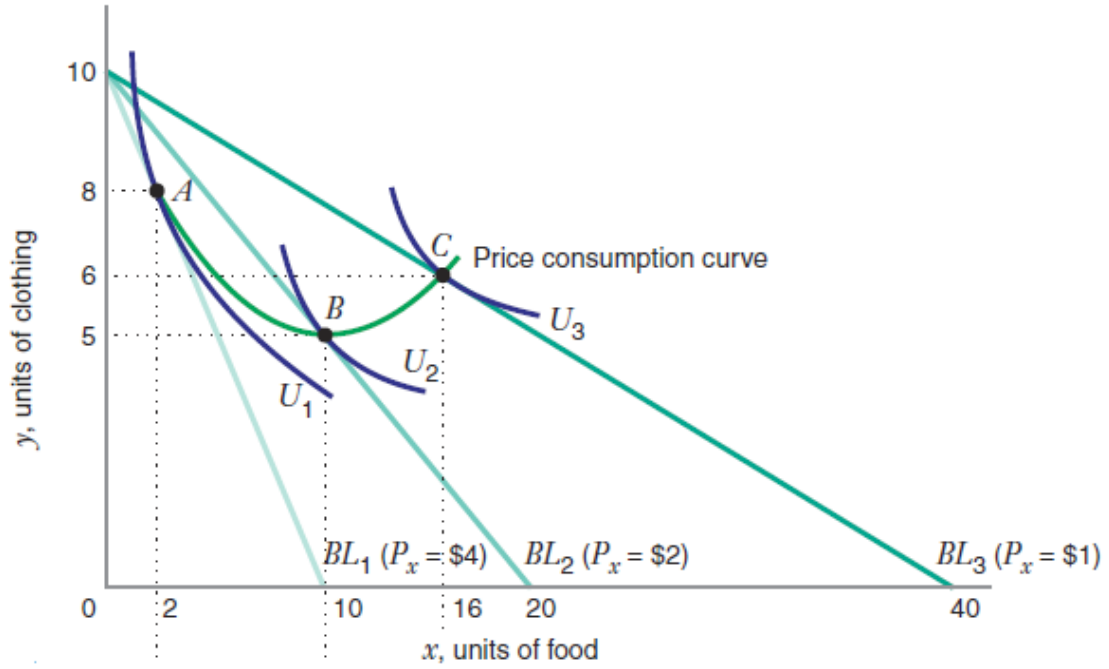
# Topic 3
# Theory of Demand

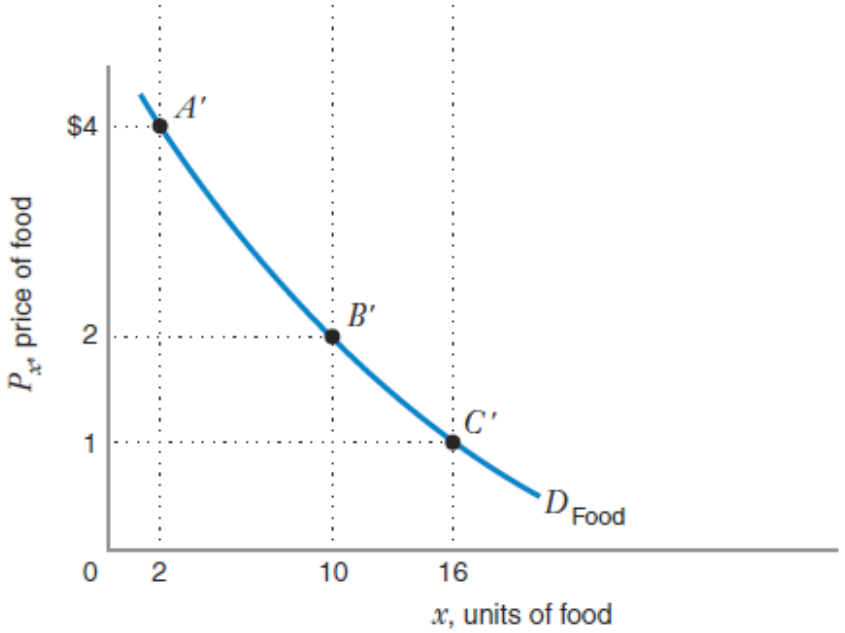
# Changes in Consumer Equilibrium

The consumer optimum can change due to the followings:

- Change in the price, which can be used to draw
  - 
  - 
- Change in the income, which can be used to draw
  - 
  - 

