Consumer Behavior:
Utility and Indifference Curves

EconTutors

SPECIALISTS IN ECONOMICS

WELL BEHAVED PREFERENCES

- Consumers can have any preferences but economists often assume (for simplicity) that preferences are well-behaved.

- 1. **Completeness.** Everything can be ranked
- 2. **Transitivity.** Preferences don't cycle
- 3. **Monotonicity.** More is better than less
- 4. **Convexity.** Averages are better than extremes

- These 4 **axioms**➔ can represent preferences with a **utility function**

- **Completeness**
- For every pair of bundles, the consumer either prefers the first to the second, is indifferent, or prefers the second to the first.
- Exactly one of x1≻x2 or x1 ≺ x2 or x2~ x1 holds for all x1, x2

- **Transitivity**
- The consumer has sequentially consistent preferences over bundles
  - If X1 ≻ X2 and X2 ≻ X3 → then it must be that X1 ≻ X3
  - If X1 ≺ X2 and X2 ≺ X3 → then it must be that X1 ≺ X3
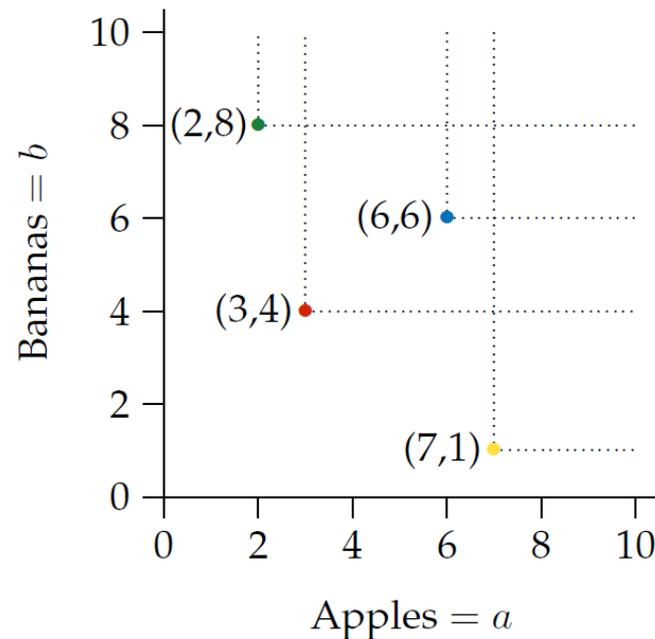 - If X1 ~ X2 and X2 ~ X3 → then it must be that X1 ~ X3

PREFERENCES TO UTILITY

- **Theorem.** If preferences are complete and transitive, then there is a function U such that, for every pair of bundles x1 and x2,

  - $x_1 \succ x_2$ if and only if $U(x_1) \geq U(x_2)$

- Consumer preferences can be **represented** by a utility function U which assigns a *number* to every bundle

- **Monotonicity**

- Consumers always prefer a bundle containing more of at least one good and no less of any other (sometimes called "non-satiation"). The utility function is increasing in each of its arguments

- Divisibility and Completeness means that not only do we have discrete bundles like 3 apples and 4 bananas but also 3.1 apples and 3.88 bananas.

- In other words, every combination of apples and bananas is attainable and can be ranked with preferences not just whole numbers.

- Which means we have indifference curves everywhere. And of course we are also able to rank them in order of preference based on our utility.
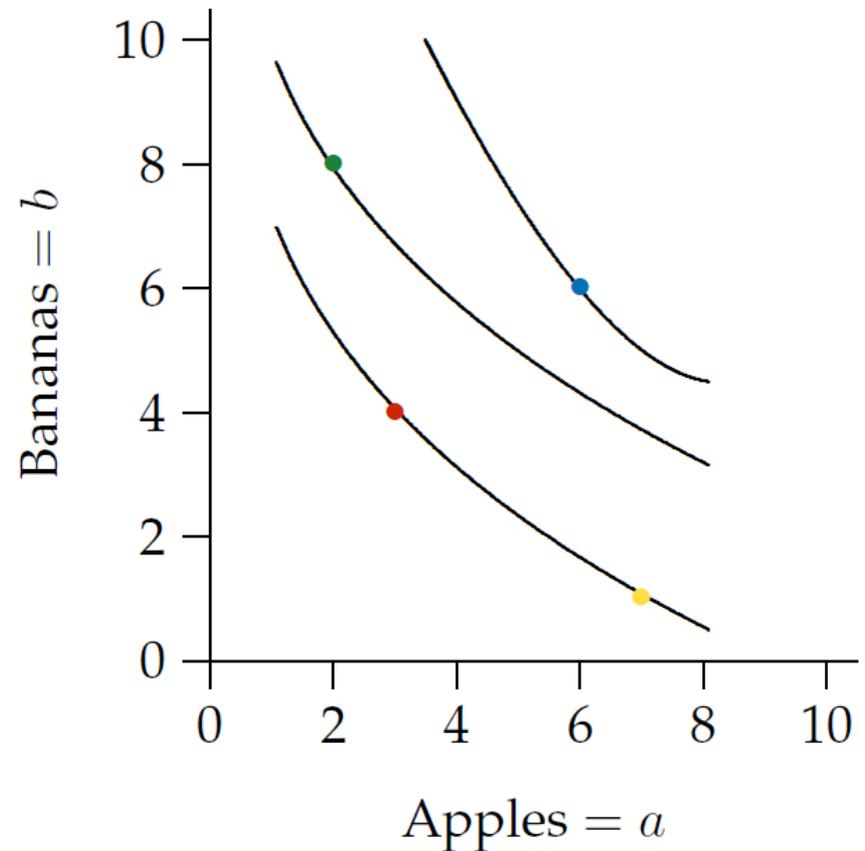
CONVEXITY

