# Lecture # 8 -- Consumer Behavior: An Introduction to the Concept of Utility

I. Utility -- A Description of Preferences

- Our goal is to come up with a model that describes consumer behavior. To begin, we need a way to describe preferences. Economists use utility to do this.
- <u>Utility</u> is the level of satisfaction that a person gets from consuming a good or undertaking an activity.
    - o It is the relative ranking, not the actual number, that matters.
- <u>Marginal utility</u> is the satisfaction obtained from consuming an additional amount of a good. It is the change in total utility resulting from a one-unit change in product.
    - o Marginal utility diminishes (gets smaller) as you consume more of a good (the fifth ice cream cone isn't as desirable as the first).
    - o However, as long as marginal utility is positive, total utility will increase!
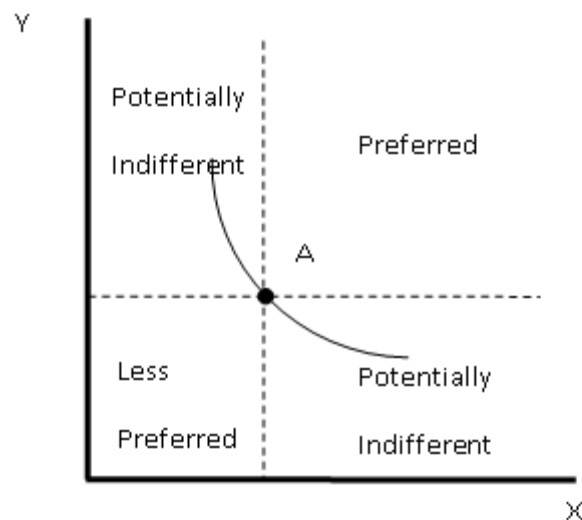
II. Mapping Preferences -- Indifference Curves

- Since economics is about allocating scarce resources -- that is, asking what choices people make when faced with limited resources -- looking at utility for a single good is not enough. We want to compare utility for different combinations of two or more goods.
- Our goal is to be able to graph the utility received from a combination of two goods with a two-dimensional diagram. We do this using indifference curves.
- An <u>indifference curve</u> represents all combinations of goods that produce the same level of satisfaction to a person.
    - o Along an indifference curve, utility is constant.
    - o Remember that each curve is analogous to a line on a contour map, where each line shows a different elevation.
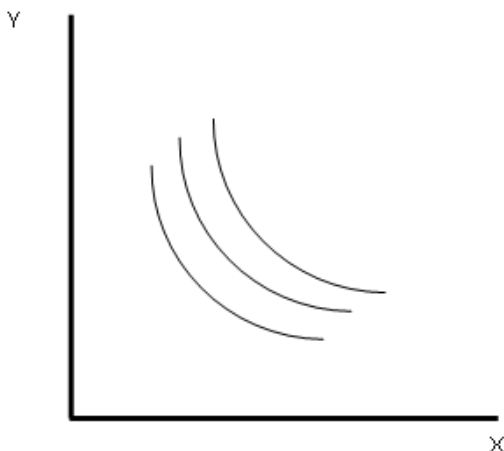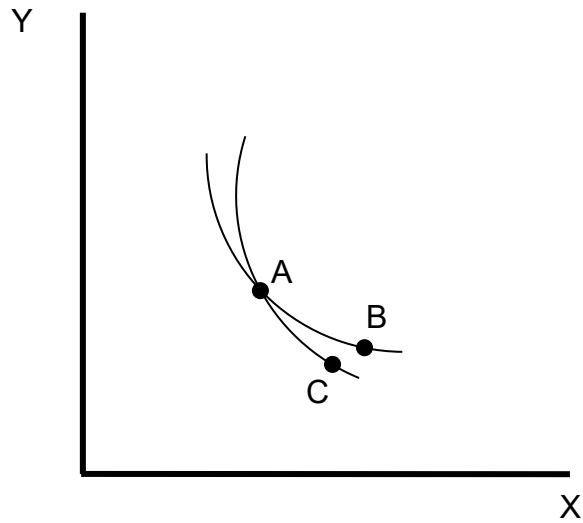
A. Drawing Indifference Curves

- Properties of indifference curves
    1. Indifference curves slope downward.
        - True because having more is better
        - In the illustration below, points to the northeast of A have more of both goods. Thus, they must be preferred.
        - Points to the southwest of A have less of each good. Thus, these points are less preferred.
        - Points to the northwest or southeast have more of one good but less of the other. The consumer may be indifferent about such combinations.

