The Theory of Consumer Choice

EE211

Part III

APPLICATIONS

Application 1: Giffen Goods

Do all demand curves slope downward?

Consumer can sometimes violate the law of demand and buy more of a good when the price rises.

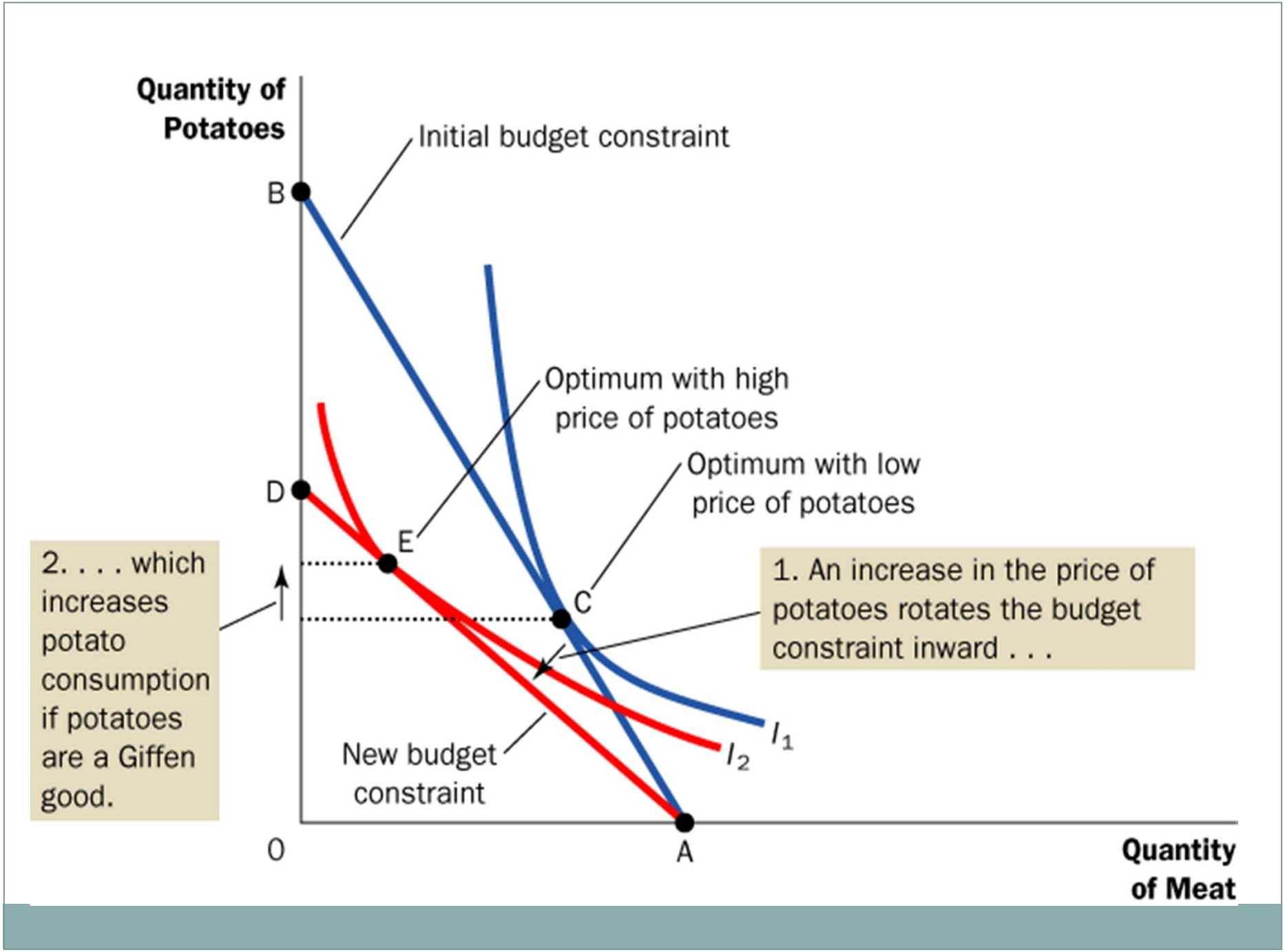
Giffen good – a good for which an increase in the price raises the quantity demanded

Giffen goods are inferior goods for which the income effect dominates the substitution effect. Therefore, they have demand curves that slope upward.

