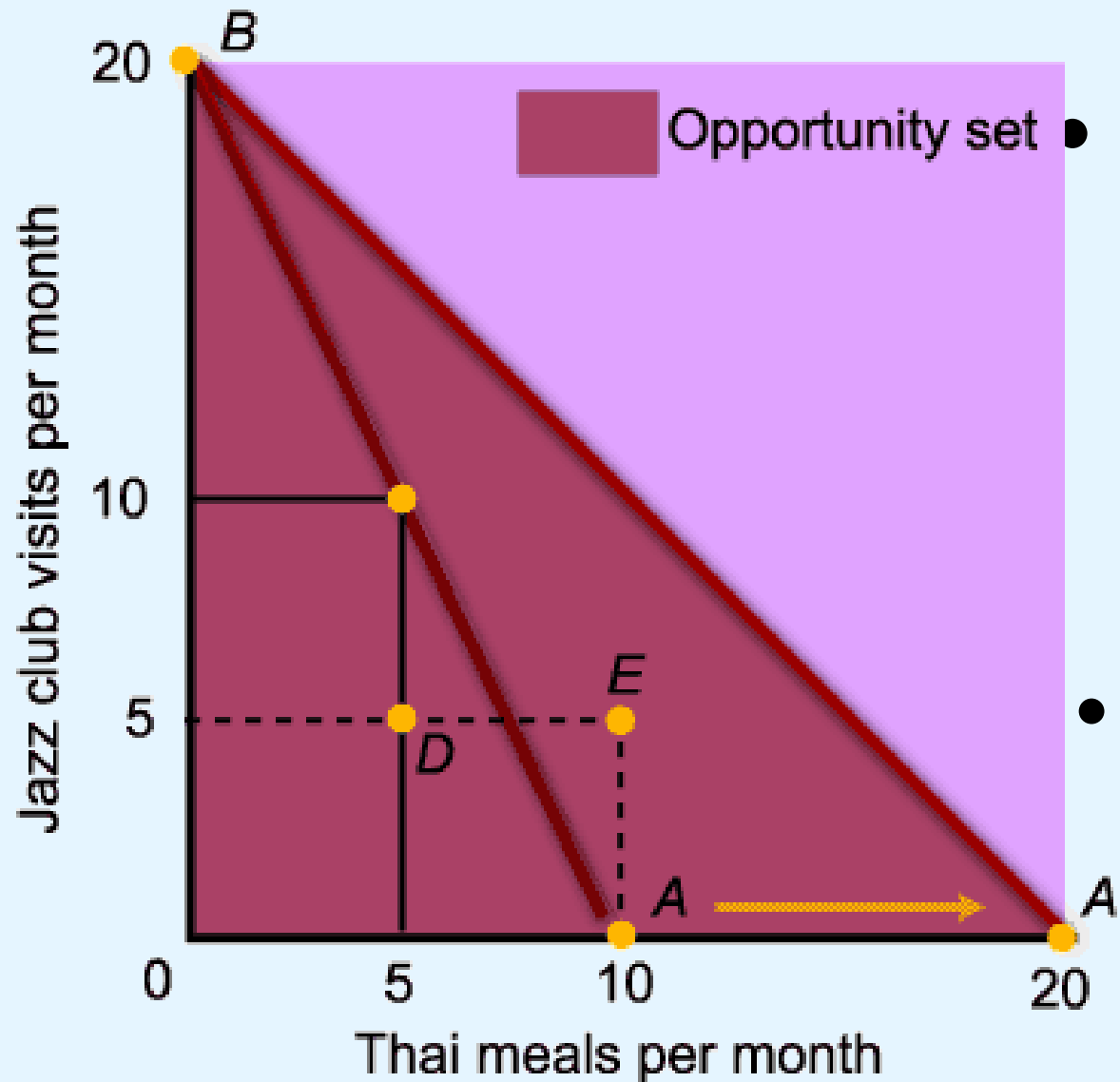


# The Budget Line



- Point *E* is unattainable, and point *D* does not exhaust the entire income available.

# The Budget Line



- A decrease in the price of Thai meals shifts the budget line outward along the horizontal axis.
- The decrease in the price of one good expands the consumer's opportunity set.

# What is Utility?

- *Utility* is the satisfaction, or reward, a product yields relative to its alternatives. The basis of choice.
- unit of measuring utility ---- *Util*

# Cardinal Utility vs. Ordinal Utility

- *Cardinal Utility*: Assigning numerical values to the amount of satisfaction
- *Ordinal Utility*: Not assigning numerical values to the amount of satisfaction but indicating the order of preferences, that is, what is preferred to what



# Total Utility

- The amount of satisfaction obtained by consuming specified amounts of a product per period of time.
- Example:  $TU(X) = U(X) = 16X - X^2$   
where  $X$  is the amount a good that is consumed in a given period of time.
- 5 units of the product per period of time yields 55 utils of satisfaction

# Marginal Utility

- The change in total utility ( $\Delta TU$ ) resulting from a one unit change in consumption ( $\Delta X$ ).
- $MU = \Delta TU / \Delta X$

