

ECO2011 Basic Microeconomics

Mankiw Chapter 21 (The Theory of Consumer Choice)

Pindyck Chapter 3 (Consumer Behavior)

2023

Motivation

- Zhang San is a freshman who just entered CUHK(SZ).
 - He is at Kuaile Shijian, trying to figure out what he wants to buy for lunch.....

The Budget Constraint: What the Consumer Can Afford

- Budget constraint: The limit on the consumption bundles that a consumer can afford
- Budget line: All combinations of goods for which the total amount of money spent is equal to income.

$$P_A A + P_B B = I$$

- Example:

- Hurley divides his income between two goods: fish and mangos.
- A “consumption bundle” is a particular combination of the goods, e.g., 40 fish & 300 mangos



Internet photo



Internet photo

Hurley's income: \$1200

Prices: $P_F = \$4$ per fish, $P_M = \$1$ per mango

- A. If Hurley spends all his income on fish, how many fish does he buy?
- B. If Hurley spends all his income on mangos, how many mangos does he buy?
- C. If Hurley buys 100 fish, how many mangos can he buy?
- D. Plot each of the bundles from parts A – C on a graph that measures fish on the horizontal axis and mangos on the vertical; connect the dots.

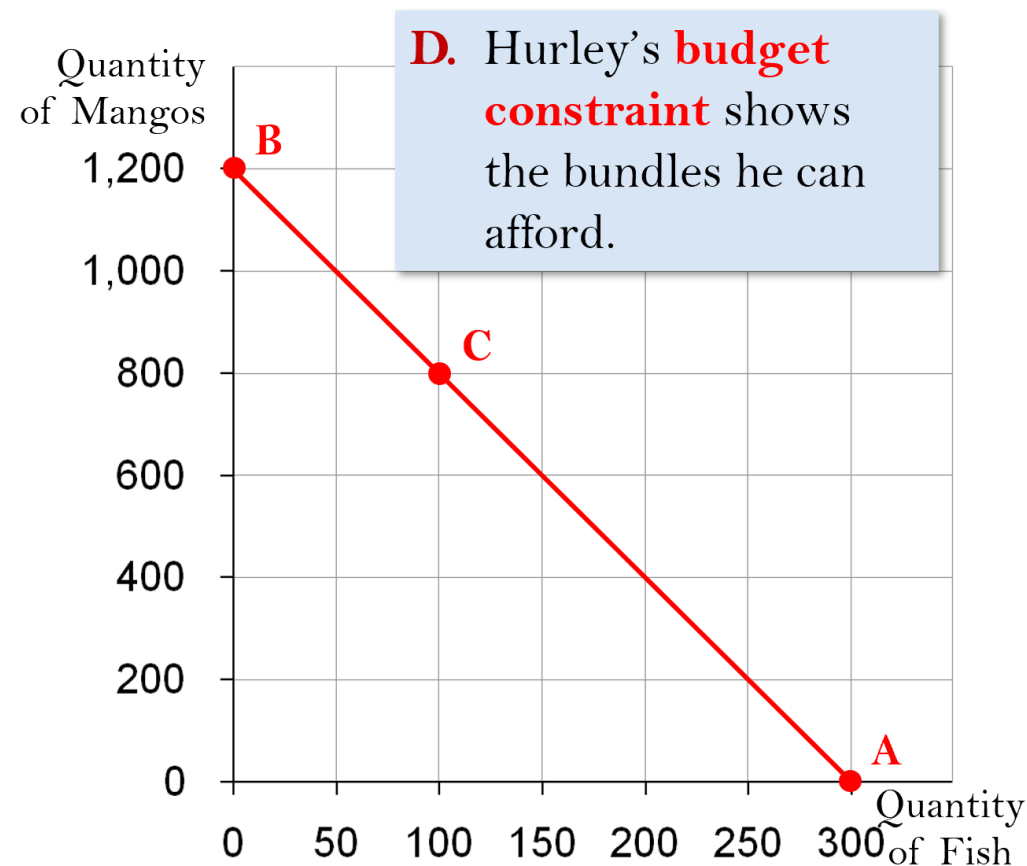
Active Learning

Answers

A. $\$1200/\4
 $= 300$ fish

B. $\$1200/\1
 $= 1200$ mangos

C. 100 fish cost \$400,
\$800 left buys 800 mangos



Active Learning Constraint

The Slope of the Budget

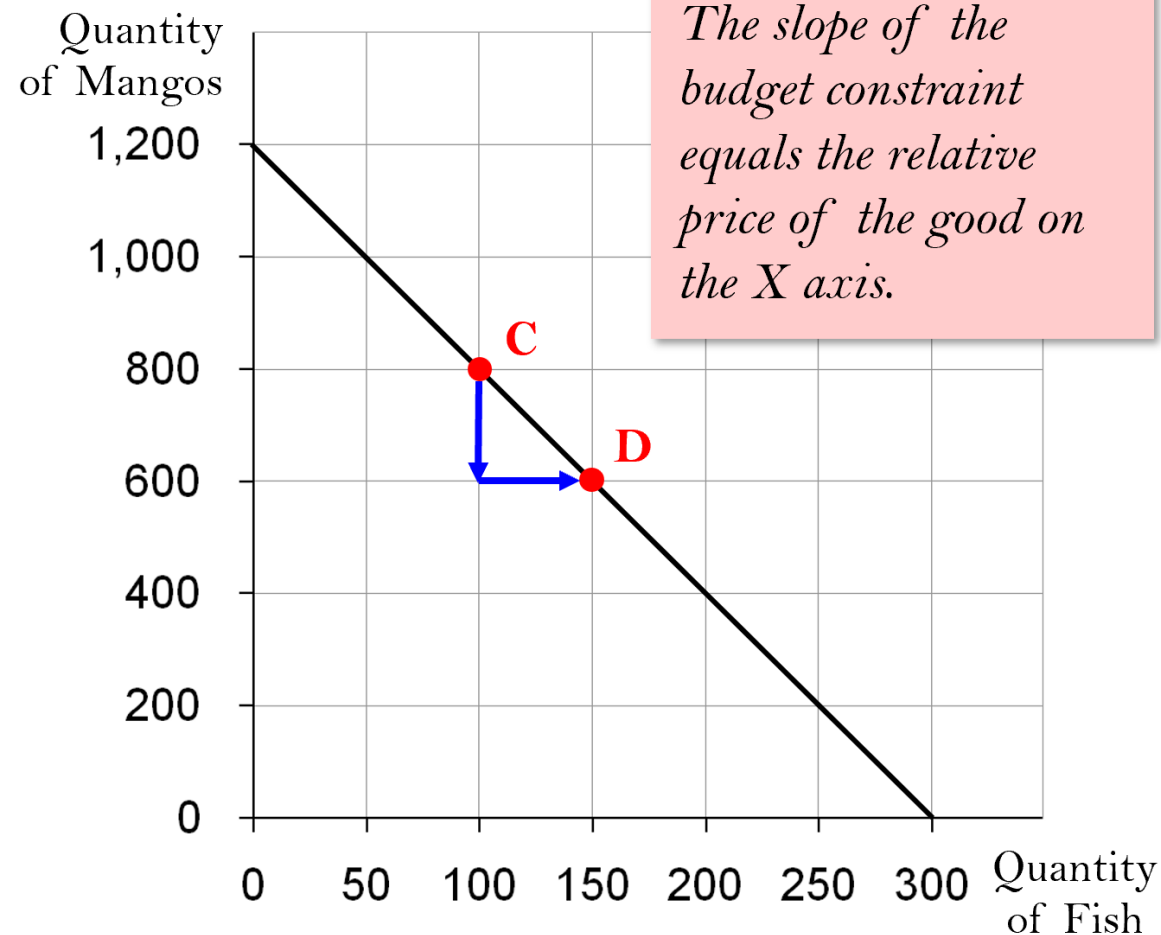
From **C** to **D**,

“rise” = -200 mangos

“run” = $+50$ fish

Slope = -4

Hurley must give up 4 mangos to get one fish.



