

CHAPTER 21

The Theory of  
Consumer Choice

PRINCIPLES OF  
**Microeconomics**  
N. Gregory Mankiw

Premium PowerPoint Slides  
by Ron Cronovich

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**In this chapter,  
look for the answers to these 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?

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**Introduction**

- § Recall one of the Ten Principles from Chapter 1:  
*People face tradeoffs.*
  - § Buying more of one good leaves less income to buy other goods.
  - § Working more hours means more income and more consumption, but less leisure time.
  - § Reducing saving allows more consumption today but reduces future consumption.
- § This chapter explores how consumers make choices like these.

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### The Budget Constraint: What the Consumer Can Afford

§ Example:  
Hurley divides his income between two goods:  
fish and mangos.

§ A “consumption bundle” is

§ **Budget constraint:**

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#### ACTIVE LEARNING 1 Budget Constraint

Hurley's income: \$1200

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

- If Hurley spends all his income on fish, how many fish does he buy?
- If Hurley spends all his income on mangos, how many mangos does he buy?
- If Hurley buys 100 fish, how many mangos can he buy?
- 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.

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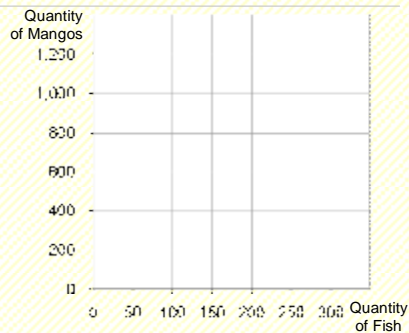
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#### ACTIVE LEARNING 1 Answers




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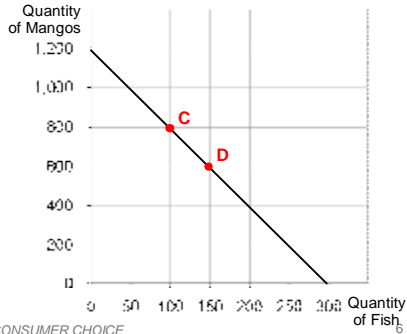
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### The Slope of the Budget Constraint

From **C** to **D**,  
 "rise" =  
 "run" =  
 Slope =  
 Hurley must give up



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### The Slope of the Budget Constraint

The slope of the budget constraint equals

$$\frac{\text{price of fish}}{\text{price of mangos}}$$

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### ACTIVE LEARNING 2 Budget constraint, continued.

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

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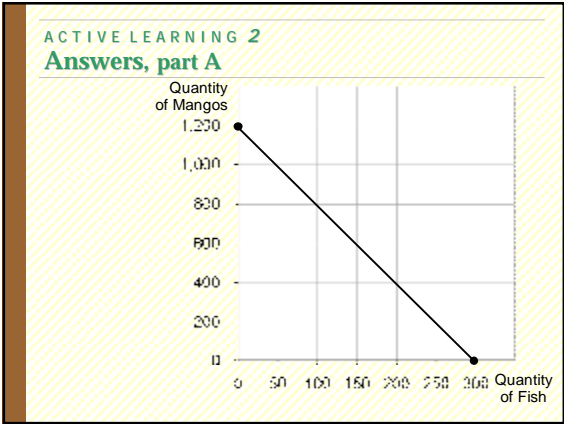
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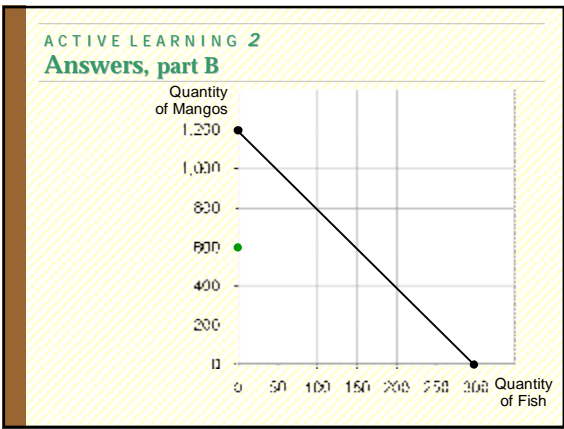
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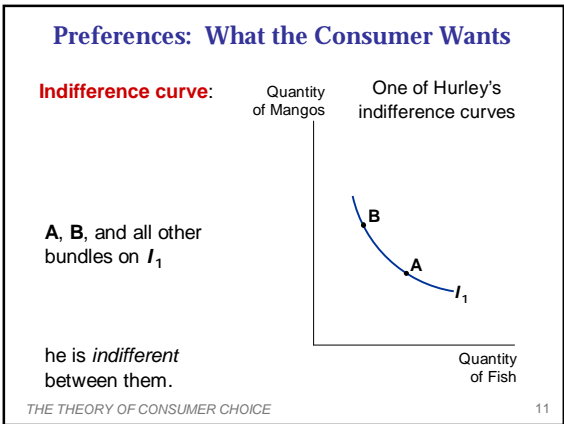
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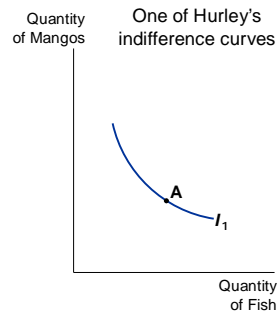
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### Four Properties of Indifference Curves