## Calculating MU from a TU Function

Example:  $TU(X) = 16X - X^2$

- $MU = dTU/dX = 16 - 2X$

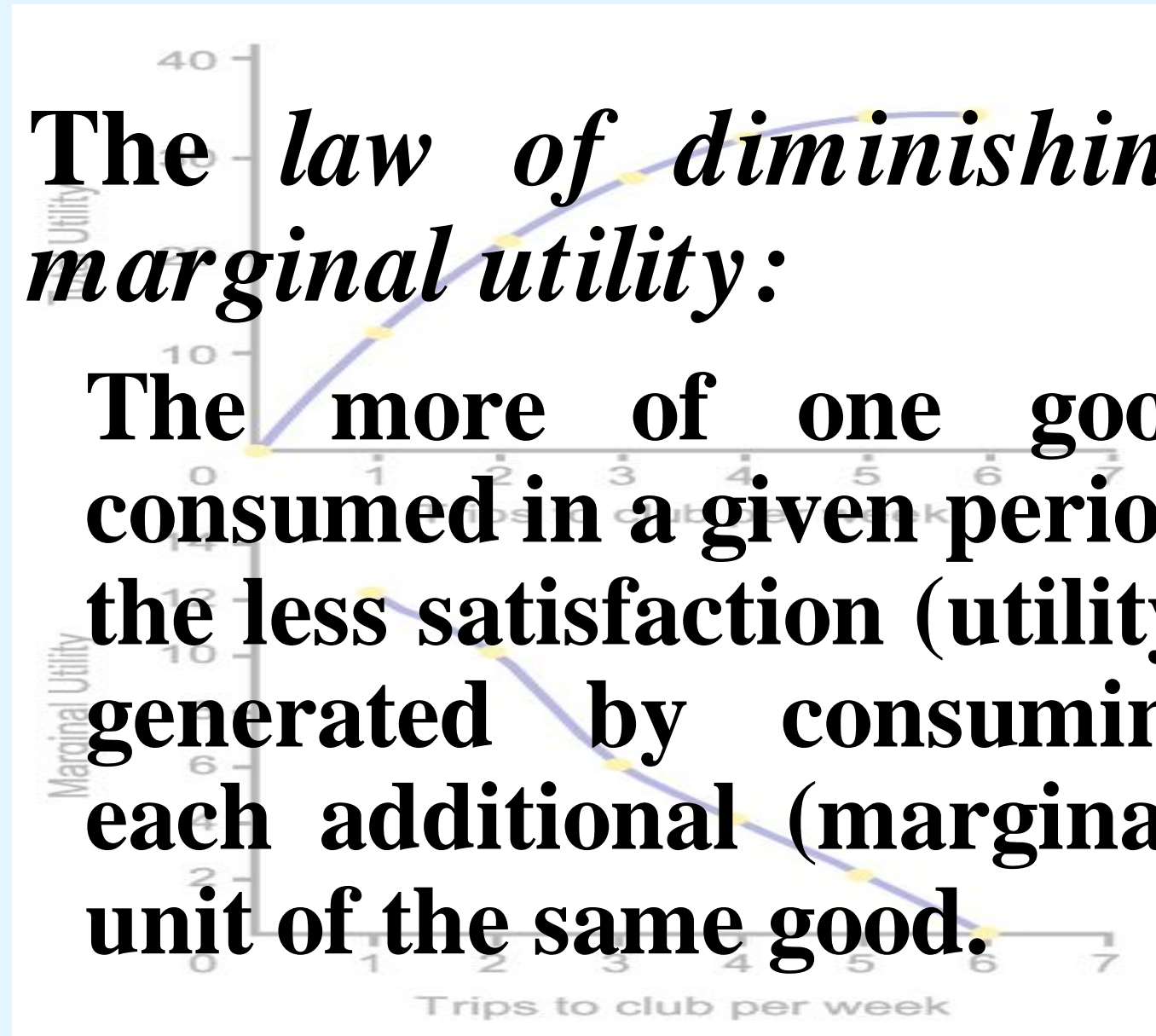
In general, the derivative of a total function is the marginal function.

- The marginal function is the slope of the total function.