Initial problem:

Hurley's income: \$1200

Prices: $P_F = \$4$ per fish, $P_M = \$1$ per mango

Show what happens to Hurley's budget constraint if:

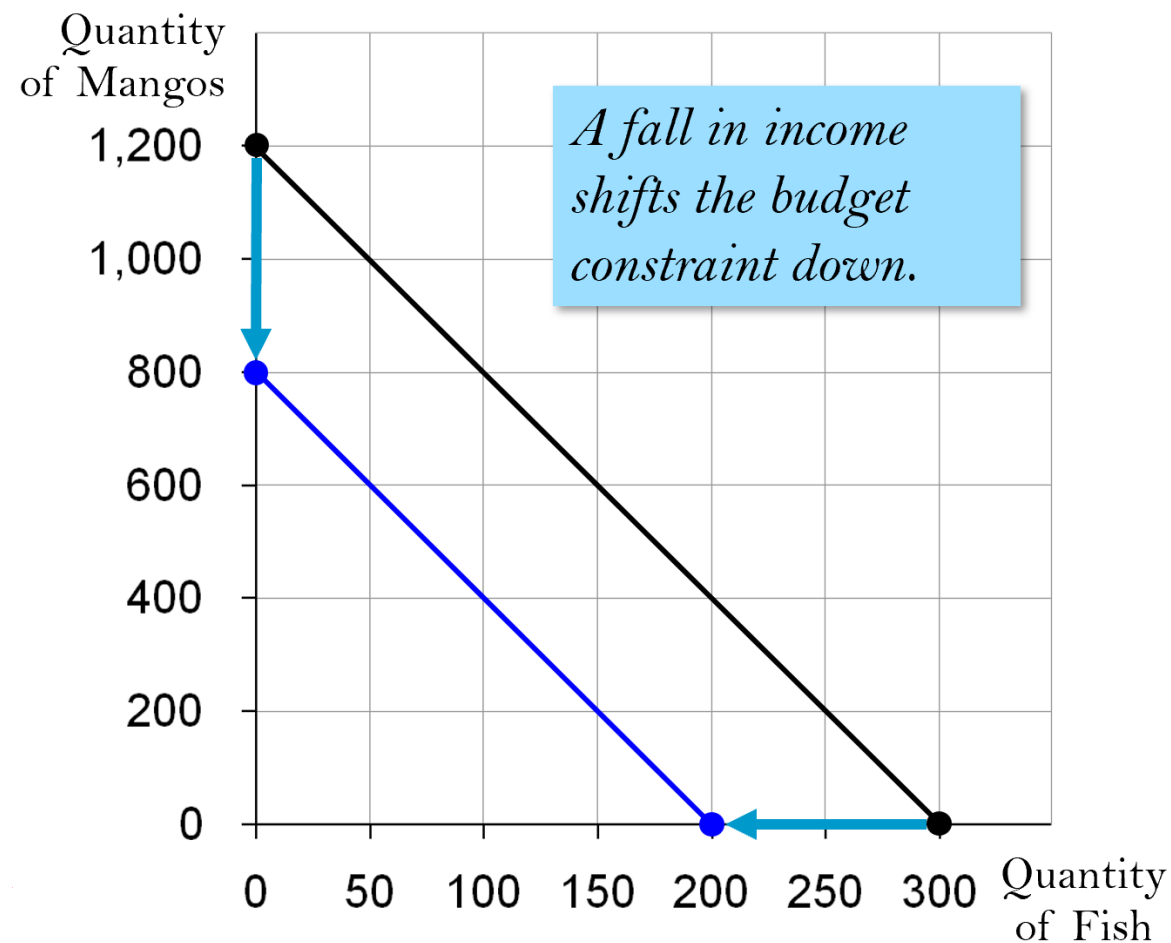
A. His income falls to \$800.

B. The price of mangos rises to $P_M = \$2$ per mango

Active Learning

Answers, part A

Now, Hurley can buy
 $\$800/\$4 = 200$ fish or
 $\$800/\$1 = 800$ mangos or
any combination in between.