# Price-Consumption and Demand Curves



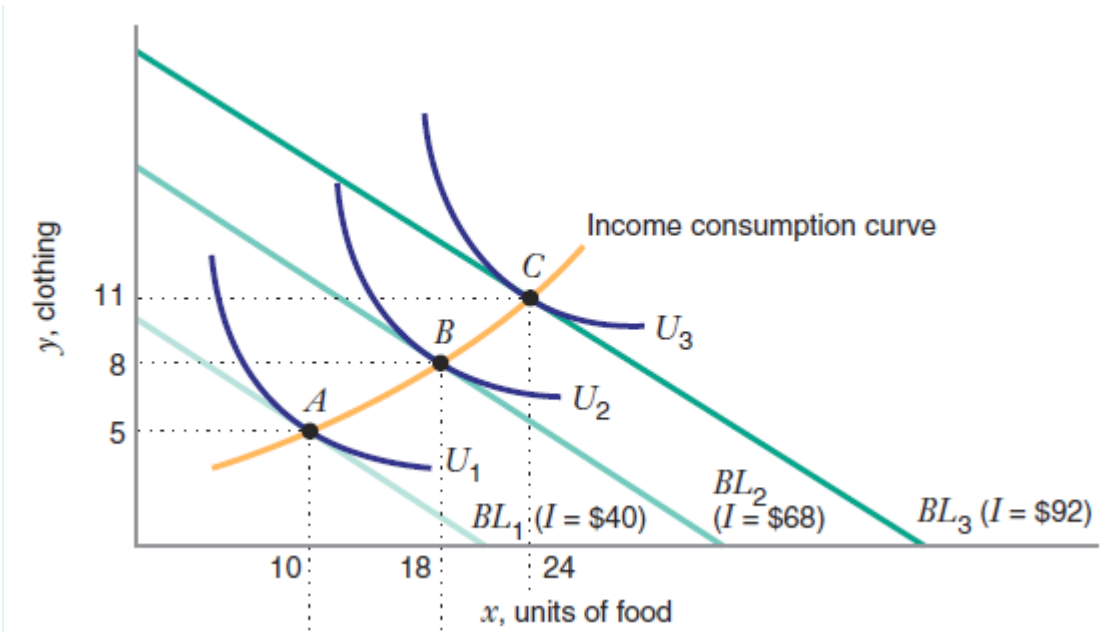



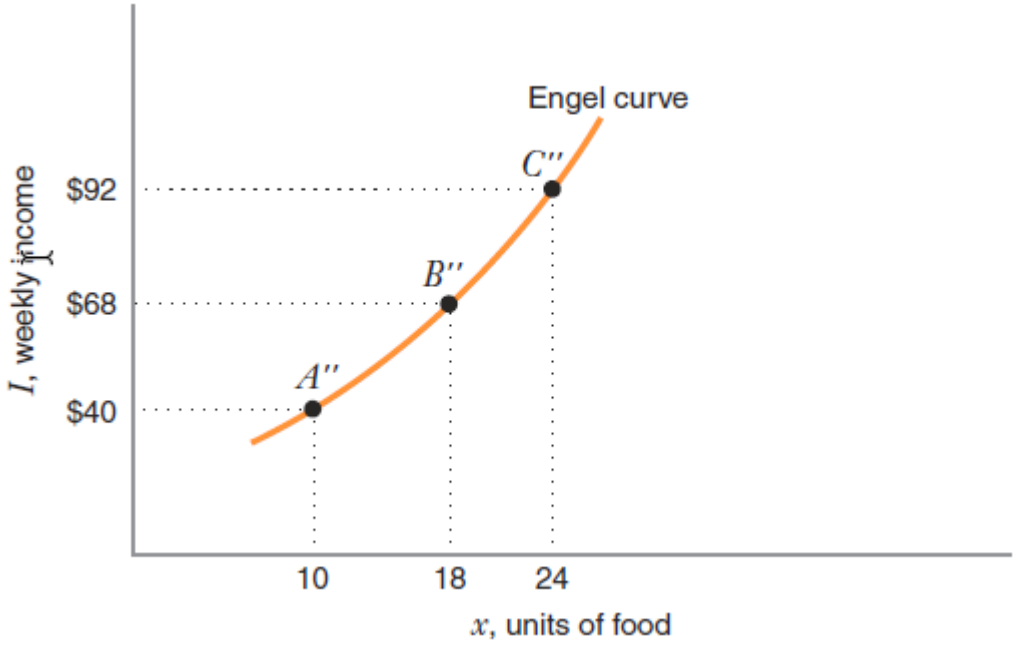
# Price-Consumption and Demand Curves

## Price-Consumption Curve

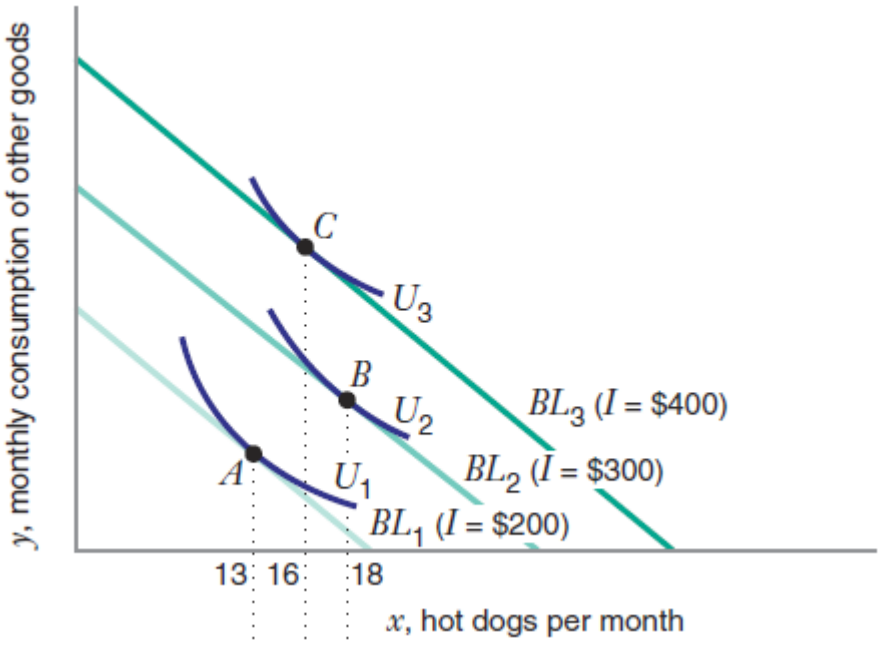
## Demand Curve

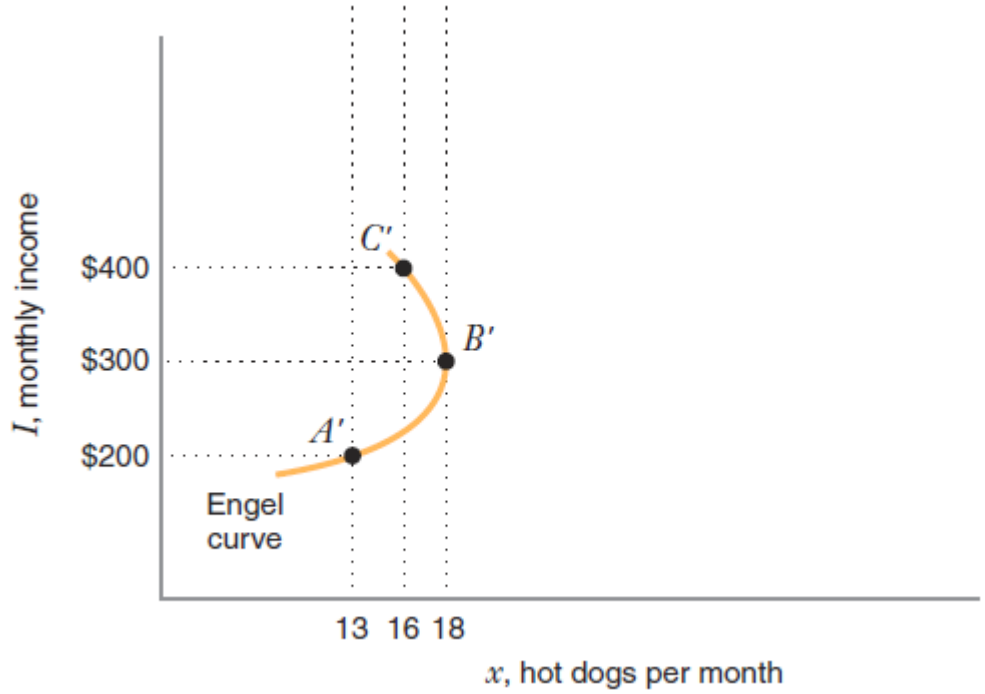
# Income-Consumption and Engel Curves



# Income-Consumption and Engel Curves



# Income-Consumption and Engel Curves

## Income-Consumption Curve

## Engel Curve

# Decomposition of the Price Effect

- When the price of a good changes, its quantity demanded changes.
- Economists believe that this change in demand is due to **the sum of two effects**:
  - –
  - –
- That is, **Total Effect (TE) = SE + IE**.

# Decomposition of the Price Effect

- **Substitution Effect**

- **Income Effect**

# Decomposition of the Price Effect

**Notation**

$X_A$

$X_B$

$X_C$

# Decomposition of the Price Effect

**CASE 1: Suppose X is a normal good and Px decreases.**

Quantity Demanded of Good X

- SE and IE work in the same direction.
- **TE: When Px falls, Qx rises a lot.**

# Decomposition of the Price Effect

**CASE 2: Suppose X is a inferior good and Px decreases.**

Quantity
Demanded
of Good X

- SE and IE work in the opposite direction, and SE > IE.
- **TE: When Px falls, Qx rises a little.**

# Decomposition of the Price Effect

**CASE 3: Suppose X is a Giffen good and Px decreases.**

Quantity
Demanded
of Good X

- SE and IE work in the opposite direction, but IE > SE.
- **TE: When Px falls, that Qx falls.**

# Identifying the Substitution Effect

We will study two approaches to identify the substitution effect ($X_B$).