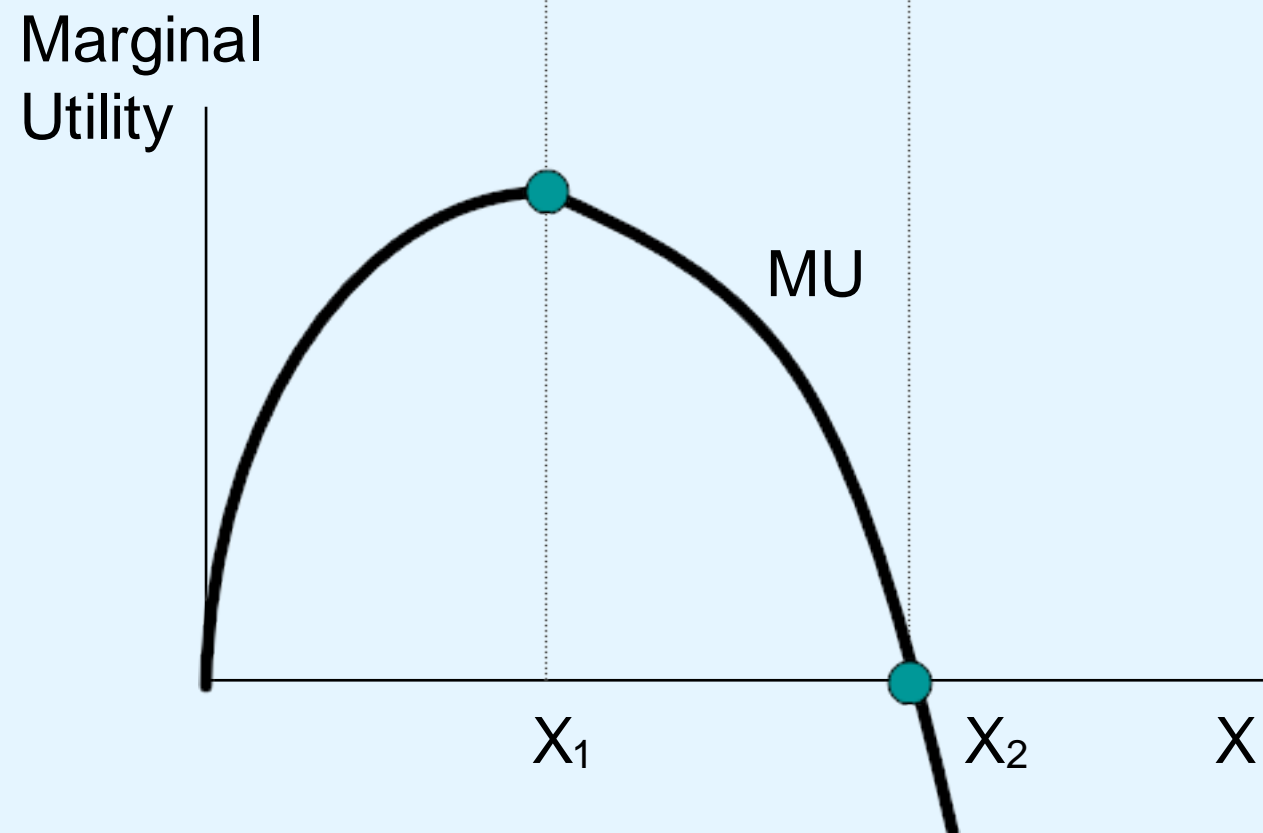
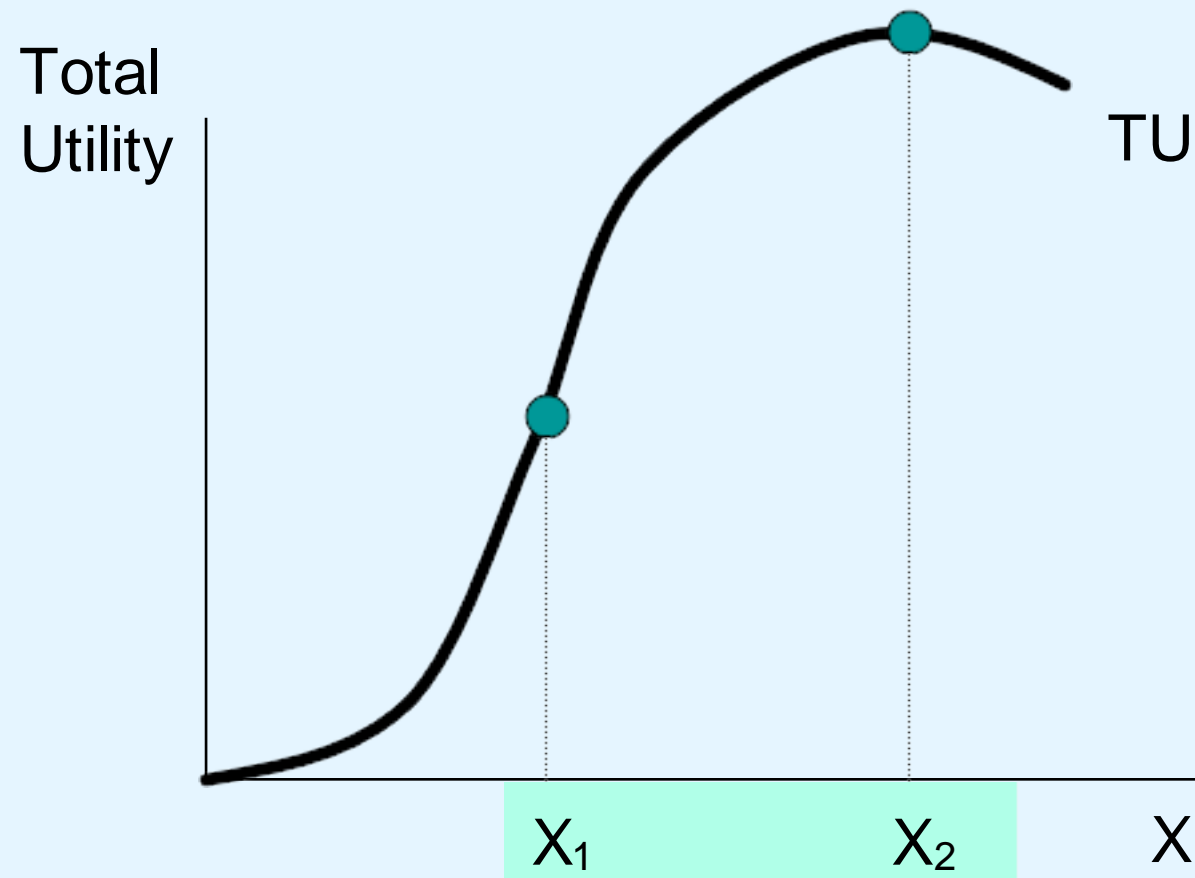
# Diminishing Marginal Utility

- The *law of diminishing marginal utility*:

The more of one good consumed in a given period, the less satisfaction (utility) generated by consuming each additional (marginal) unit of the same good.



# Graphs of Total Utility & Marginal Utility



$X_1$  is where marginal utility reaches its maximum.

This is where we encounter diminishing marginal utility.

The slope of TU has reached its maximum; TU has an inflection point here.

$X_2$  is where total utility reaches its maximum.

MU is zero.

This is the saturation point or satiation point.

After that point, TU falls and MU is negative.

# The Utility-Maximizing Rule

- Utility-maximizing consumers spread out their expenditures until the following condition holds:

$$\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y}$$

where:  $MU_X$  = marginal utility derived from the last unit of  $X$  consumed.

$MU_Y$  = marginal utility derived from the last unit of  $Y$  consumed.

