McEachern **ECON** 2010-2011

# CHAPTER 1

## The Art and Science of Economic Analysis

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# The Economic Problem

- Wants, desires: unlimited
- Resources: scarce
- Economic choice
- Economics
  - How people use scarce resources to satisfy unlimited wants

LO1

# Resources

- Inputs; factors of production
  - Used to produce goods and services
- Goods and services are scarce because resources are scarce

1. Labor
2. Capital
3. Natural Resources
4. Entrepreneurial ability

LO1

# Resources

- Labor – human effort
  - Physical effort
  - Mental effort
  - Time
  - Payment: Wage
- Capital – human creations
  - Physical capital
  - Human capital
  - Payment: Interest

LO1

# Resources

- Natural resources – Gifts of nature
  - Renewable
  - Exhaustible
  - Payment: Rent
- Entrepreneurial ability
  - Talent, idea
  - Risk of operation
  - Payment: Profit

LO1

# Goods and Services

- Good: see, feel, touch
- Service: intangible
- Scarce good/service
  - The amount people desire exceeds the amount available at zero price
- Choice
  - Give up some goods and services

LO1

# Goods and Services

- Bads
  - We want none of them; not even at a zero price
- Free goods and services
- "There is no such thing as a free lunch"
  - Involve a cost to someone

LO1

# Economic Decision Makers

- Households
  - Consumers
    - Demand goods and services
  - Resource owners
    - Supply resources
- Firms, Governments, Rest of the World
  - Demand resources
  - Produce goods and services

LO1

# Markets

- Bring together buyers and sellers
- Determine price and quantity
- Product markets
  - Goods and services
- Resource markets
  - Resources

LO1

# A Simple Circular-Flow Model

- Flow of
  - Resources
  - Products
  - Income
  - Revenue
    - Among economic decision makers
- Interaction
  - Households
  - Firms

LO1

LO1

# The Simple Circular-Flow Model for Households and Firms

Exhibit 1

Households
- Supply resources to resource market; earn income
- Demand goods and services from product market; spend income

Firms
- Demand resources to produce goods and services; payment for resources
- Supply goods and services to product market earn revenue

# Rational Self-Interest

- Individuals are rational
  - Make the best choice
  - Given the available information
  - Maximize expected benefit
    - With a given cost
  - Minimize expected cost
    - For a given benefit
- The lower the personal cost of helping others, the more help we offer

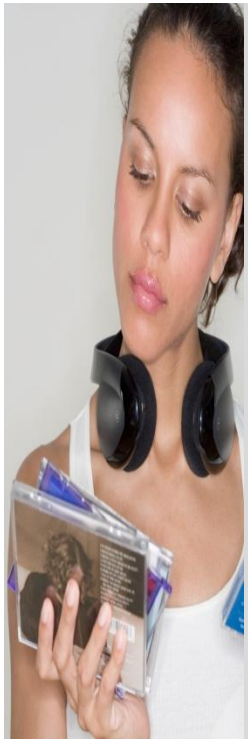
$LO^2$

# Choice Requires Time and Information

- Time and information – scarce; valuable
- Rational decision makers
  - Willing to pay for information
    - Improve choices
  - Acquire information
    - Additional benefit expected exceeds the additional cost

$LO^2$

# Economic Analysis Is Marginal Analysis



- Expected marginal benefit
- Expected marginal cost
- Marginal
  - Incremental, additional, extra
- Rational decision maker:
  - Change the status quo if expected marginal benefit exceeds expected marginal cost

$LO^2$

# Microeconomics and Macroeconomics

- Microeconomics
  - Individual economic choices
  - Markets coordinate the choices of economic decision makers
  - Individual pieces of the puzzle
- Macroeconomics
  - Performance of the economy as a whole
  - Big picture

LO2

# The Science of Economic Analysis

- Economic theory / model
  - Simplification of economic reality
  - Important elements of the problem
  - Make predictions about the real word
- Good theory
  - Guide
  - Sort, save, understand information