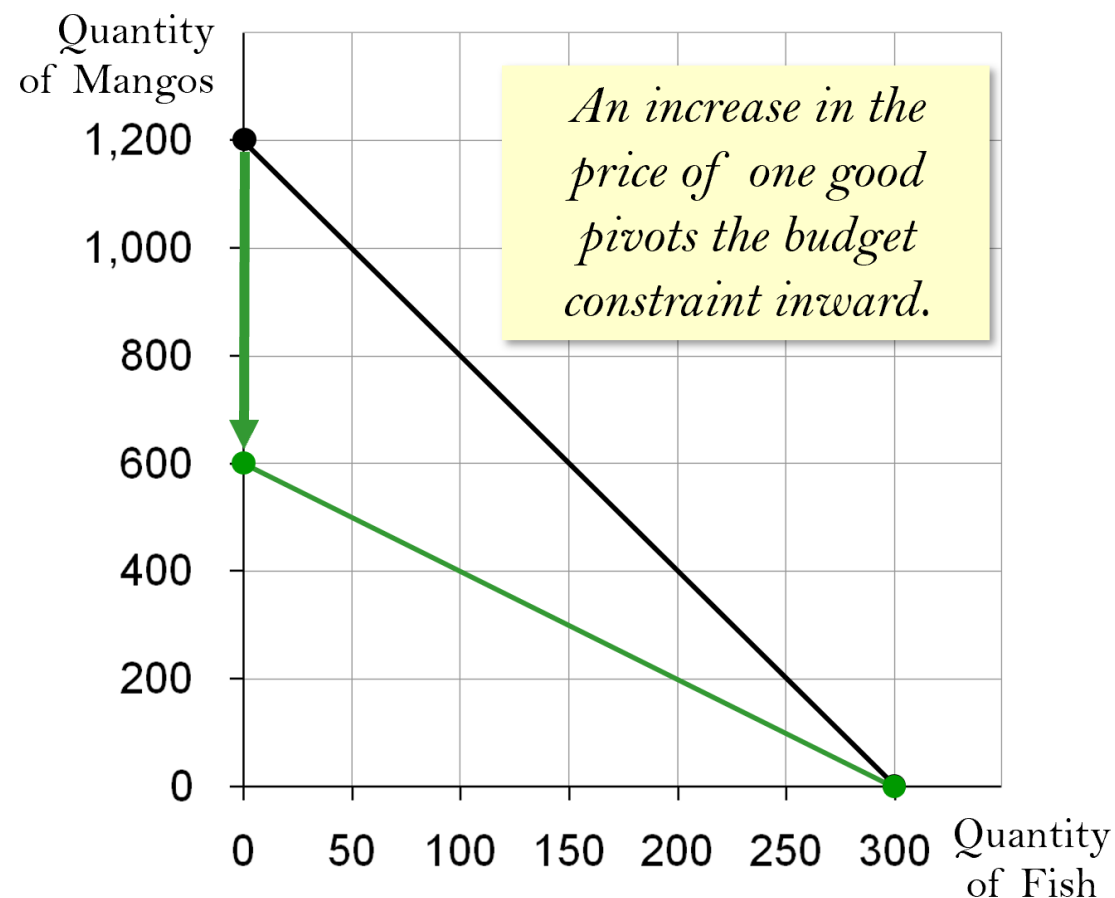
Active Learning

Answers, part B

Hurley can still buy 300 fish.

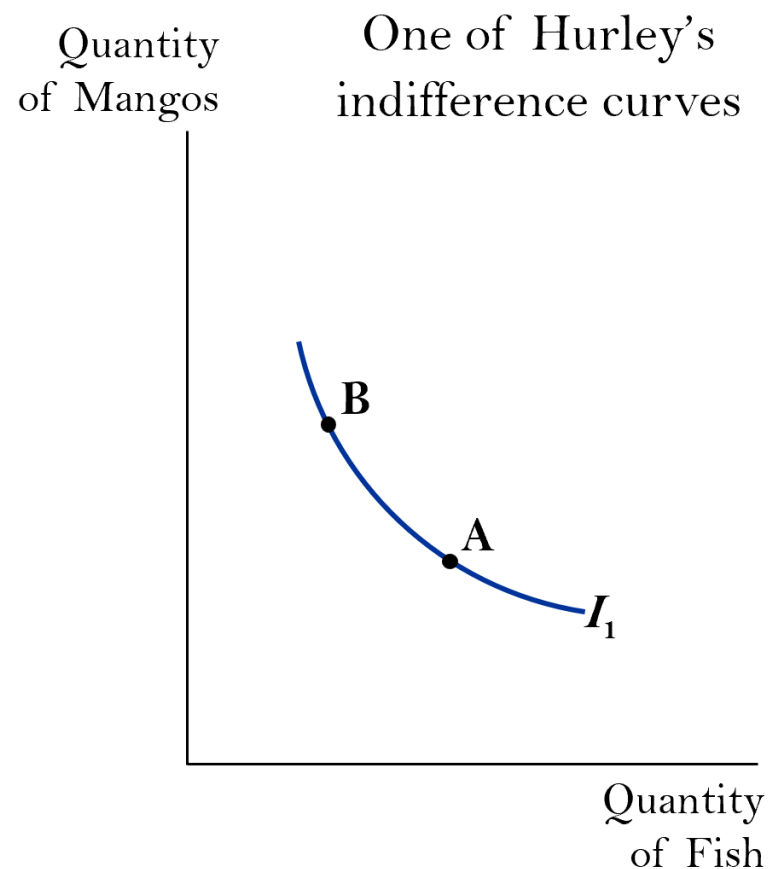
But now he can only buy
 $\$1200/\$2 = 600$ mangos.

Notice: slope is smaller, relative
price of fish is now only 2
mangos



Preferences: What the Consumer Wants

- Indifference curve:
shows all consumption bundles that give the consumer the same level of satisfaction
- **A**, **B**, and all other bundles on I_1 make Hurley equally happy: he is *indifferent* between them.



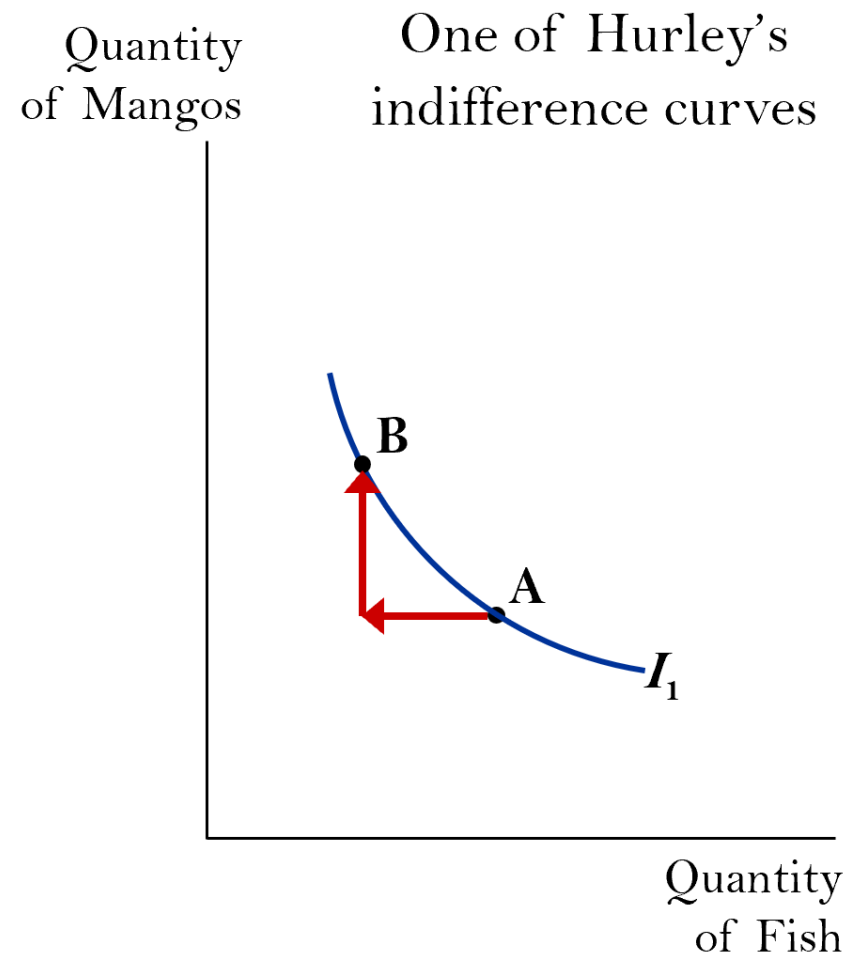
Some Basic Assumptions about Preferences

- Completeness: consumers can compare and rank all possible baskets: Prefer A to B, prefer B to A, or indifferent between the two.
 - Note that these preferences ignore costs.
- Transitivity: Preferences are transitive. If prefers A to B and B to C, then must prefer A to C. Transitivity is normally regarded as necessary for consumer consistency.
- More is better than less: Goods are assumed to be desirable—i.e., to be good. Always prefer more of any good to less. Never satisfied or satiated; more is always better, even if just a little better.