- **Hicksian Method**

- **Slutskian Method**

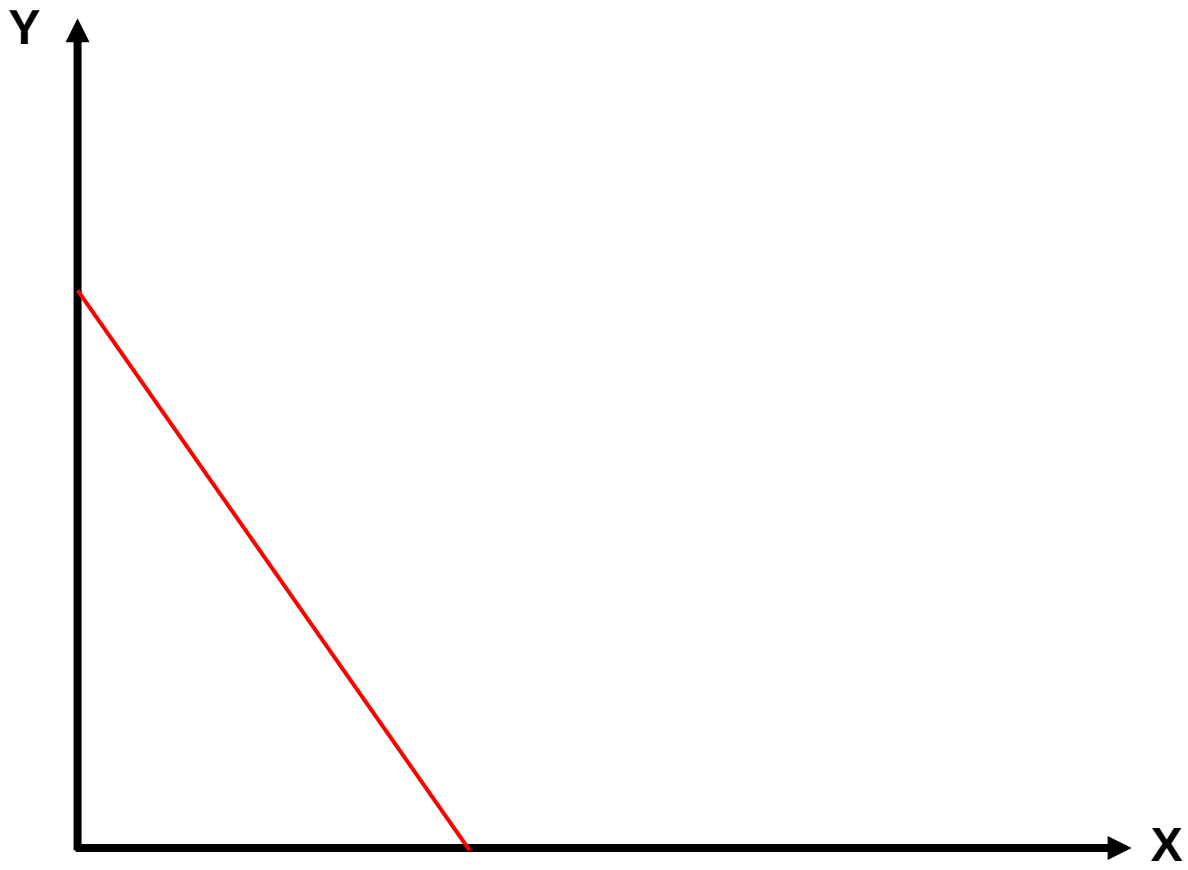
# Identifying the Substitution Effect

**Hicksian Method**

**Slutskian Method**

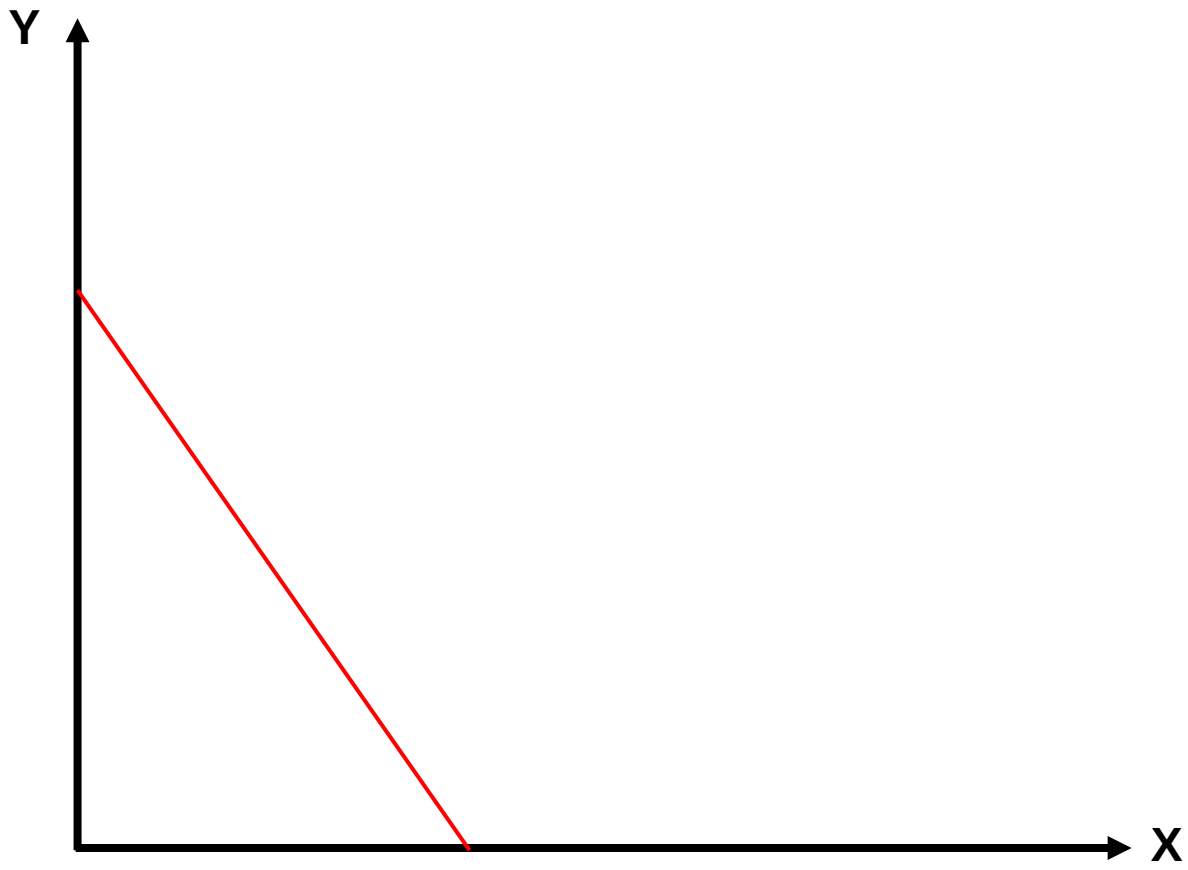
# Hicksian Method to identify the SE

**Case 1: Px falls, and X is a normal good.**



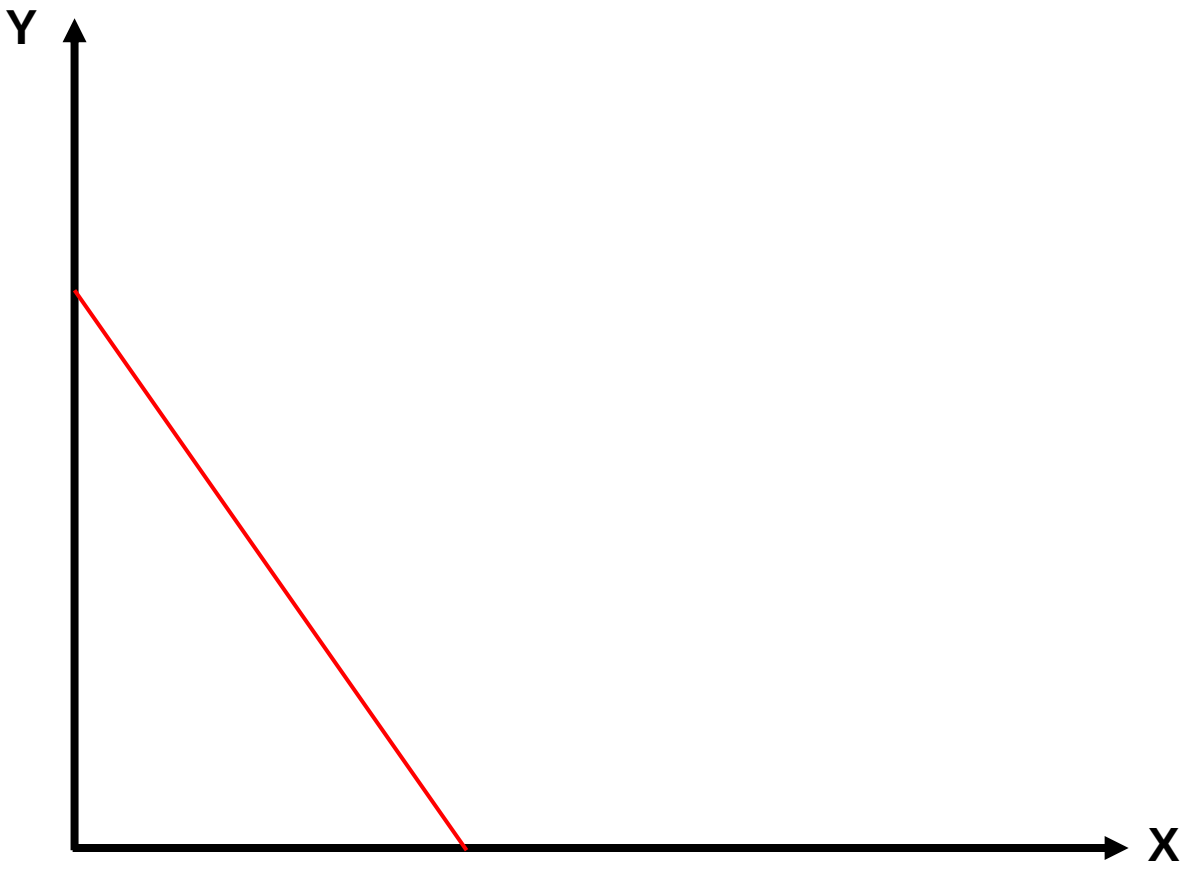
# Hicksian Method to identify the SE

**Case 2: Px falls, and X is an inferior good.