- Example, the consumer buys two goods – meat and potatoes

- If price of potatoes rises,
  - substitution effect: buy less potatoes
  - income effect: buy more potatoes

- If income effect > substitution effect,
  then potatoes are a **Giffen good**, a good for which an increase in price raises the quantity demanded.


Quantity of Potatoes
Initial budget constraint
B
Optimum with high price of potatoes
Optimum with low price of potatoes
D
E
C
2. . . . which increases potato consumption if potatoes are a Giffen good.
1. An increase in the price of potatoes rotates the budget constraint inward . . .
I_1
I_2
New budget constraint
0
A
Quantity of Meat

A recent study by Robert Jensen and Nolan Miller

- A field experiment for 5 months in the Chinese province of Hunan
- Randomly selected households vouchers that subsidized the purchase of rice, and used surveys to measure how consumption of rice responded to changes in the price
- Found strong evidence that poor households exhibited Giffen behavior – Lowering the price of rice with the subsidy voucher caused households to reduce their consumption of rice, and removing the subsidy had the opposite effect

Application 2: Wages and Labor Supply

- How do wages affect labor supply?
- We can use the same theory to analyze how a person allocates time. People spend some of their time enjoying leisure and some of it working so they can afford to buy consumption goods
- Trade-off between leisure and consumption

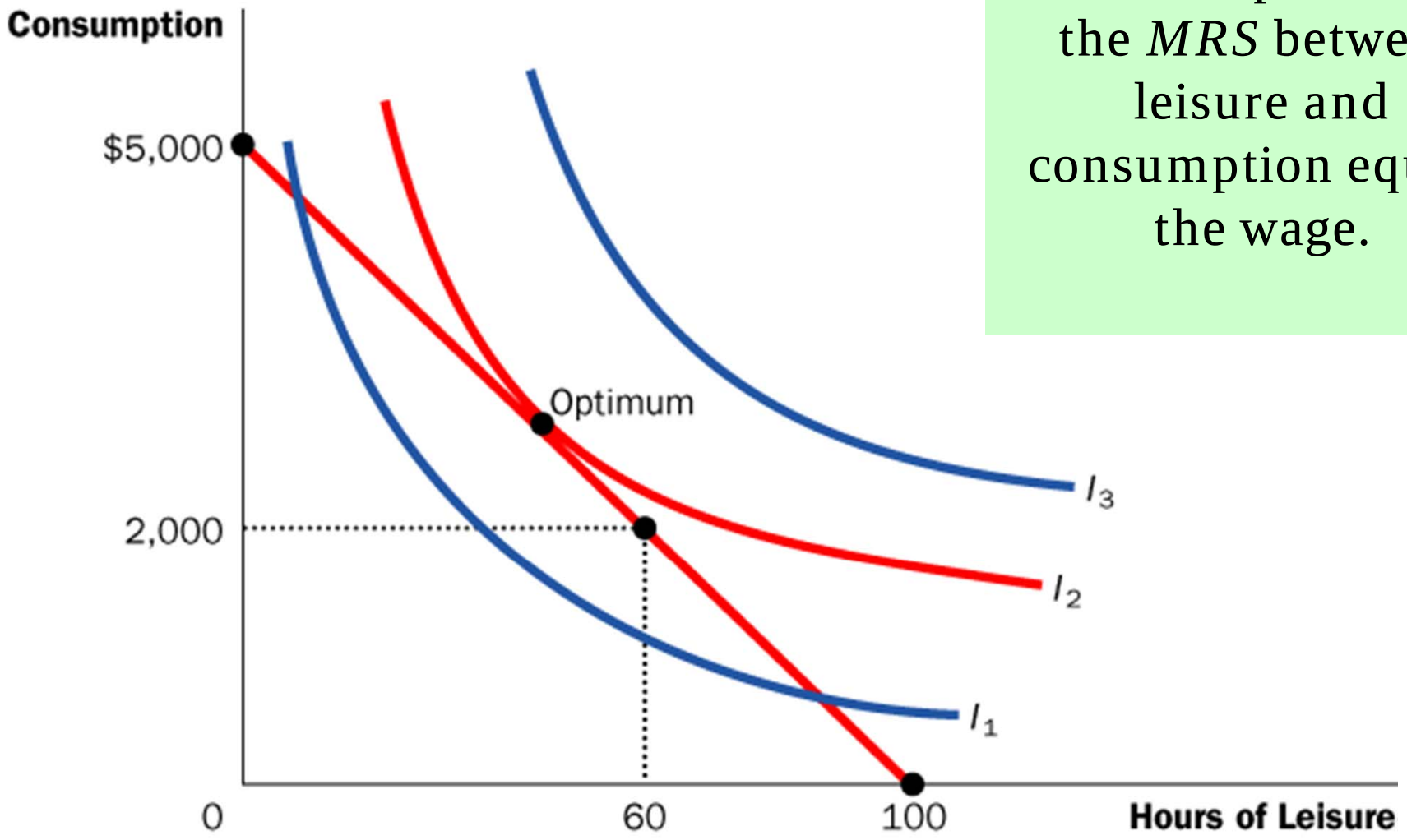
- Consider the decision facing Sally, a freelance software designer.
- Sally is awake for 100 hours per week. She spends some of her time enjoying leisure. She spends the rest of her time at computer developing software. For every hour she works developing software, she earns $50, which she spends on consumption goods.
- Her wage reflects the trade-off Sally faces between leisure and consumption. For every hour of leisure she gives up, she works one more hour and gets $50 of consumption