Four Properties of Indifference Curves

1. Indifference curves are downward-sloping.

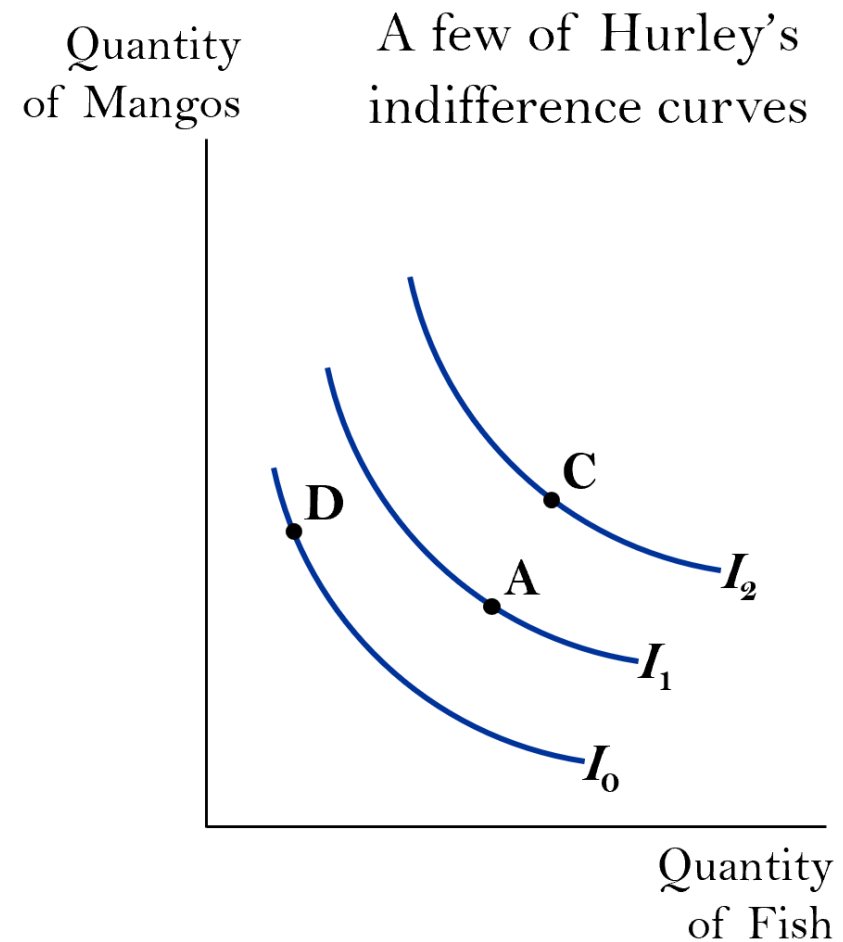
- If the quantity of fish is reduced, the quantity of mangos must be increased to keep Hurley equally happy.



Four Properties of Indifference Curves

2. Higher indifference curves are preferred to lower ones.

- Hurley prefers every bundle on I_2 (like **C**) to every bundle on I_1 (like **A**).
- He prefers every bundle on I_1 (like **A**) to every bundle on I_0 (like **D**).

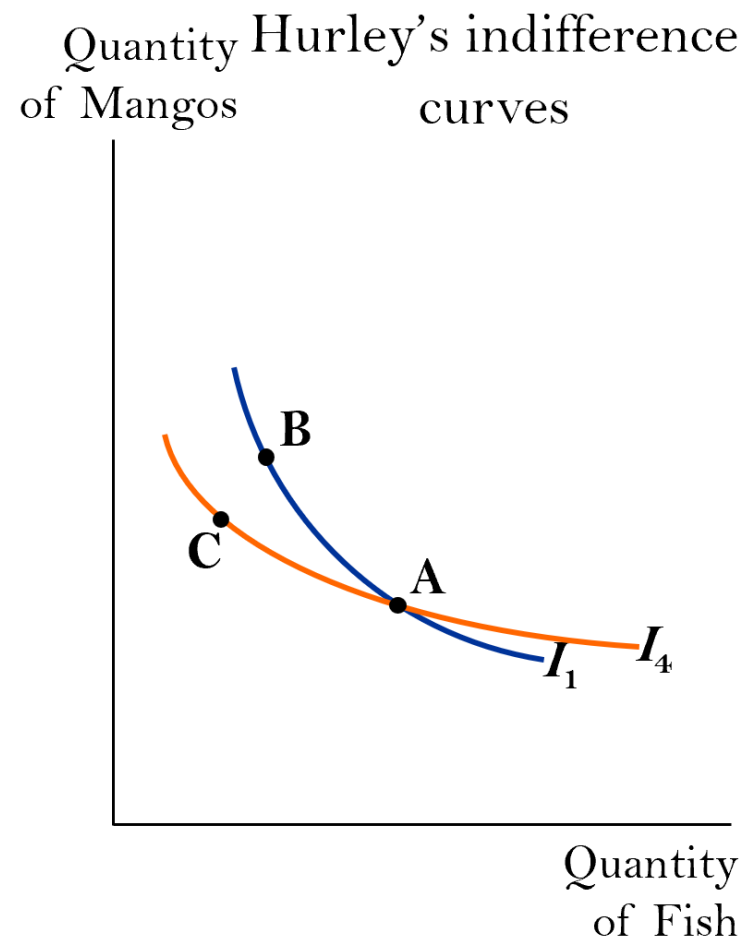


Four Properties of Indifference Curves

3. Indifference curves cannot cross.

Suppose they did.

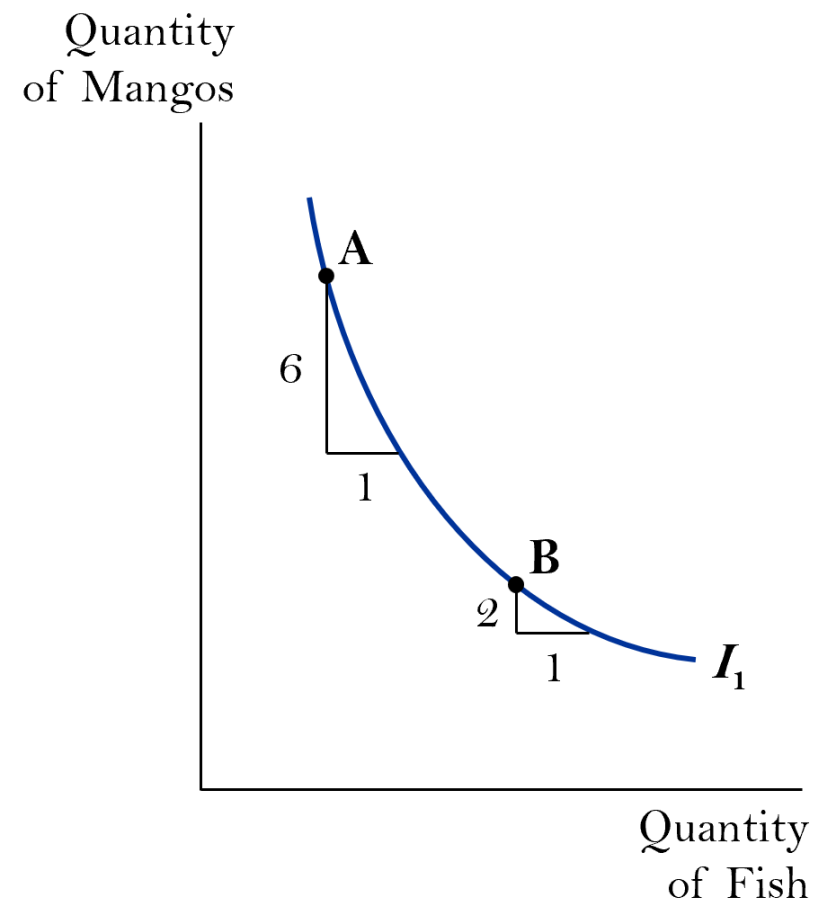
- Hurley should prefer **B** to **C**, since **B** has more of both goods.
- Yet, Hurley is indifferent between **B** and **C**:
- He likes **C** as much as **A** (both are on I_4).
- He likes **A** as much as **B** (both are on I_1).