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



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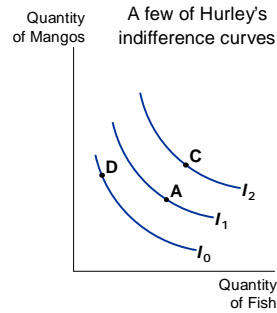
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### Four Properties of Indifference Curves

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).



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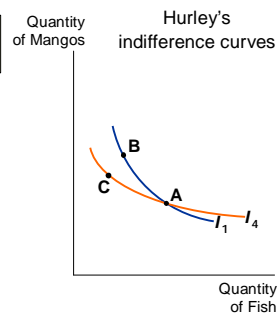
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### Four Properties of Indifference Curves

3. Indifference curves cannot cross.

Suppose they did.



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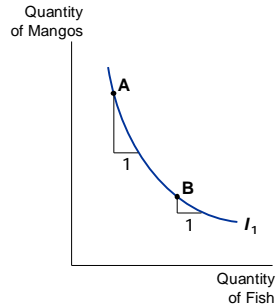
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### Four Properties of Indifference Curves

4. Indifference curves are bowed inward.

Hurley is willing to give up more mangos for a fish if



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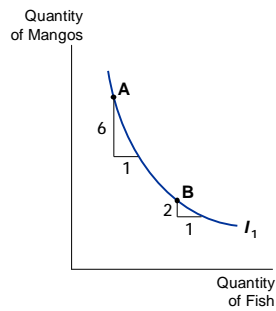
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### The Marginal Rate of Substitution

**Marginal rate of substitution (MRS):**

Hurley's MRS is

MRS falls as you move down along an indifference curve.



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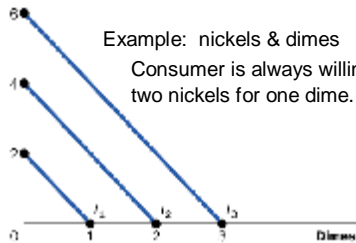
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### One Extreme Case: Perfect Substitutes

**Perfect substitutes:**

Nickels



Example: nickels & dimes  
Consumer is always willing to trade two nickels for one dime.

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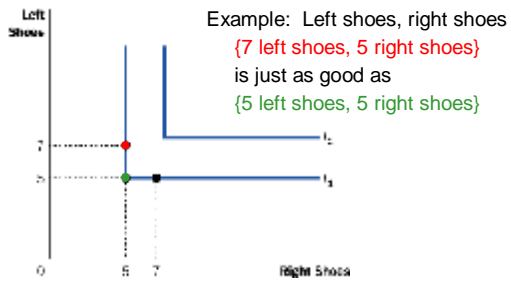
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### Another Extreme Case: Perfect Complements

**Perfect complements:**



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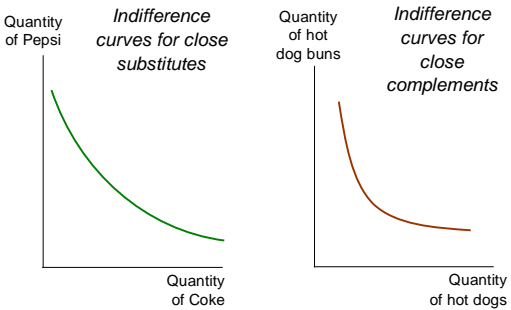
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### Less Extreme Cases: Close Substitutes and Close Complements




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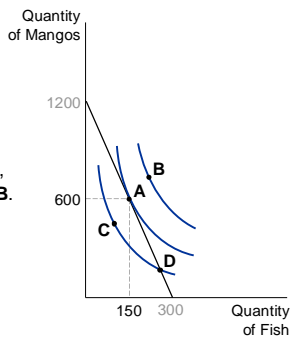
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### Optimization: What the Consumer Chooses

**A is the optimum:**

Hurley prefers **B** to **A**, but he cannot afford **B**.

Hurley can afford **C** and **D**, but **A** is on a higher indifference curve.