$Y$  = quantity of  $Y$  purchased

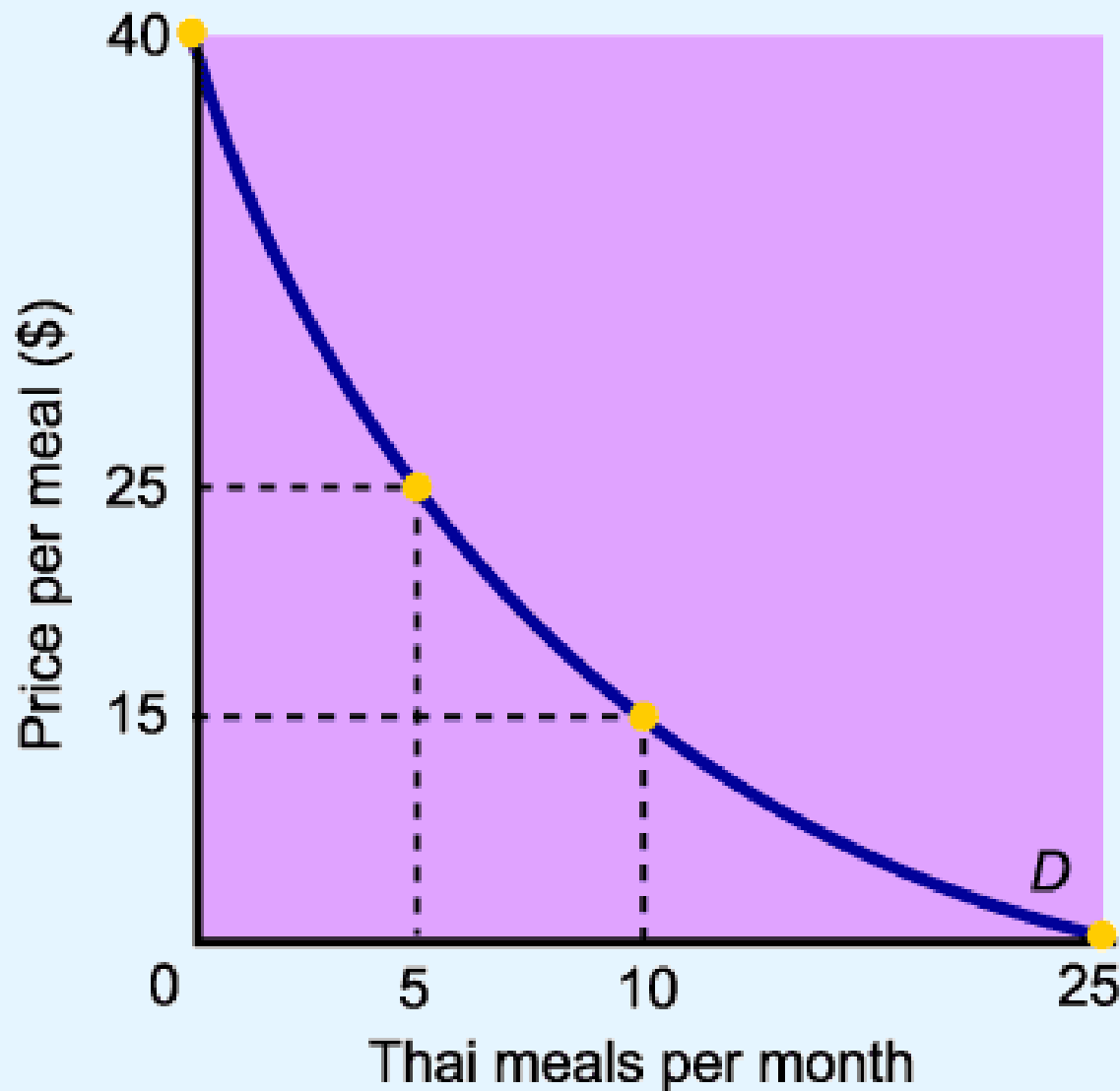
$P_X$  = price of good  $X$

$P_Y$  = price of good  $Y$

# Allocation of Fixed Expenditure Per Week Between Two Alternatives

(1) <i>TRIPS TO CLUB PER WEEK</i>		(2) <i>TOTAL UTILITY</i>	(3) <i>MARGINAL UTILITY (MU)</i>		(4) <i>PRICE (P)</i>		(5) <i>MARGINAL UTILITY PER DOLLAR (MU/P)</i>	
1		12	12		\$3.00		4.0	
2		22	10		3.00		3.3	
3		28	6		3.00		2.0	
4		32	4		3.00		1.3	
5		34	2		3.00		0.7	
6		34	0		3.00		0	
(1) <i>BASKETBALL GAMES PER WEEK</i>		(2) <i>TOTAL UTILITY</i>	(3) <i>(MU)</i>		(4) <i>(P)</i>		(5) <i>(MU/P)</i>	
1		21	21		\$6.00		3.5	
2		33	12		6.00		2.0	
3		42	9		6.00		1.5	
4		48	6		6.00		1.0	
5		51	3		6.00		.5	
6		51	0		6.00		0	

# Diminishing Marginal Utility and Downward-Sloping Demand

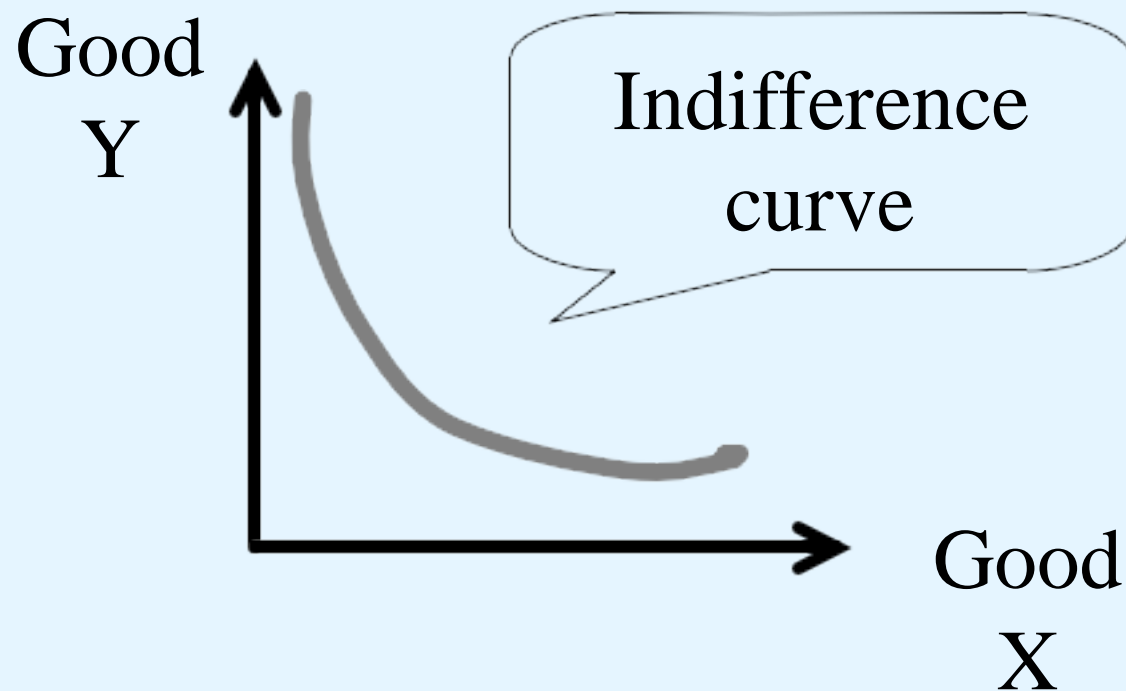


- Diminishing marginal utility helps to explain why demand slopes down.
- Marginal utility falls with each additional unit consumed, so people are not willing to pay as much.