Budget constraint

- Shows a person's tradeoff between consumption and leisure.
- Depends on how much time she has to divide between leisure and working.
- The relative price of an hour of leisure is the amount of consumption she could buy with an hour's wages.

Indifference curve

- Shows "bundles" of consumption and leisure that give her the same level of satisfaction.

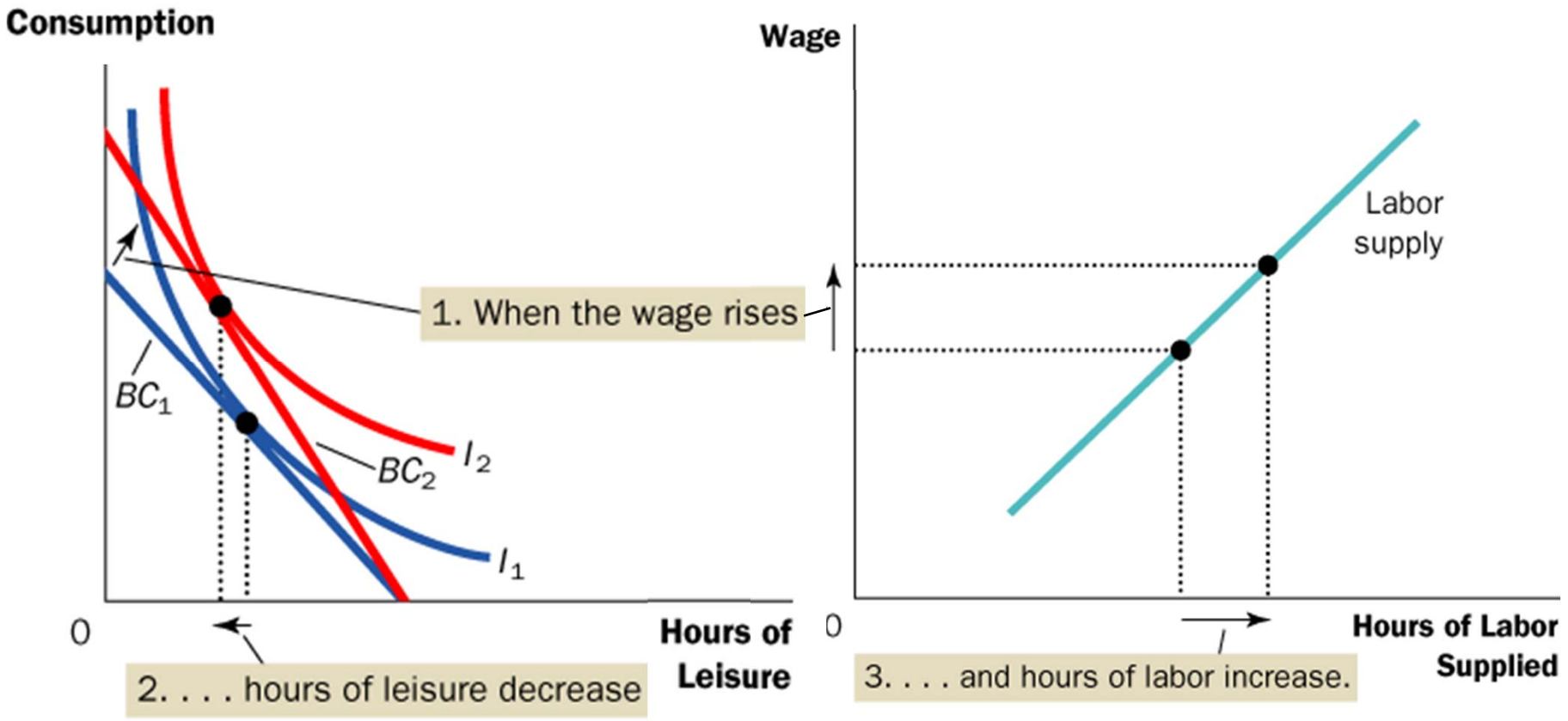


At the optimum, the *MRS* between leisure and consumption equals the wage.

Now consider what happens when Sally's wage increases from $50 to $60 per hour.