    2. Bundles on indifference curves farther from the origin are preferred to bundles on indifference curves closer to the origin.
        - Also true because more is better.
        - Note how positional goods violate the assumption that more is better. Why? What does this mean for policy?
    3. There is an indifference curve through every possible bundle.
   - For now, we are not worried about whether or not the bundle is affordable. That comes later.

4. Indifference curves cannot cross.
    ▪ Follows from transitivity. This assumes that people are rational.

Y

A

B

C

X

5. In general, indifference curves are convex -- that is they are bowed toward the origin.
    ▪ This is because people prefer variety.
        ▪ 5 of x and 5 of y is better than 8 x and 2 y.
    ▪ Curvature is less when the goods are close substitutes, because then variety isn't as important.
        ▪ Consider the examples of left & right shoes (perfect complements) and black & blue pens (perfect substitutes).

B. Marginal Rate of Substitution

- Marginal Rate of Substitution (MRS) is the rate at which a person will give up good *y* in order to get more of good *x* and still have the same utility.
    - It is equal to the negative of the slope of the indifference curve
        - In the example below, as we move from point A to point B, we give up 2 units of Y to gain one unit of X.
        - Thus, the slope of the indifference curve in this region is -2, and the MRS = 2.
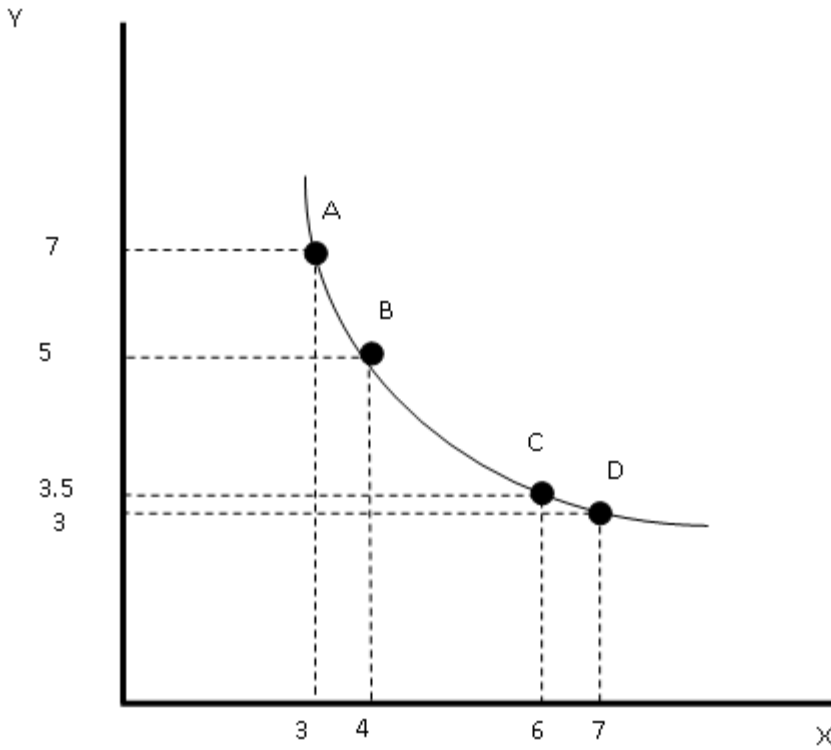

    - As we move along the indifference curve, the curve gets flatter, and the MRS is lower.
        - Moving from C to D, we are only willing to give up 0.5 units of Y to get one unit of X.
        - Thus, the slope of the indifference curve in this region is -0.5, and the MRS = 0.5.

- o MRS = MU_X/MU_Y
  - Thus, MRS tells us the ratio of the marginal utilities.
  - Note that, as we move along the indifference curve, the MRS gets lower.
  - From A to B, where the MRS = 2, X is more valuable than Y, since we have more Y than X.
    - Here, as a result, the marginal utility of X is twice that of Y.
  - From C to D, where the MRS = 0.5, Y is more valuable than X.
    - The marginal utility of X is just half that of Y.
    - This result follows from diminishing returns.
   - When we have more of X, we place less importance on getting even more.