# Indifference curve

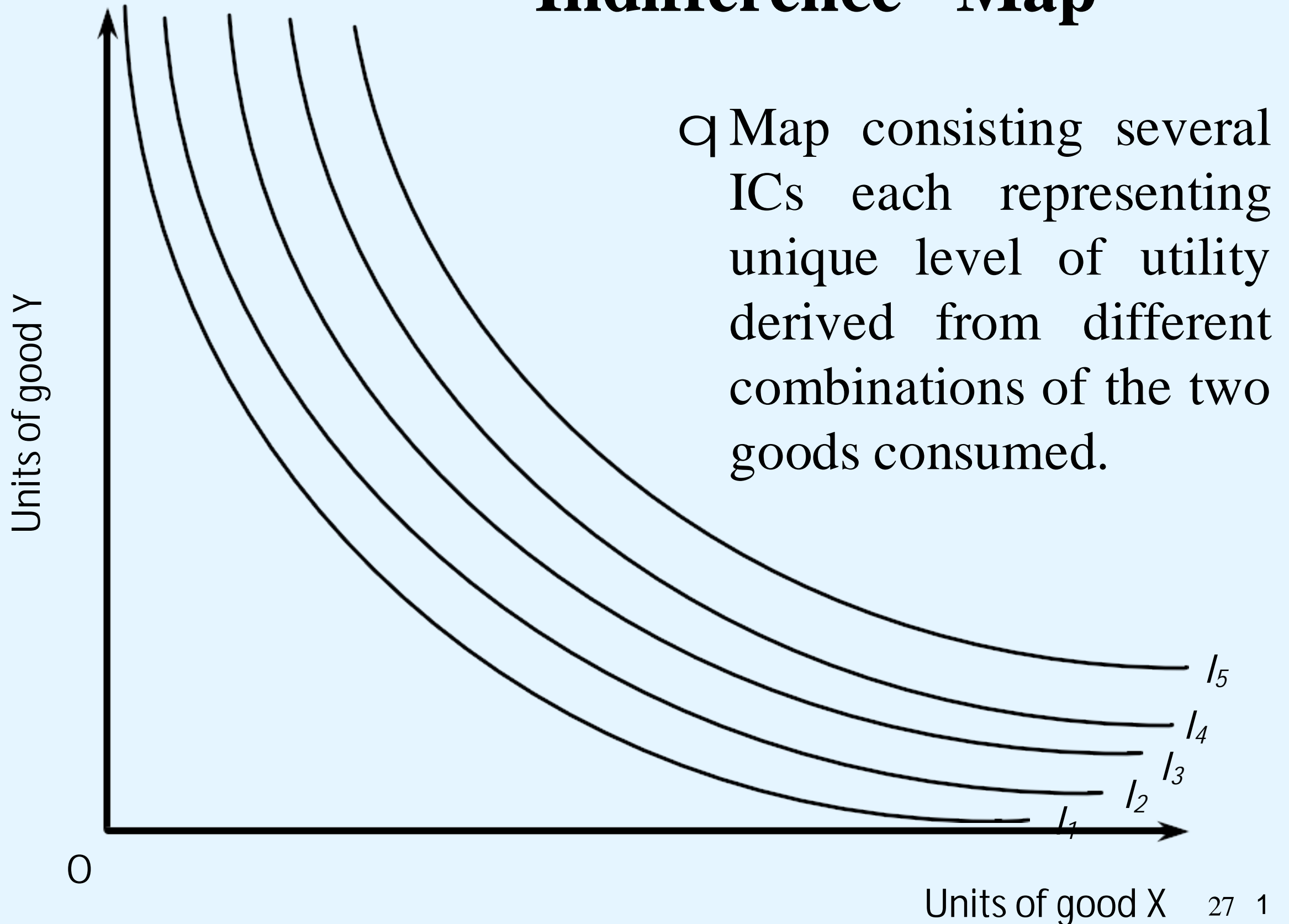
- Q Locus of combinations of two goods giving equal level of utility to the consumer