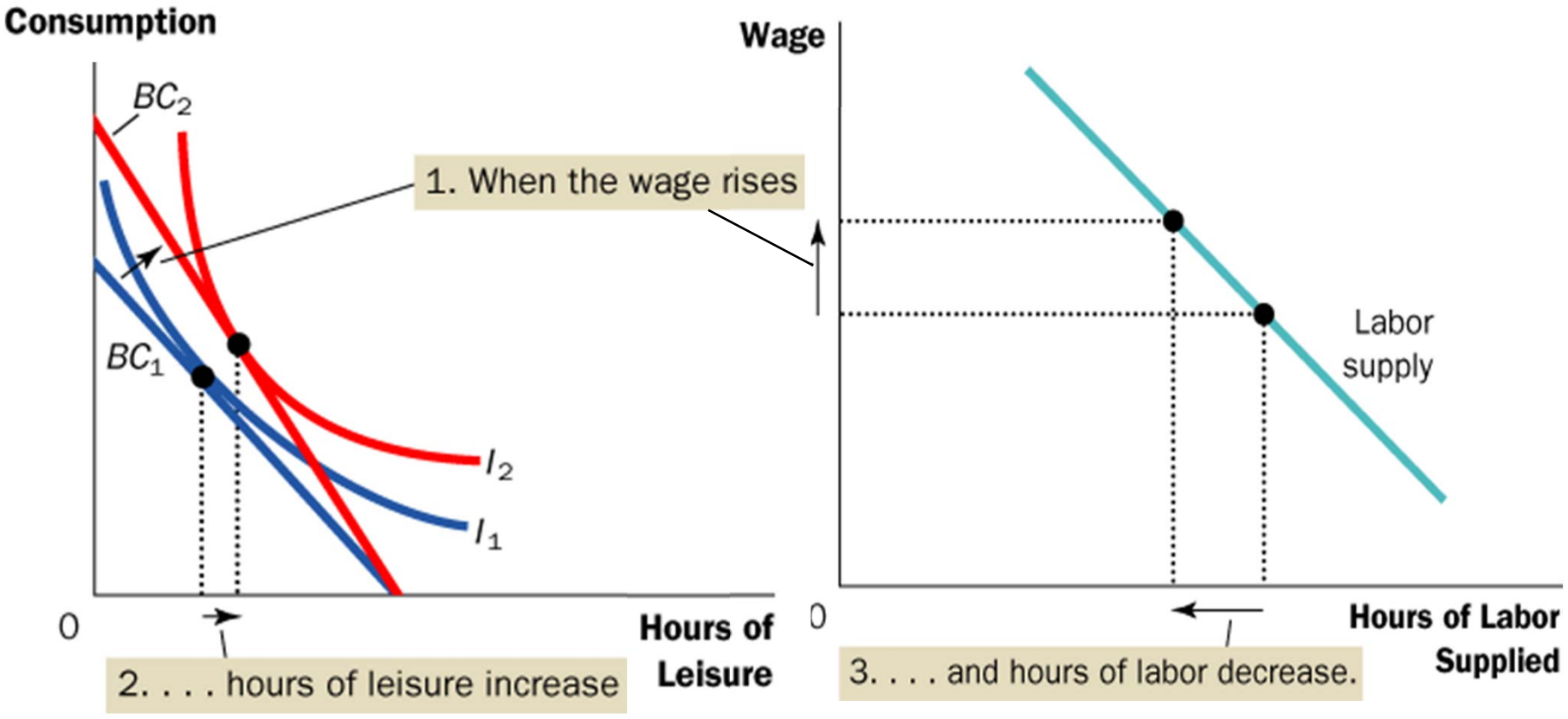
For this person, *SE* > *IE*

So her labor supply increases with the wage



For this person, $SE < IE$

So his labor supply falls when the wage rises



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

- *Substitution effect (SE)*: A higher wage makes leisure more expensive relative to consumption.

  The person chooses less leisure,
  i.e., increases quantity of labor supplied.

- *Income effect (IE)*: With a higher wage, she can afford more of both "goods."

  She chooses more leisure,
  i.e., reduces quantity of labor supplied.

- A higher wage induces Sally to enjoy less leisure and work more, so the labor-supply curve slopes upward.
- A higher wage induces Sally to enjoy more leisure and work less, so the labor supply curve is puzzling..
- The labor supply curve, therefore could be either upward or backward-sloping