**



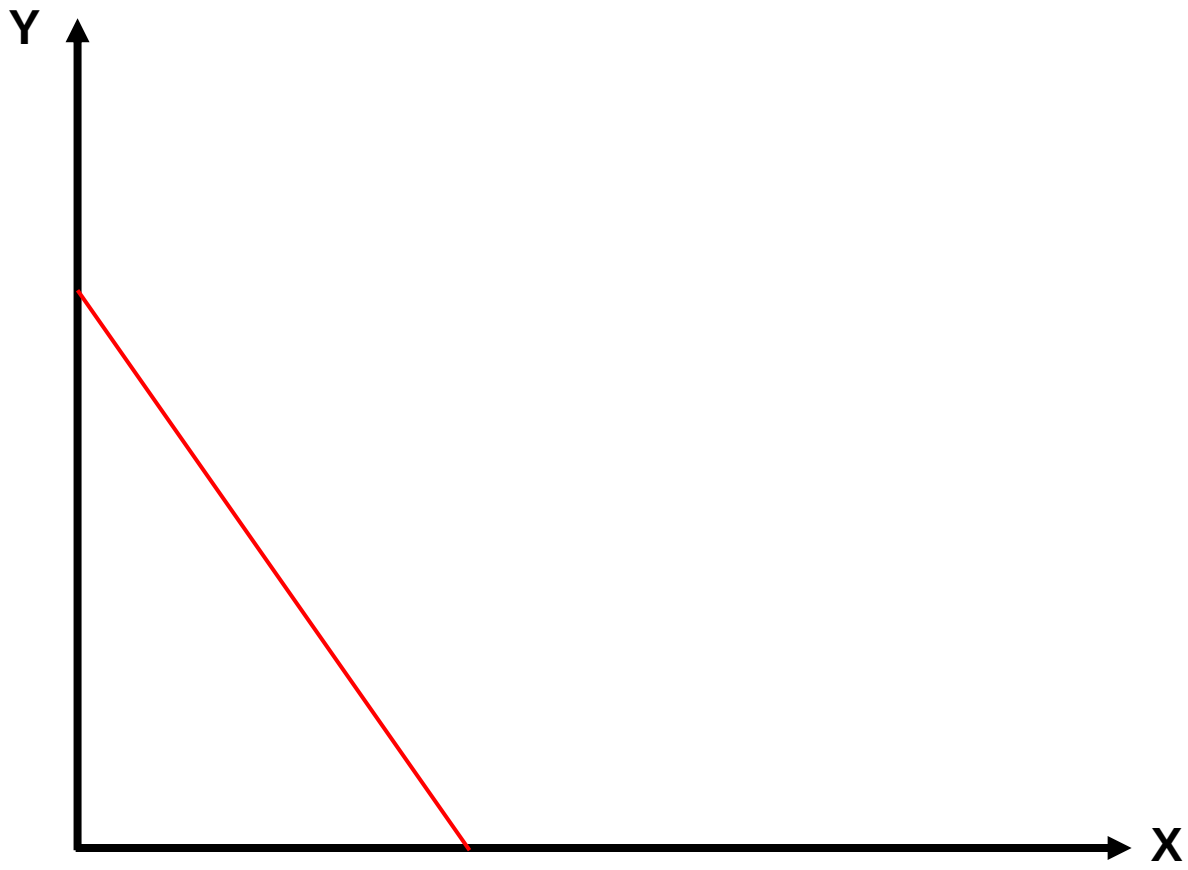
# Hicksian Method to identify the SE

**Case 3: Px falls, and X is a Giffen good.**



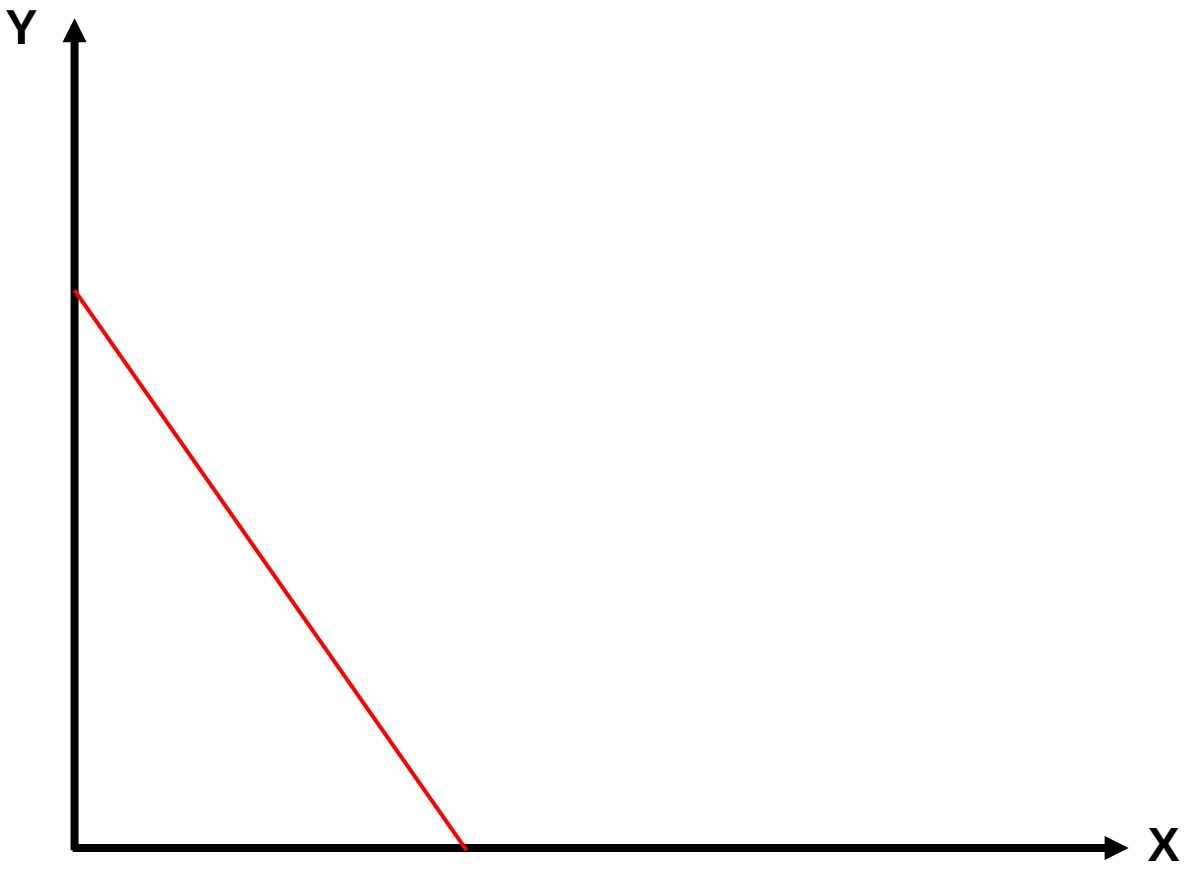
# Slutskian Method to identify the SE

**Case 1: Px falls, and X is a normal good.**



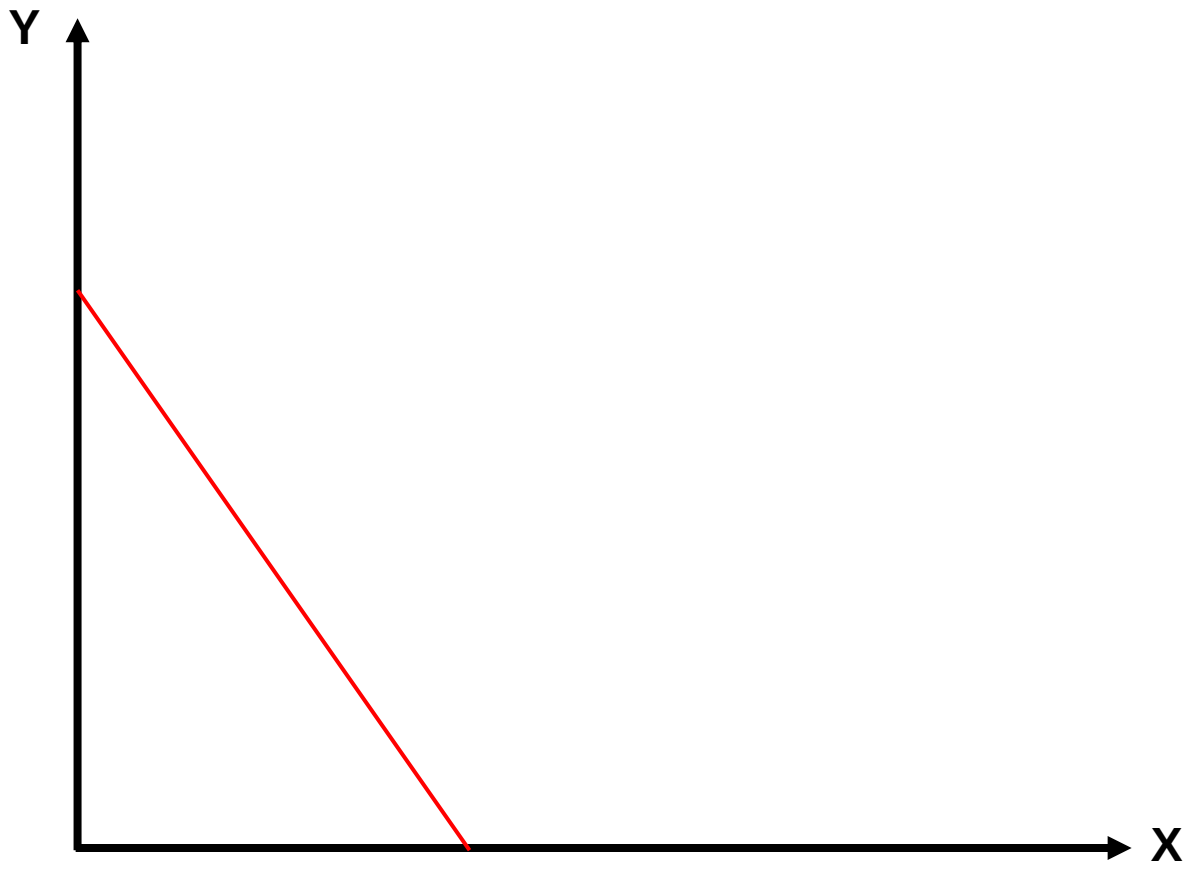
# Slutskian Method to identify the SE

**Case 2: Px falls, and X is an inferior good.