Four Properties of Indifference Curves

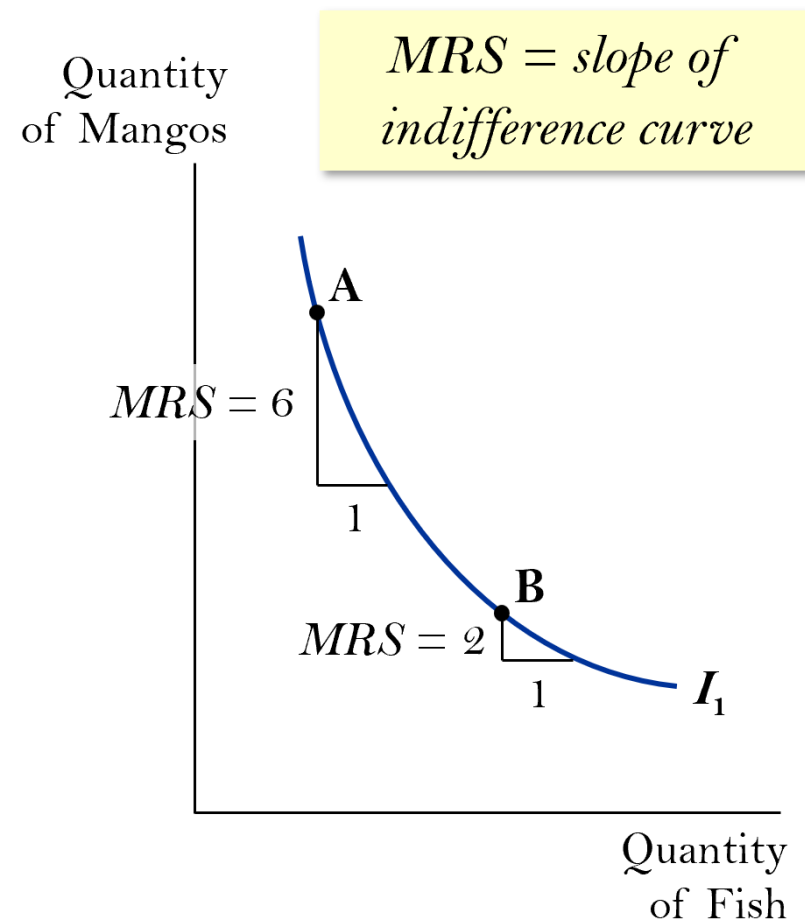
4. Indifference curves are bowed inward.

- Hurley is willing to give up more mangos for a fish if he has few fish (**A**) than if he has many (**B**).



The Marginal Rate of Substitution

- **Marginal rate of substitution (MRS):** Maximum amount of a good that a consumer is willing to give up in order to obtain one additional unit of another good.
- Hurley's MRS is the amount of mangos he would substitute for another fish.
- MRS falls as you move down along an indifference curve.

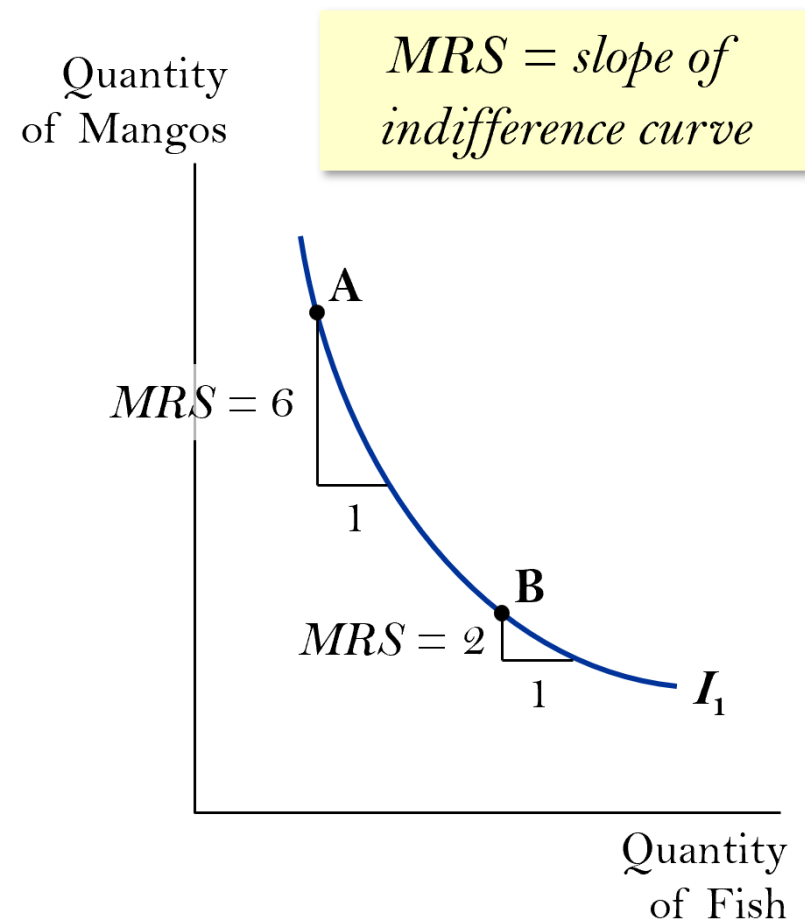


The Marginal Rate of Substitution

■ Convexity

Observe that the MRS falls as we move down the indifference curve. The decline in the MRS reflects our fourth assumption regarding consumer preferences: a diminishing marginal rate of substitution. When the MRS diminishes along an indifference curve, the curve is convex.

■ Why do we assume diminishing MRS?