III. The Budget Constraint

- Now that we have a way of describing preferences, we need to introduce a constraint. The constraint will be the income that the consumer has available to spend.
- The Budget Constraint is all possible combinations of two commodities that are affordable, given prices and a fixed amount of income.
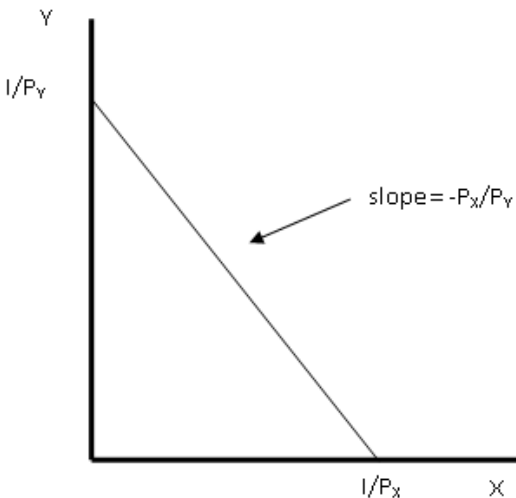

- o $I = P_xX + P_yY$

- o The intercepts represent the amount of the good you can get if you spend all your income on that good (I/P_X and I/P_Y).
  - Changes in income lead to parallel shifts of the budget constraint.
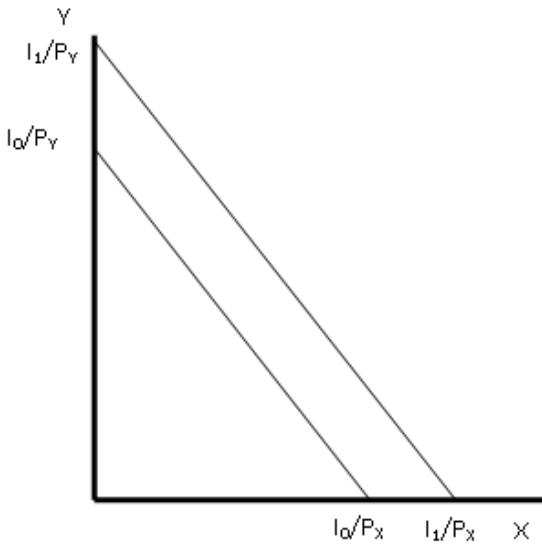

- o The slope ($-P_X/P_Y$) represents the relative prices. It tells how much of Y you need to give up to afford another unit of X.
  - Changes in prices cause the line to rotate.
  - In the example below, P_{X1} is lower than P_{X0}. Thus, we can afford more, so the budget constraint rotates outward.
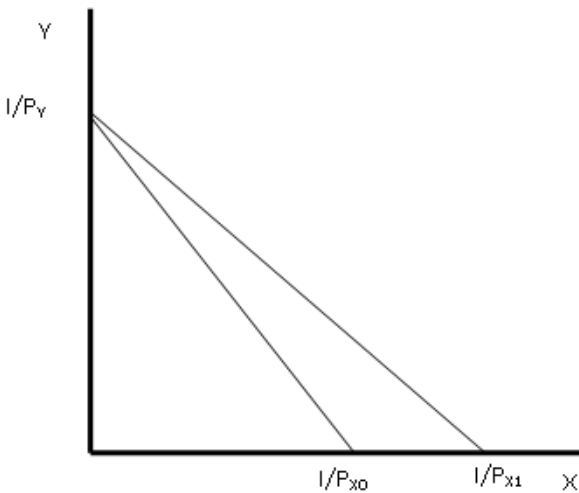

- Note in general that focusing on how bundles on the origin change (e.g. if you spend all of your money on only one good) can help determine how to change the budget constraint as income or prices change.

## IV. Which Bundle to Choose? Maximizing Utility

- What must be true about the maximizing bundle?
    1. It must be on the budget constraint.
    2. It must be on the highest possible indifference curve.