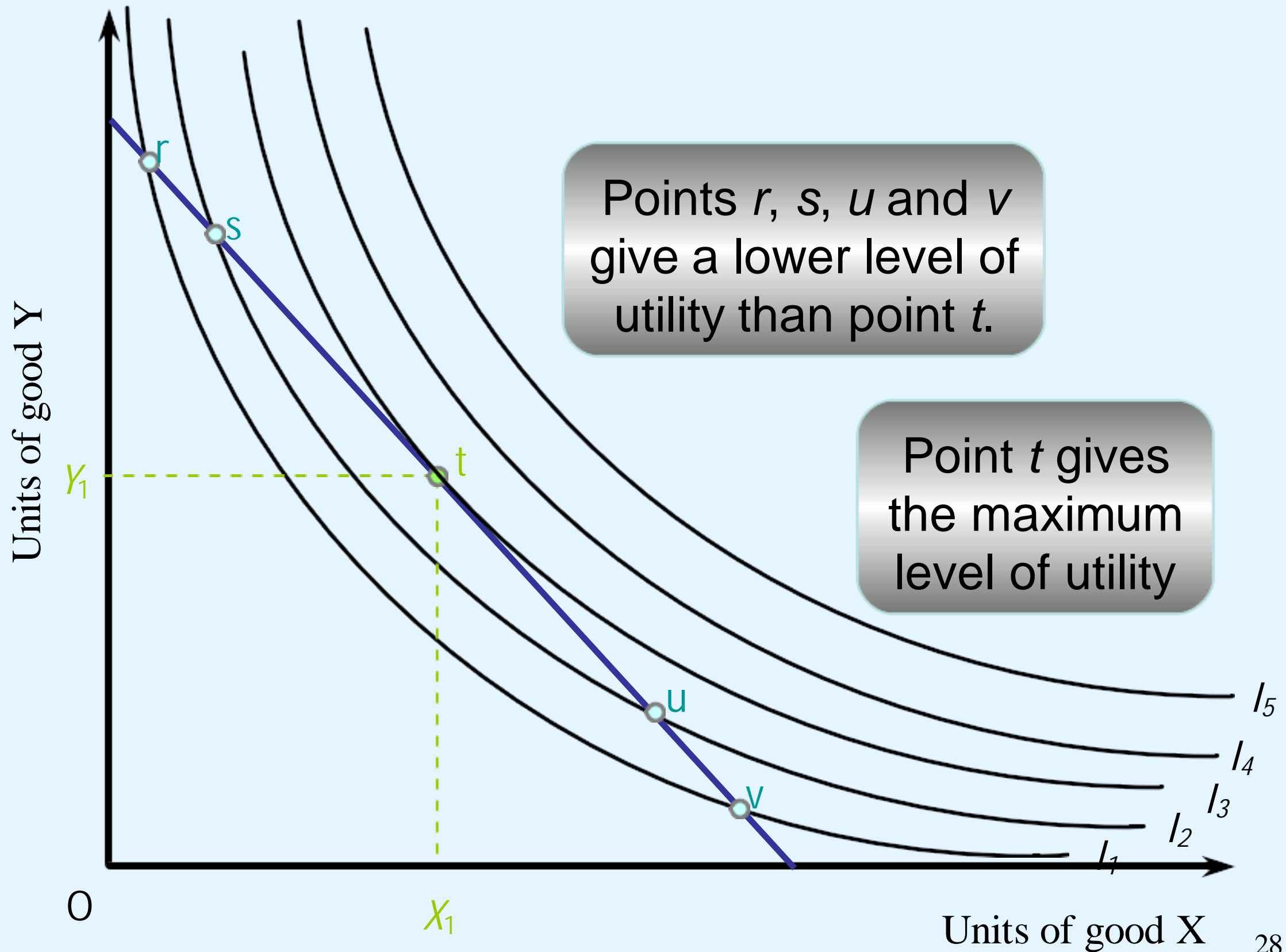
# Properties of Indifference curve

- i. IC will be downward sloping
- ii. IC is convex to the origin
- iii. Two IC can not cut or touch each other
- iv. Higher IC represents higher level of utility

# Indifference Map



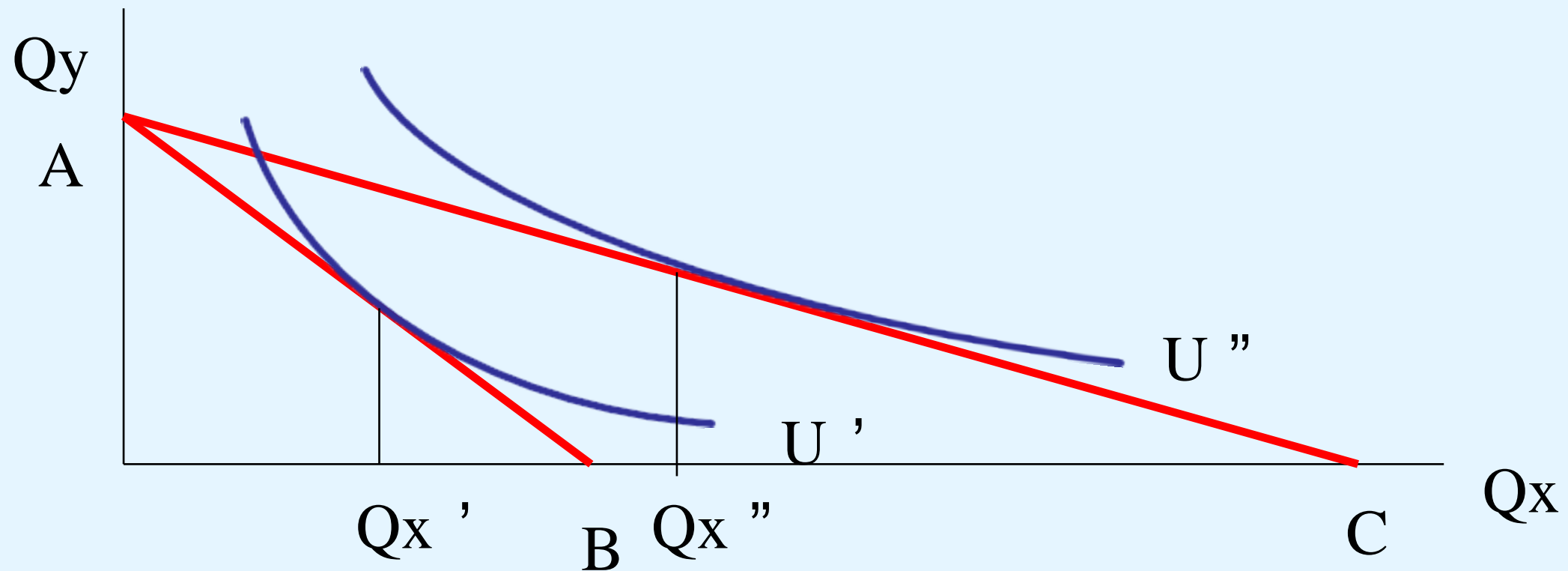
# Optimum consumption



# Consumers Equilibrium

- Q Objective: Maximization of utility subject to budget constraint.
- Q Equilibrium condition:
  - i. Necessary condition:  $MRS_{XY} = \text{Price Ratio}$
  - ii. Sufficient condition: IC is convex at the point of tangency

# Price Effect



Change in the optimum level of consumption arising out of the change in the price of the of one commodity( other things remaining constant).

# Income and Substitution Effects

Price changes affect households in two ways:

- The *income effect*: Consumption changes because purchasing power changes.
- The *substitution effect*: Consumption changes because opportunity costs change.

# Income Effect

**INCOME EFFECT:** Change in the optimum level of consumption arising out of the change in the real income of the consumer (other things remaining constant).