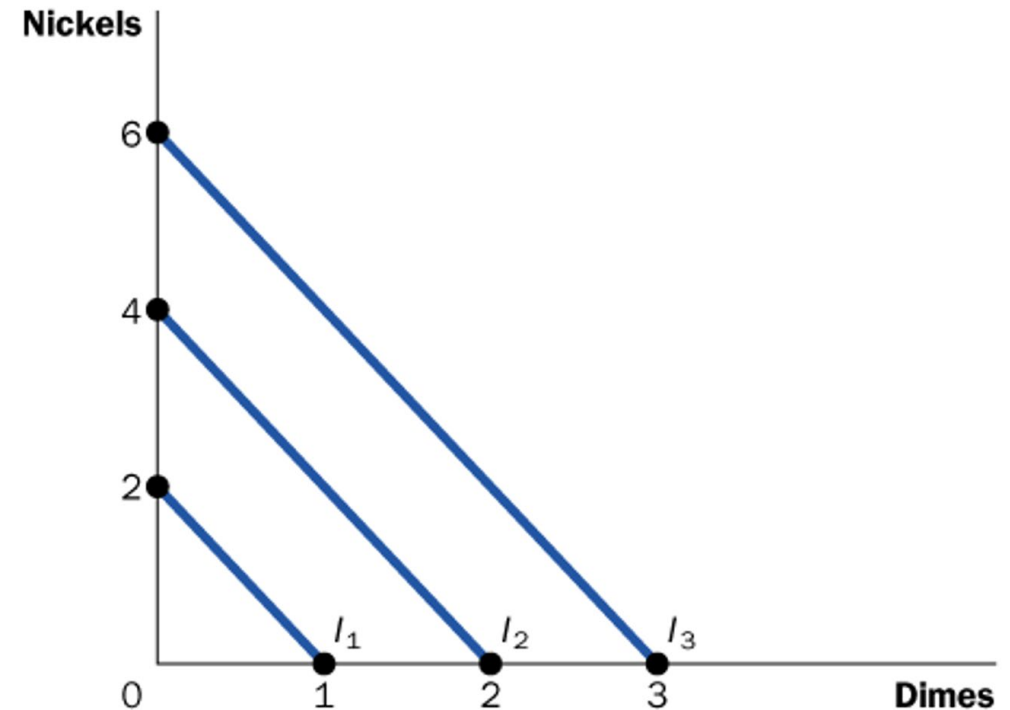


One Extreme Case: Perfect Substitutes

Perfect substitutes: two goods with straight-line indifference curves, constant MRS

Example: nickels and dimes

- Consumer is always willing to trade two nickels for one dime.

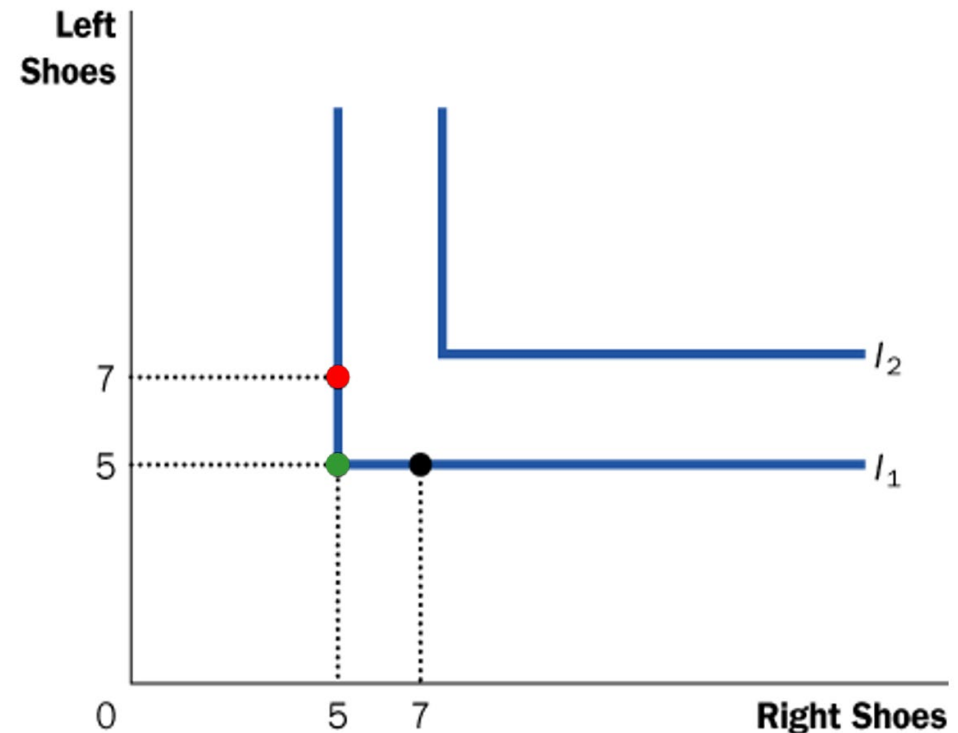


Another Extreme Case: Perfect Complements

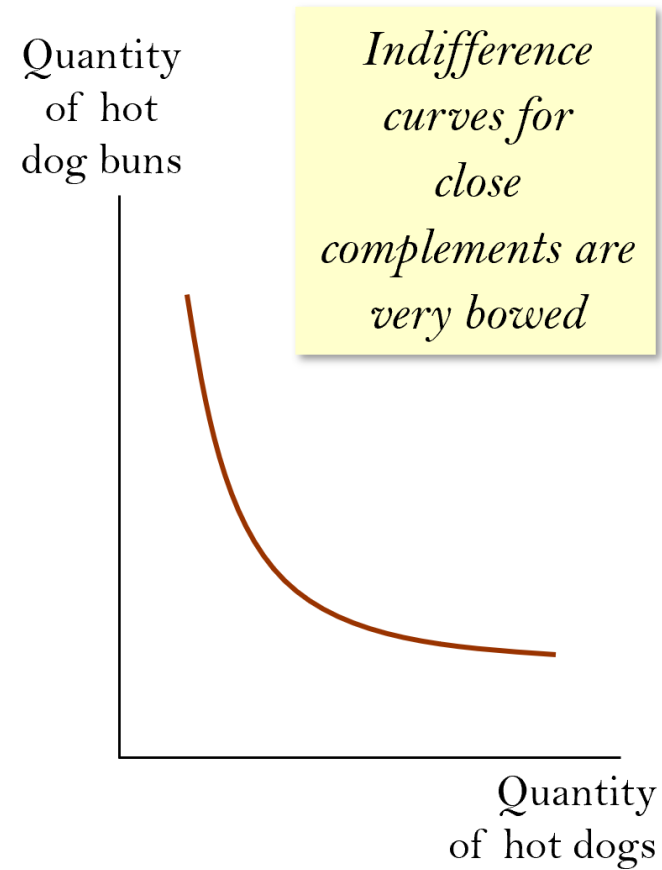
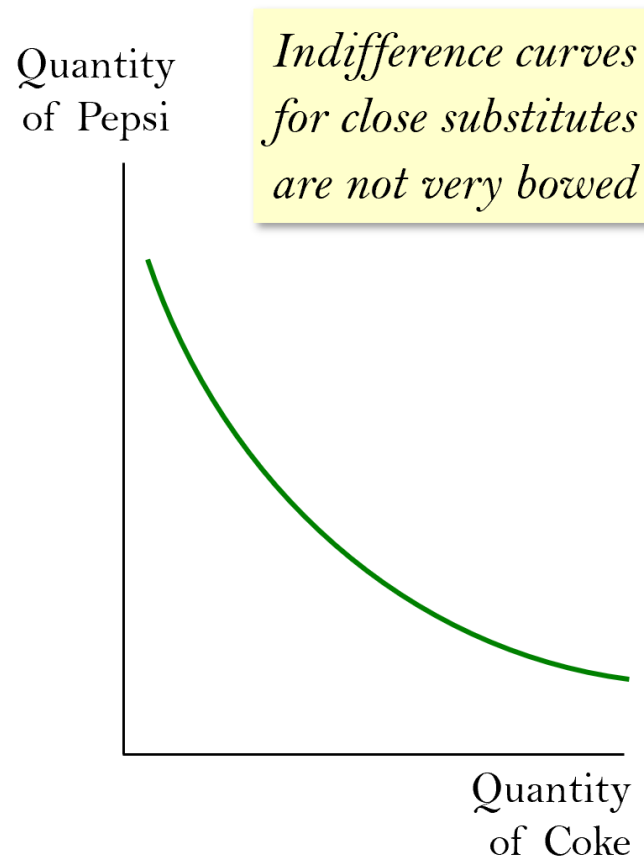
Perfect complements: Two goods for which the MRS is zero or infinite; the indifference curves are shaped as right angles.