**



# Slutskian Method to identify the SE

**Case 3: Px falls, and X is a Giffen good.**



# Income Compensation in the Two Approaches

**Notice that the imaginary budget lines of both approaches imply the consumer's income were changed.**

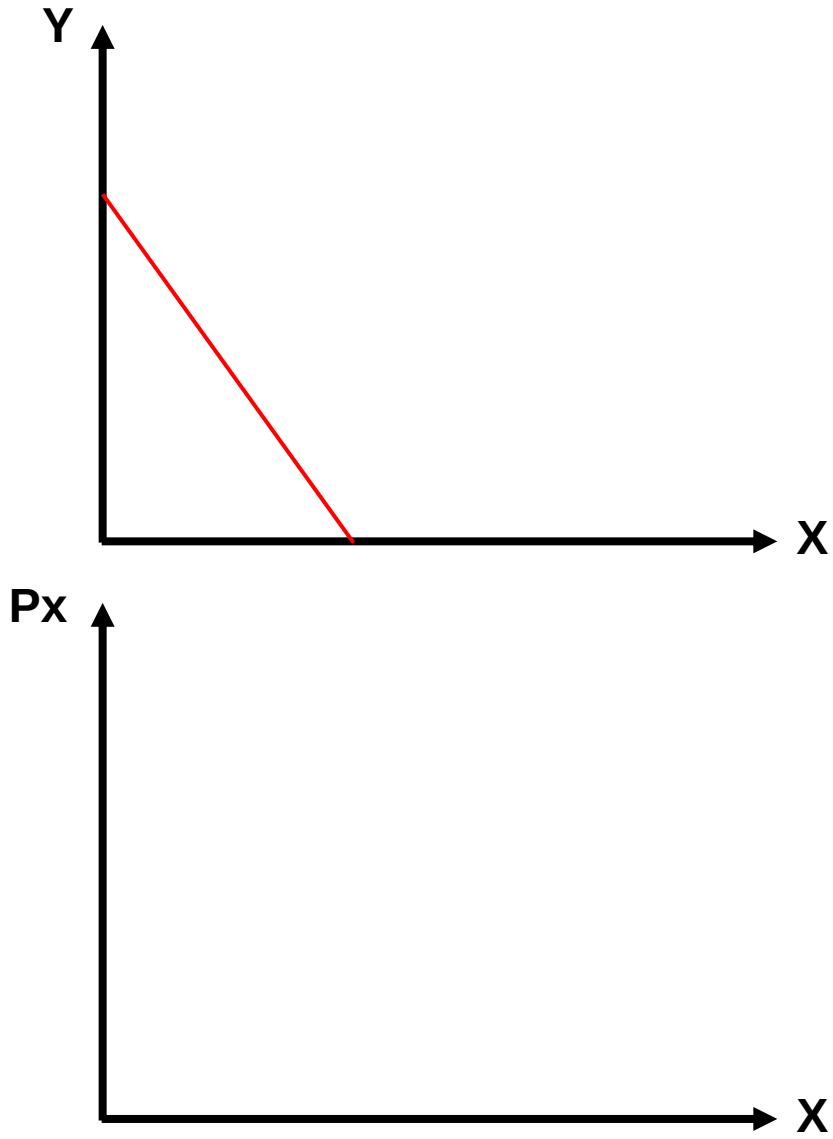
- Hicksian Method

- Slutskian Method

# Compensated Demand and Uncompensated Demand

- Uncompensated Demand (Marshallian Demand)

- Compensated Demand



# Decomposition of the Price Effect

## LEARNING-BY-DOING EXERCISE 5.4

### Finding Income and Substitution Effects Algebraically

In Learning-By-Doing Exercises 4.2 and 5.2, we met a consumer who purchases two goods, food and clothing. He has the utility function $U(x, y) = xy$, where $x$ denotes the amount of food consumed and $y$ the amount of clothing. His marginal utilities are $MU_x = y$ and $MU_y = x$. Now suppose that he has an income of \$72 per week and that the price of clothing is $P_y = \$1$ per unit. Suppose that the price of food is initially $P_{x_1} = \$9$ per unit and that the price subsequently falls to $P_{x_2} = \$4$ per unit.

**Problem** Find the numerical values of the income and substitution effects on food consumption, and graph the results.