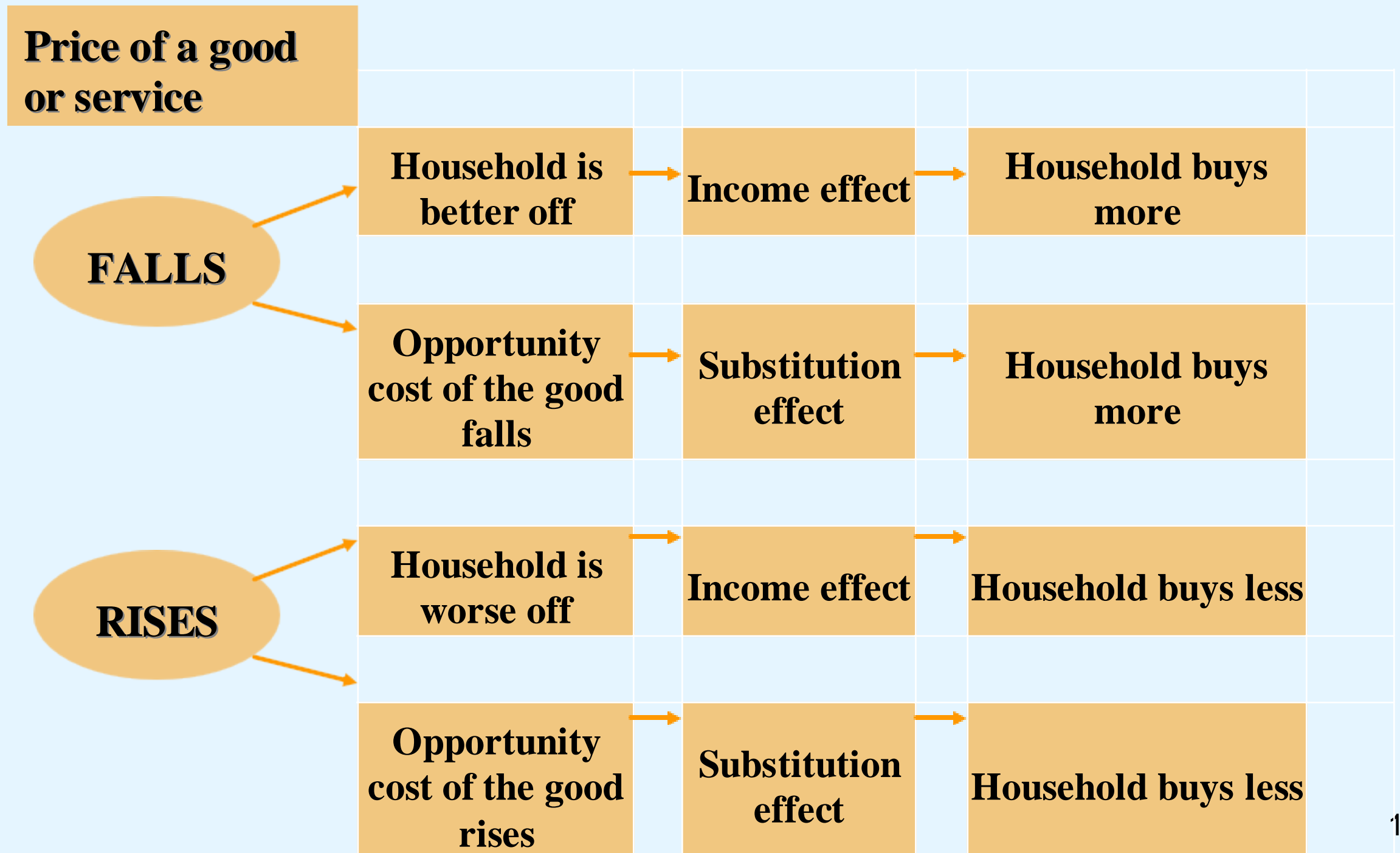
# The Income Effect of a Price Change

- When the price of a product falls, a consumer has more purchasing power with the same amount of income.
- When the price of a product rises, a consumer has less purchasing power with the same amount of income.

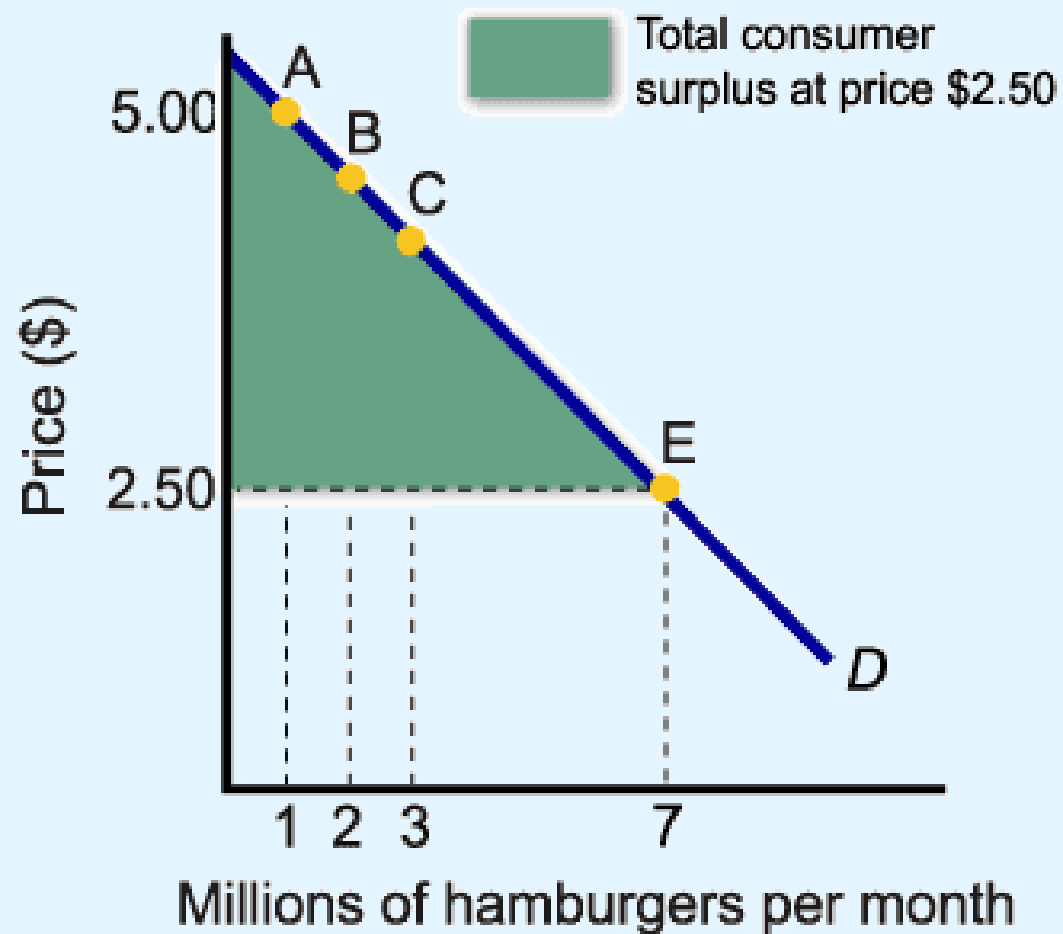
# The Substitution Effect of a Price Change