Example: Left shoes, right shoes

- {7 left shoes, 5 right shoes} is just as good as {5 left shoes, 5 right shoes}



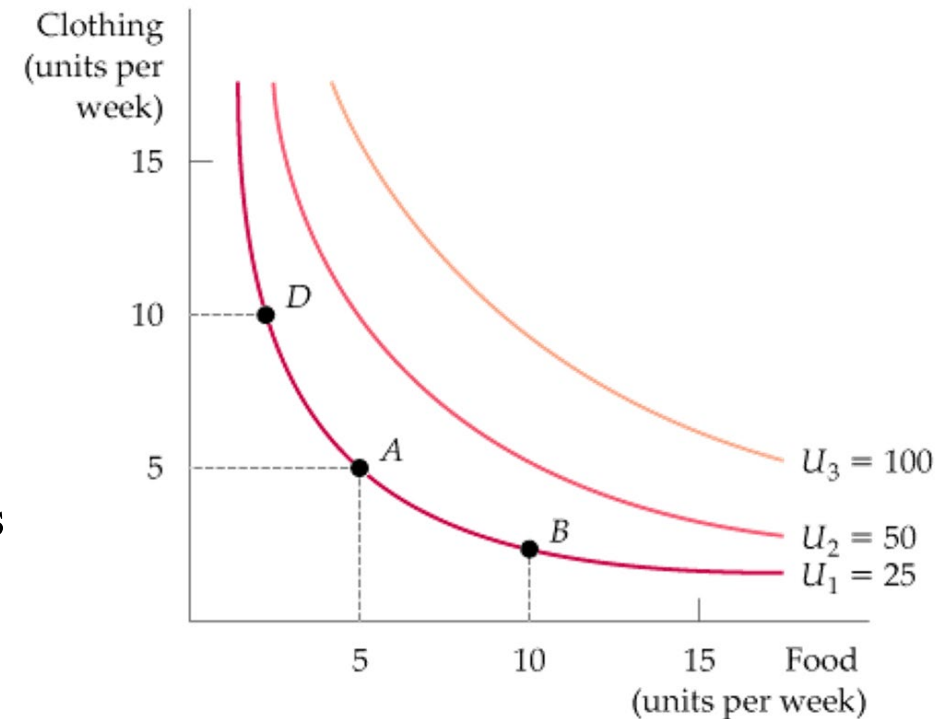
Less Extreme Cases: Close Substitutes and Close Complements



Utility and Utility Function

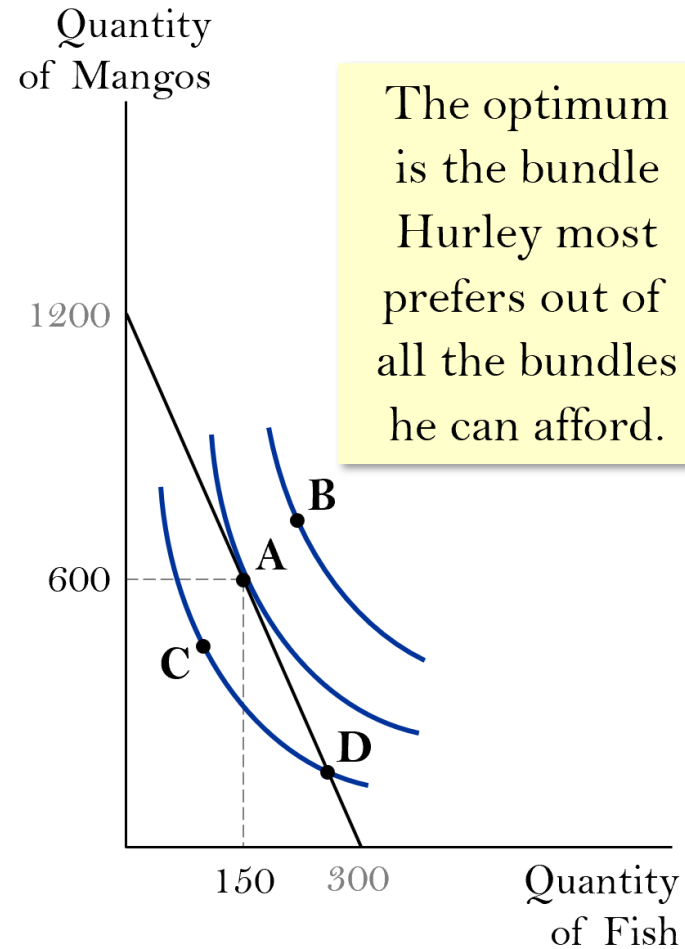
- Utility: Numerical score representing the satisfaction that a consumer gets from a given bundle.
- Utility Function: Formula that assigns a level of utility to individual bundles.
 - A utility function can be represented by a set of indifference curves, each with a numerical indicator.
- The figure shows three indifference curves (with utility levels of 25, 50, and 100, respectively) associated with the utility function:

$$u(F, C) = FC$$



Optimization: What the Consumer Chooses

- **A** is the *optimum*: the point on the budget constraint that touches the highest possible indifference curve.
- Hurley prefers **B** to **A**, but he cannot afford **B**.
- Hurley can afford **C** and **D**, but **A** is on a higher indifference curve.