- Averages are better than extremes.

- This axiom implies that if we have two extreme bundles (x2 and x3) in this case then their average, x1, will be such that consumers will prefer x1 to both x2 and x3.

- Why? because consumers like variety (averages) over abundance (concentration) in one (or the other) good.

- What's wrong with abundance in one good? Recall *diminishing marginal utility…*

$$\mathbf{x}_2 \sim \mathbf{x}_3$$
$$\mathbf{x}_1 \succ \mathbf{x}_2$$
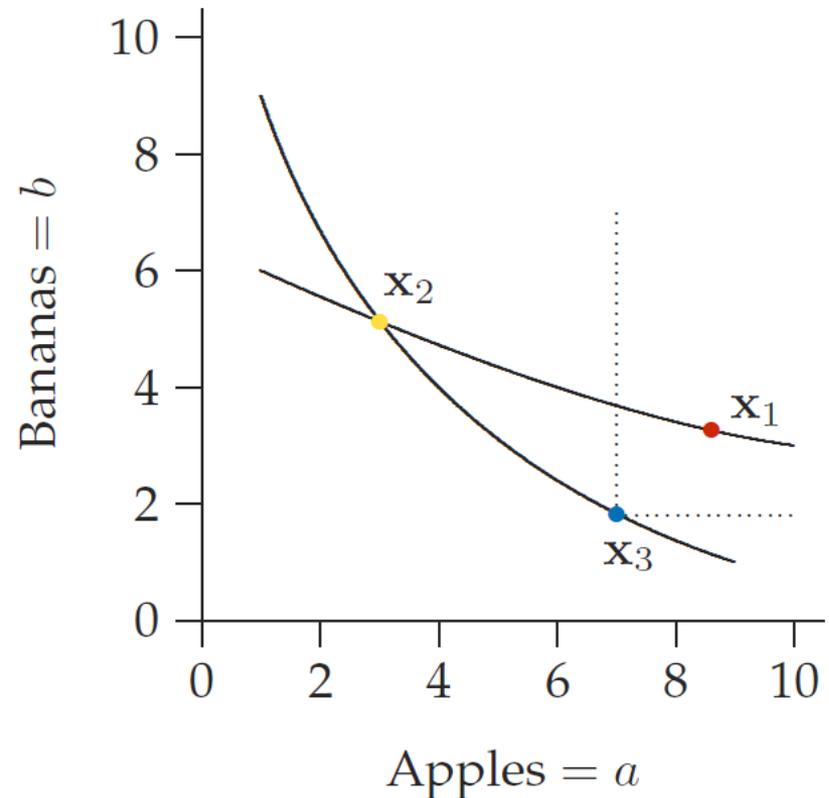$$\mathbf{x}_1 \succ \mathbf{x}_3$$
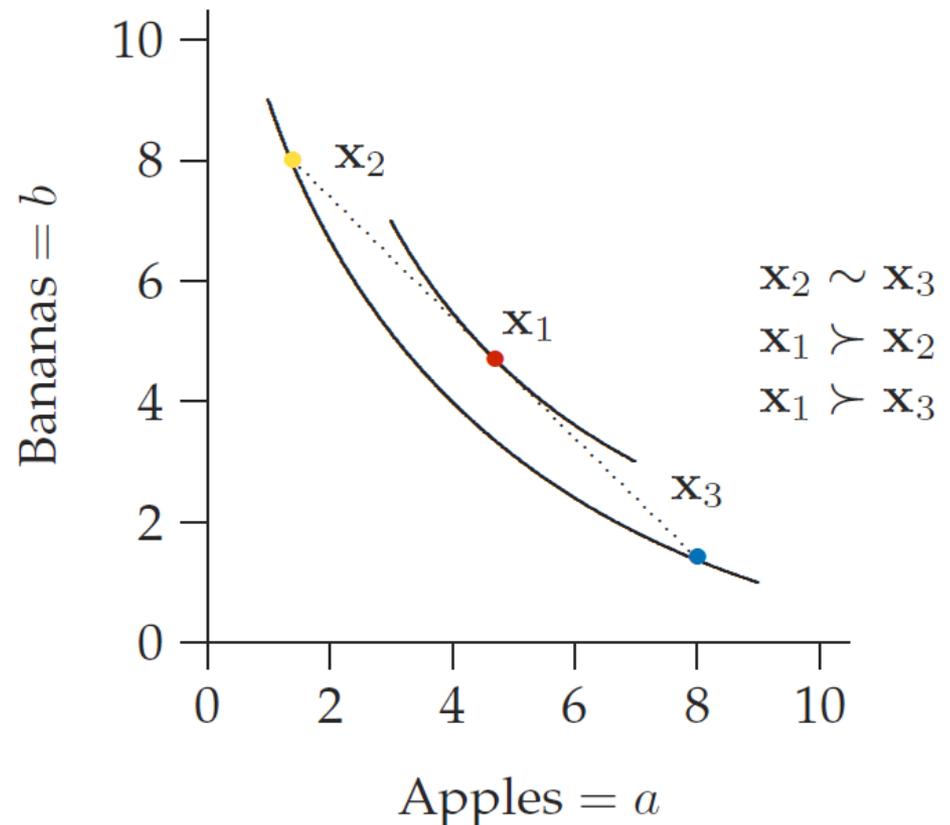
INDIFFERENCE CURVES DON'T CROSS