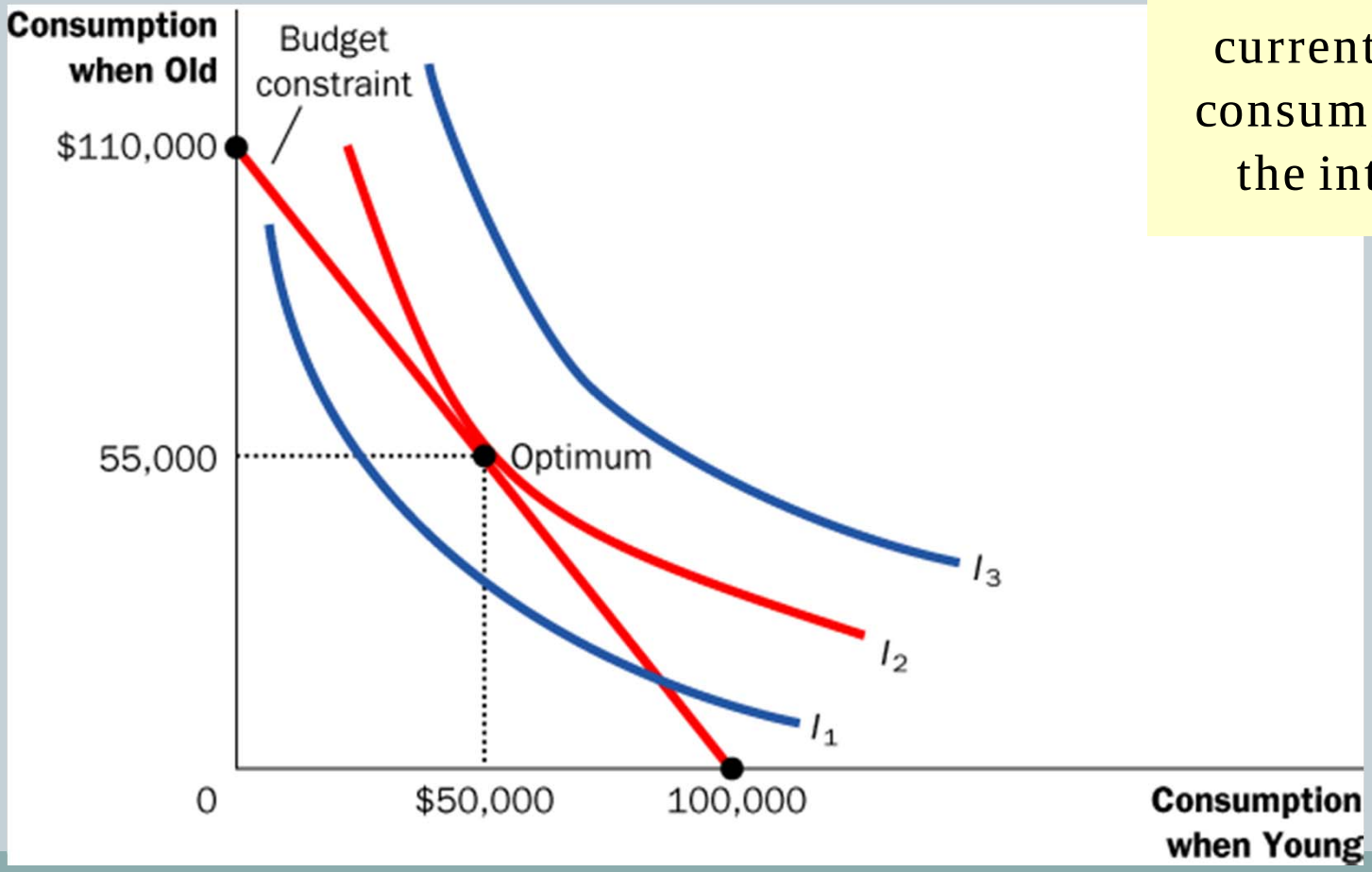
Application 3: Interest Rates and Saving

- How do interest rates affect household saving?
- Every person faces is how much income to consume today and how much to save for the future
- We can use the theory of consumer choice to analyze how people make this decision and how the amount they save depends on the interest rate their savings will earn.

- 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 (Suppose the interest rate is 10%)