- Consider some examples
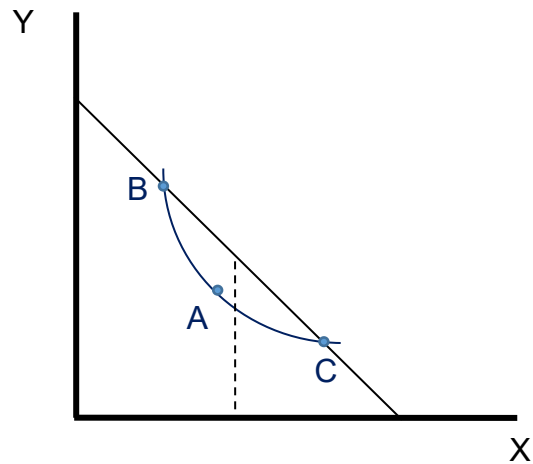
- o A is not on the budget constraint: we have money left to spend
- o B & C are on the budget constraint, but we can do better
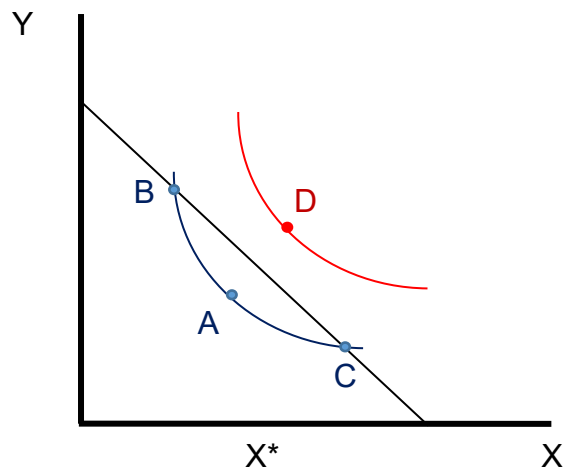
- o D is on a higher indifference curve, but it is not on the budget constraint: we cannot afford it
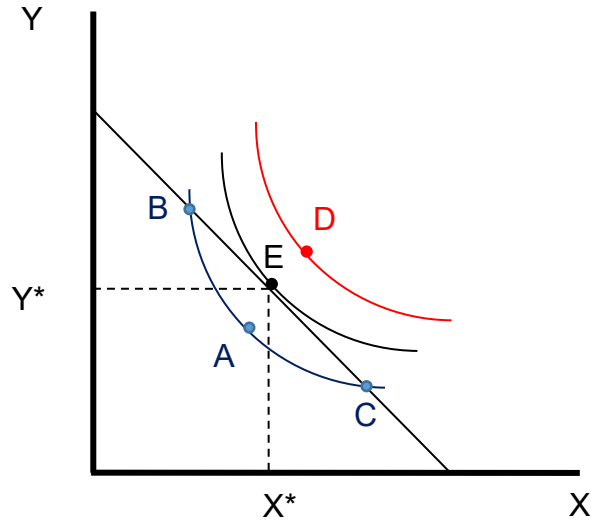
- o E is the best we can do
- o It is the highest possible indifference curve that is still on the budget constraint
- o At this point, the indifference curve and budget constraint are tangent
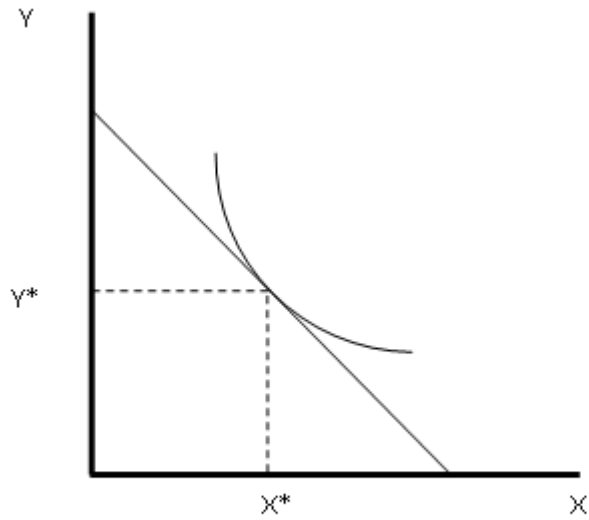
- MRS = $MU_x/MU_y = P_x/P_y$, or:
  - $MU_x/P_x = MU_y/P_y$
  - ***The marginal utility per dollar spent on x equals the marginal utility spent per dollar on y.***
  - If not, utility could be improved by spending less on the good with a lower marginal utility per dollar and more on the good with a higher marginal utility per dollar.
- Note the importance of *marginal analysis*.
  - ***In general, things are maximized when they are equal at the margin.***