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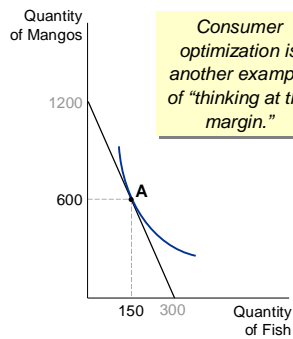
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### Optimization: What the Consumer Chooses

At the optimum,

$$MRS = P_F/P_M$$



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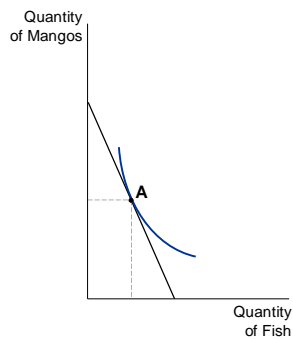
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### The Effects of an Increase in Income

An increase in income

If both goods are "normal," Hurley



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### ACTIVE LEARNING 3

#### Inferior vs. normal goods

§ An increase in income increases the quantity demanded of **normal goods** and reduces the quantity demanded of **inferior goods**.

§ Suppose fish is a normal good but mangos are an inferior good.

§ Use a diagram to show the effects of an increase in income on Hurley's optimal bundle of fish and mangos.

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**ACTIVE LEARNING 3**  
**Answers**

Quantity of Mangos

Quantity of Fish

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**The Effects of a Price Change**

Initially,  
 $P_F = \$4$   
 $P_M = \$1$

$P_F$  falls to \$2

Quantity of Mangos

1200

600

150 300

Quantity of Fish

initial optimum

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**The Income and Substitution Effects**

A fall in the price of fish has two effects on Hurley's optimal consumption of both goods.

§ **Income effect**

§ **Substitution effect**

Notice:

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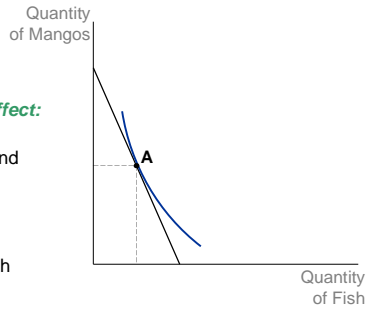
### The Income and Substitution Effects

Initial optimum at **A**.

$P_F$  falls.

**Substitution effect:**  
from **A** to **B**,  
buy more fish and  
fewer mangos.

**Income effect:**  
from **B** to **C**,  
buy more of both  
goods.



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#### ACTIVE LEARNING 4

#### The substitution effect in two cases

Do you think the substitution effect would be bigger for substitutes or complements?

§ Draw an indifference curve for Coke and Pepsi, and, on a separate graph, one for hot dogs and hot dog buns.

§ On each graph, show the effects of a relative price change (keeping the consumer on the initial indifference curve).

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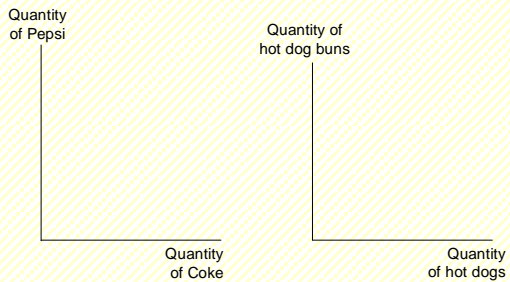
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#### ACTIVE LEARNING 4

#### Answers




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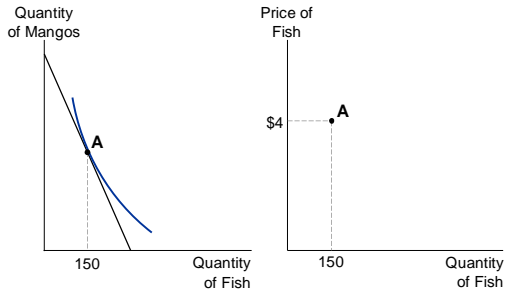
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### Deriving Hurley's Demand Curve for Fish



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### Application 1: Giffen Goods

- § Do all goods obey the *Law of Demand*?
- § Suppose the goods are potatoes and meat, and potatoes are an inferior good.
- § If price of potatoes rises,
  - § substitution effect:
  - § income effect:
- § If then potatoes are a **Giffen good**,

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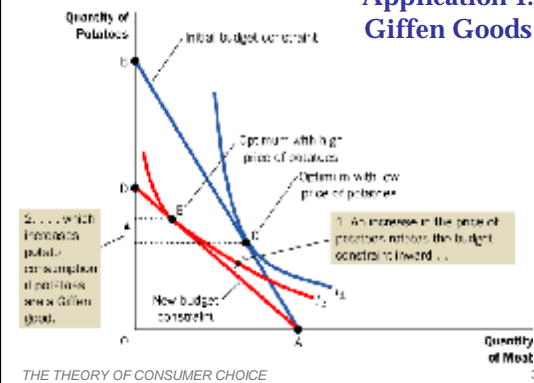
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### Application 1: Giffen Goods