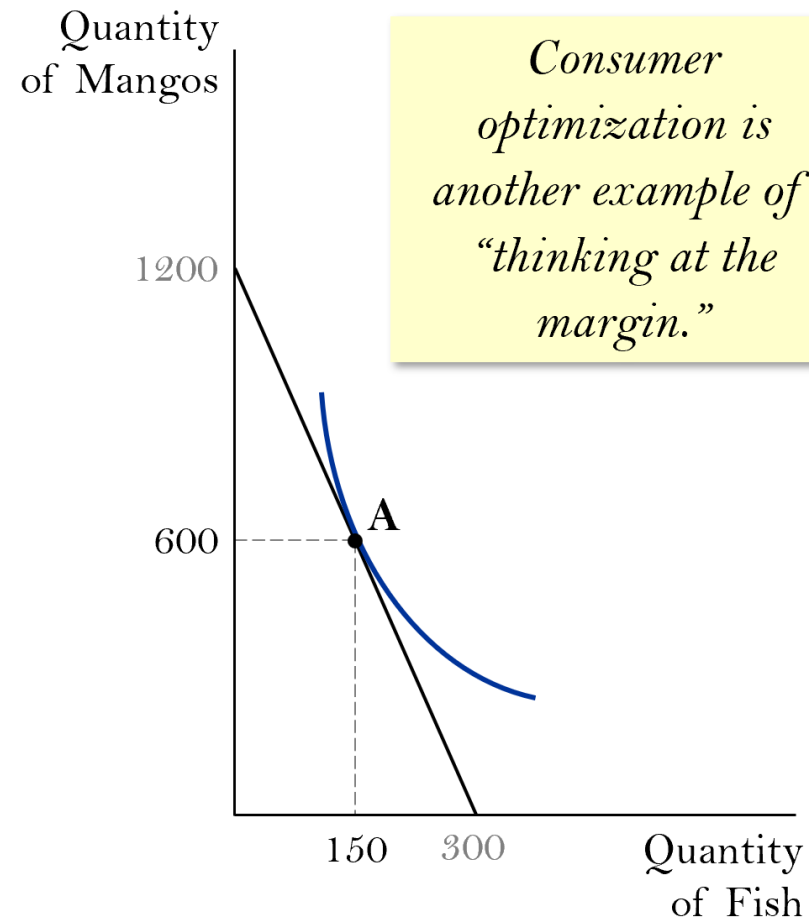
Optimization: What the Consumer Chooses

- At the optimum, slope of the indifference curve equals slope of the budget constraint:

$$\text{MRS} = P_F / P_M$$

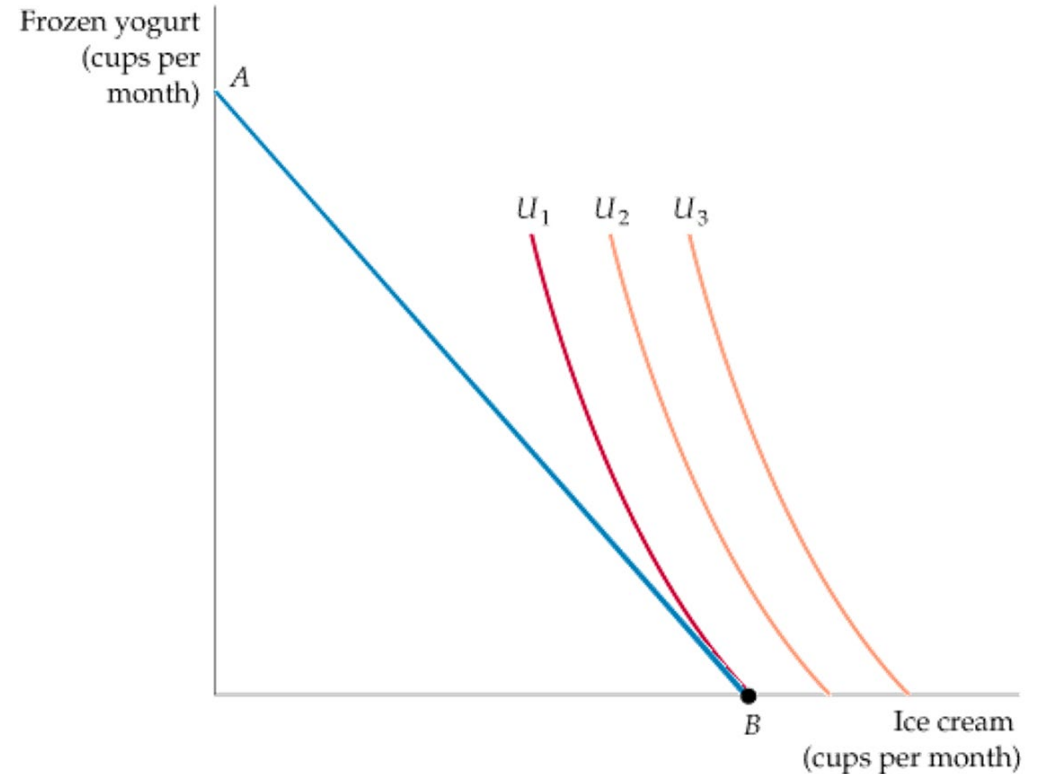
marginal
value of fish
(in terms of
mangos)

price of fish
(in terms of
mangos)



Corner Solutions

- corner solution: situation in which the marginal rate of substitution for one good in a chosen market basket is not equal to the slope of the budget line.
- When a corner solution arises, the consumer maximizes satisfaction by consuming only one of the two goods.
- Given budget line AB, the highest level of satisfaction is achieved at B on indifference curve U_1 , where the MRS (of ice cream for frozen yogurt) is greater than the ratio of the price of ice cream to the price of frozen yogurt.



Marginal Utility and Consumer Choice

- marginal utility (MU): Additional satisfaction obtained from consuming one additional unit of a good.
- diminishing marginal utility: Principle that as more of a good is consumed, the consumption of additional amounts will yield smaller additions to utility.

$$0 = MU_F(\Delta F) + MU_C(\Delta C)$$

$$-(\Delta C / \Delta F) = MU_F / MU_C$$

$$MRS = MU_F / MU_C$$

$$MRS = P_F / P_C$$

$$MU_F / MU_C = P_F / P_C$$

$$MU_F / P_F = MU_C / P_C$$

Marginal Utility and Consumer Choice

$$MU_F / P_F = MU_C / P_C$$

- equal marginal principle: principle that utility is maximized when the consumer has equalized the marginal utility per dollar of expenditure across all goods.

Do People Really Think This Way?

- People do not make spending decisions by writing down their budget constraints and indifference curves.
- Yet, they try to make the choices that maximize their satisfaction given their limited resources.
- The theory in this chapter is only intended as a metaphor for how consumers make decisions.
- It explains consumer behavior fairly well in many situations and provides the basis for more advanced economic analysis.

Can You Answer the Following Questions?

- How does the budget constraint represent the choices a consumer can afford?
- How do indifference curves represent the consumer's preferences?
- What determines how a consumer divides her resources between two goods?
- How does the theory of consumer choice explain decisions such as how much a consumer saves, or how much labor she supplies?

End