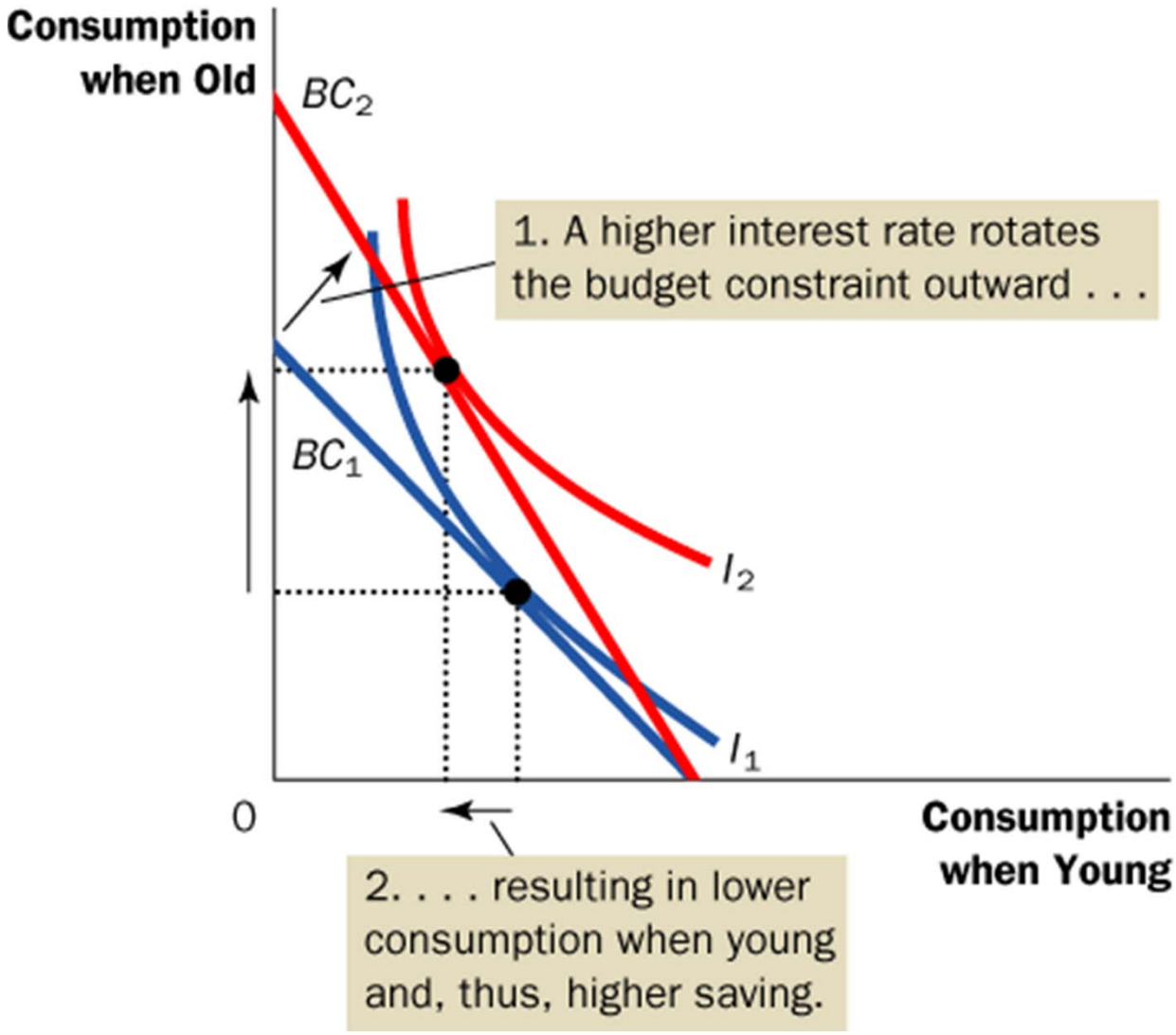
- The interest rate determines
  the relative price of consumption when young
  in terms of consumption when old.