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## Application 2: Wages and Labor Supply

Budget constraint

§ The relative price of an hour of leisure

Indifference curve

§ Shows "bundles" of

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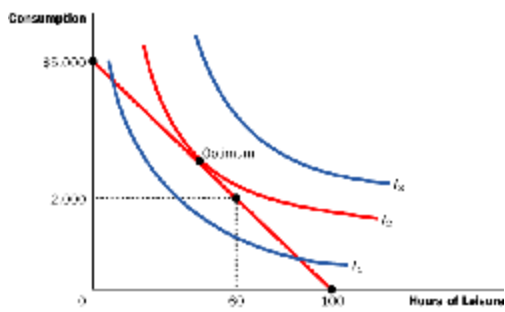
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## Application 2: Wages and Labor Supply



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## Application 2: Wages and Labor Supply

An increase in the wage has two effects on the optimal quantity of labor supplied.

§ *Substitution effect (SE):*

§ *Income effect (IE):*

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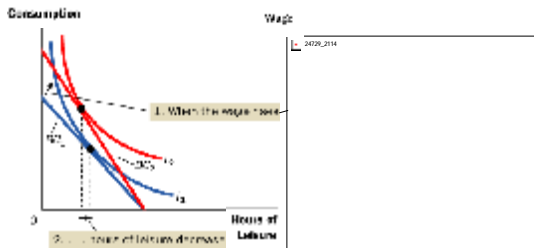
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### Application 2: Wages and Labor Supply

For this person,  
 $SE > IE$

So her labor supply  
increases with the wage



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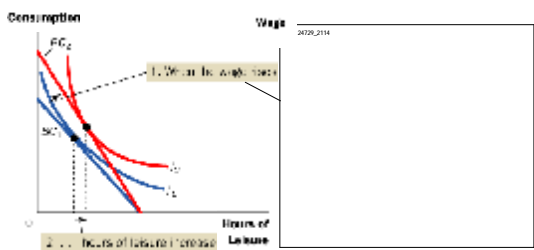
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### Application 2: Wages and Labor Supply

For this person,  
 $SE < IE$

So his labor supply falls  
when the wage rises



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### Could This Happen in the Real World???

Cases where the income effect on labor supply is very strong:

§ Over last 100 years, technological progress has increased labor demand and real wages. The average workweek fell from 6 to 5 days.

§ When a person wins the lottery or receives an inheritance, his wage is unchanged – hence no substitution effect.

But such persons are more likely to work fewer hours, indicating a strong income effect.

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### Application 3: Interest Rates and Saving

- § A person lives for two periods.
- § Period 1: young, works, earns \$100,000  
consumption = \$100,000 minus amount saved
- § Period 2: old, retired  
consumption = saving from Period 1  
plus interest earned on saving
- § The interest rate determines

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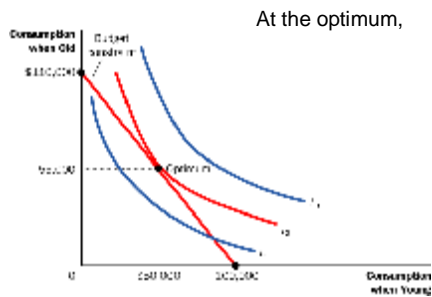
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### Application 3: Interest Rates and Saving

Budget constraint shown is for 10% interest rate.



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### ACTIVE LEARNING 5 Effects of a change in the interest rate

- § Suppose the interest rate rises.
- § Describe the income and substitution effects on current and future consumption, and on saving.

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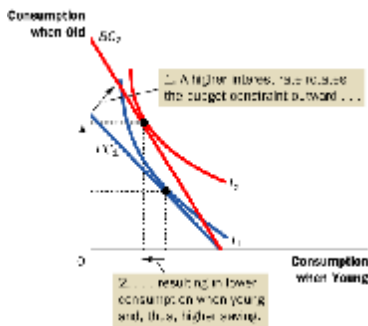
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### Application 3: Interest Rates and Saving



In this case,  $SE > IE$  and saving rises

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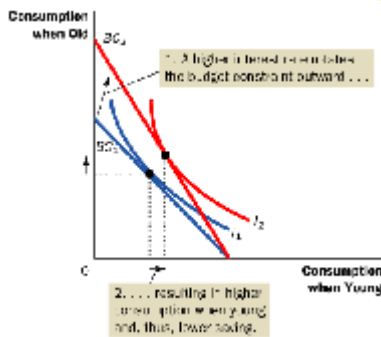
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### Application 3: Interest Rates and Saving



In this case,  $SE < IE$  and saving falls

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### CONCLUSION:

#### *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.

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