- Indifference curves also do not cross, and are always parallel.

- Proof by contradiction: if they cross it leads us to violate the assumption of monotonicity.

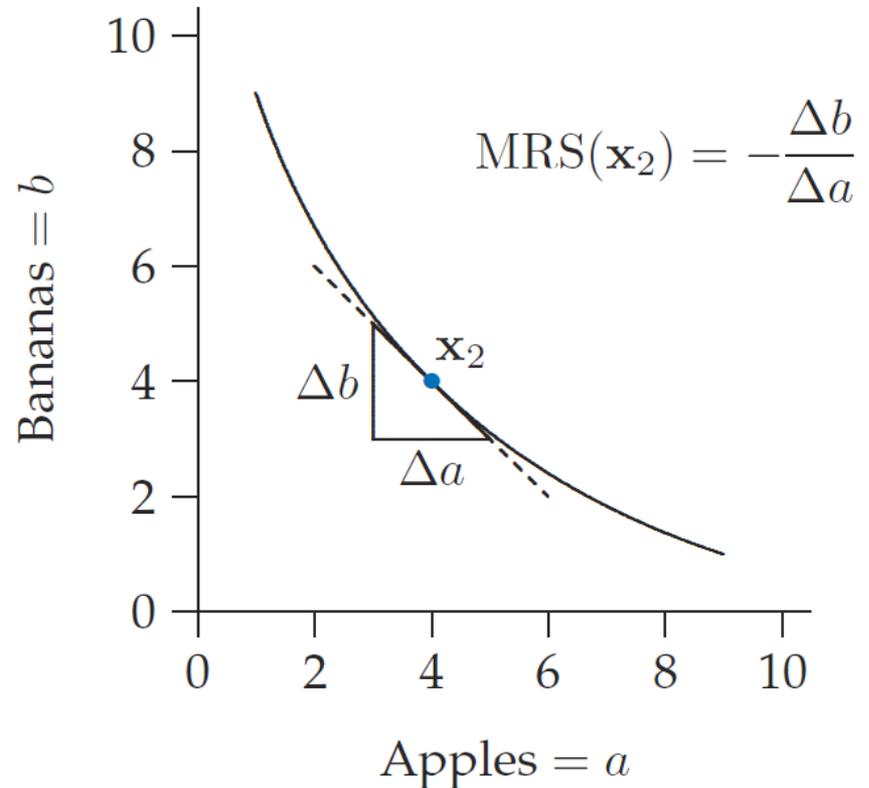- Indifference curves must be downward sloping, parallel, and convex (mostly).

- Question: How much of one good is a consumer just willing to give up in order to receive an extra unit of another good? **A.** The MRS. . .

$$\text{MRS}(\mathbf{x}_2) = -\frac{\Delta b}{\Delta a}$$

THANK YOU!

Like ♦ Comment ♦ Subscribe