- When the price of a product falls, that product becomes more attractive relative to potential substitutes.
- When the price of a product rises, that product becomes less attractive relative to potential substitutes.

# Income and Substitution Effects of a Price Change



# Consumer Surplus



- *Consumer surplus* is the difference between the maximum amount a person is willing to pay for a good and its current market price.
- Consumer surplus measurement is a key element in *cost-benefit analysis*.

## Consumer's surplus

Buyer's **willingness to pay** = maximum price he is willing to pay

A point on a demand curve reflects the willingness to pay of some buyers.

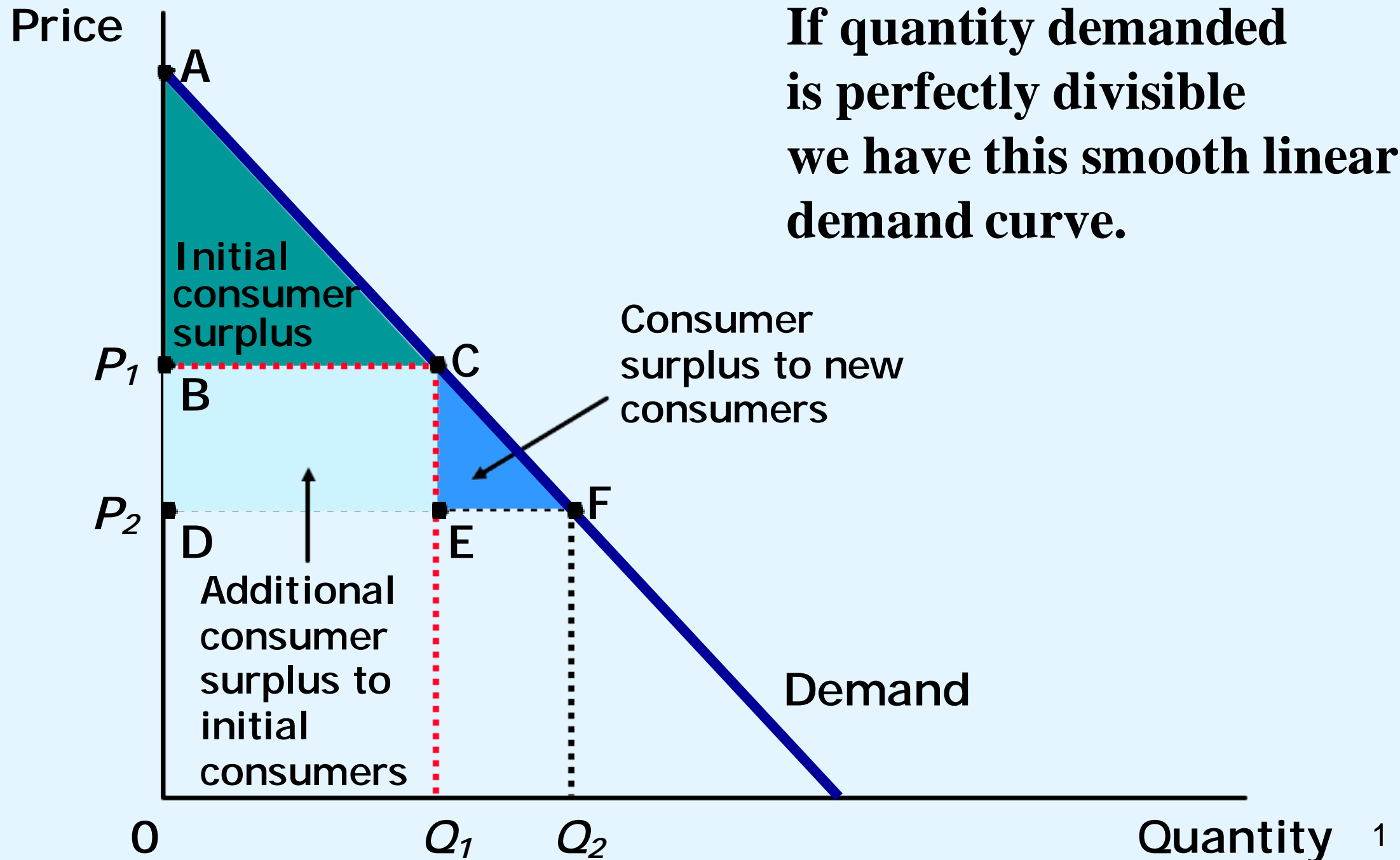
Demand curve is downward sloping because as you are lowering the market price, more people whose willingness to pay is lower, enters the market.

**Consumer's surplus** = **willingness to pay** – **actual price buyer pays** in a market, measures the **benefits to buyers of participating in a market**.

Consumer surplus is measured as the area below the demand curve above the market price.

# *Market Demand Curve, Price and Consumer Surplus*

**If quantity demanded is perfectly divisible we have this smooth linear demand curve.**



# The Diamond/Water Paradox

The *diamond/water paradox* states that:

1. the things with the greatest value in use frequently have little or no value in exchange, and
2. the things with the greatest value in exchange frequently have little or no value in use.

**Thank You**