Budget constraint shown is for 10% interest rate



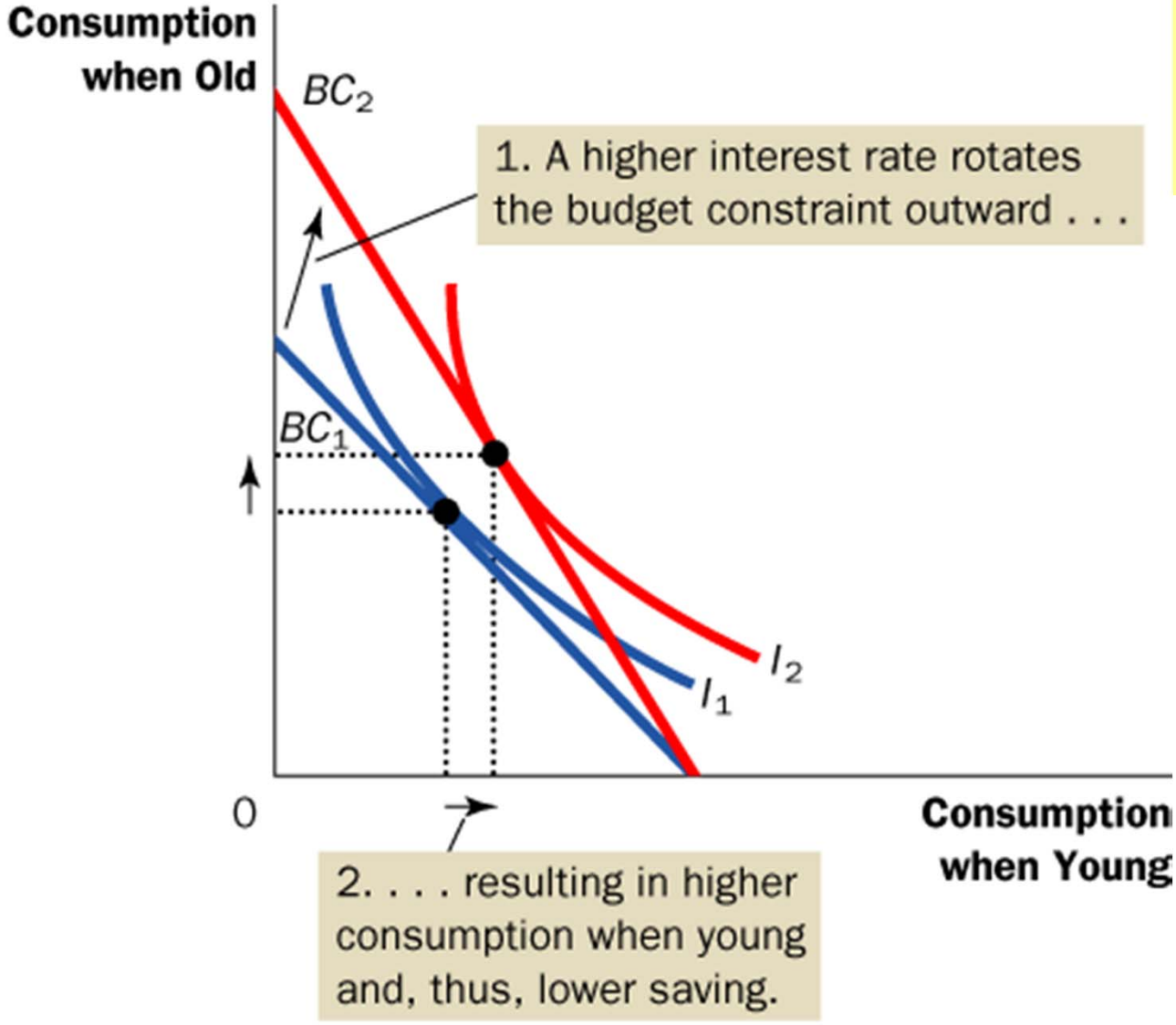
At the optimum, the *MRS* between current and future consumption equals the interest rate.

Now consider what happens when the interest rate increases from 10 percent to 20 percent.



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

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



Two possible outcomes

Substitution effect

- Current consumption becomes more expensive relative to future consumption.
- Current consumption falls, saving rises, future consumption rises.

Income effect

- Can afford more consumption in both the present and the future. Saving falls.

- In both cases, the budget constraint shifts outward and becomes steeper. At the new higher interest rate, Sam gets more consumption when old for every dollar of consumption that he gives up when young.

- In both cases, consumption when old rises.

Scenario 1 Sam responds to the higher interest rate by consuming less when young

If the substitution effect of a higher interest rate is greater than the income effect, Sam saves more.

Scenario 2 Sam responds by consuming more when young

If the income effect is greater than the substitution effect, Sam saves less.

- The theory of consumer choice says that an increase in the interest rate could either encourage or discourage saving

Source:

- Mankiw, N.G. (2012)