LO3

# The Scientific Method

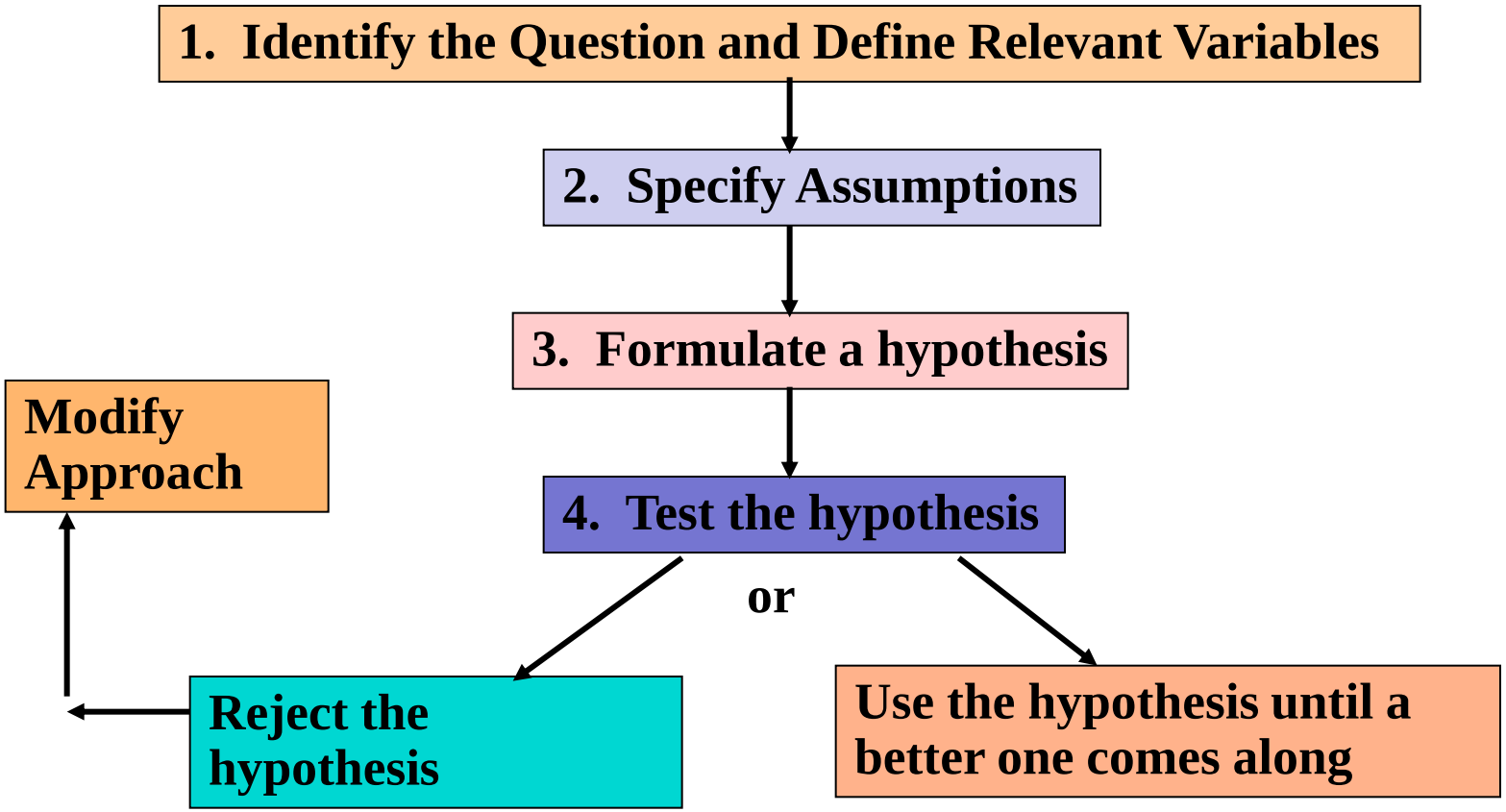
1. Identify the question and define relevant variables
2. Specify assumptions
   - Other-things-constant
   - Behavioral assumptions
3. Formulate the hypothesis
   - Key variables relate to each other
4. Test the hypothesis - evidence


LO3

LO3

Exhibit 2

# The Scientific Method: Step by Step



# Normative Versus Positive

- Positive economic statement
  - Assertion about economic reality
  - Supported or rejected by evidence
  - True or false
  - ‘What is’
- Normative economic statement
  - Opinion
  - ‘What should be’

LO3

LO3

# A Yen for Vending Machines

Case Study

- Japan – lower unemployment
  - Low birthrate
  - No immigration
  - Aging population
- Vending machines
  - Wider variety of products
  - Preferred

# Predicting Average Behavior

- Individual behavior
  - Difficult to predict
  - Random actions of individuals
    - Offset one another
- Average behavior of groups
  - Predicted more accurately

LO3

# Pitfalls of Faulty Economic Analysis

- The fallacy that association is causation
  - Event A caused event B – associated in time
- The fallacy of composition
  - What is true for the individual is true for the group
- The mistake of ignoring the secondary effects
  - Unintended consequences

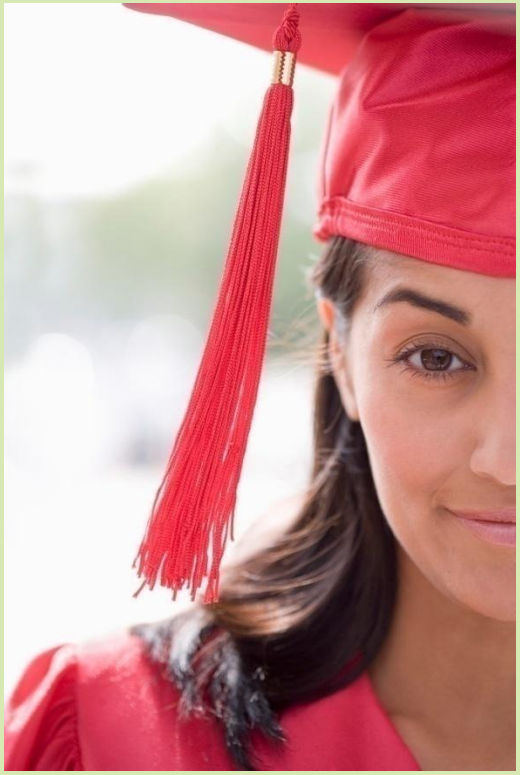
LO4

LO5

# College Major and Annual Earnings

Case Study

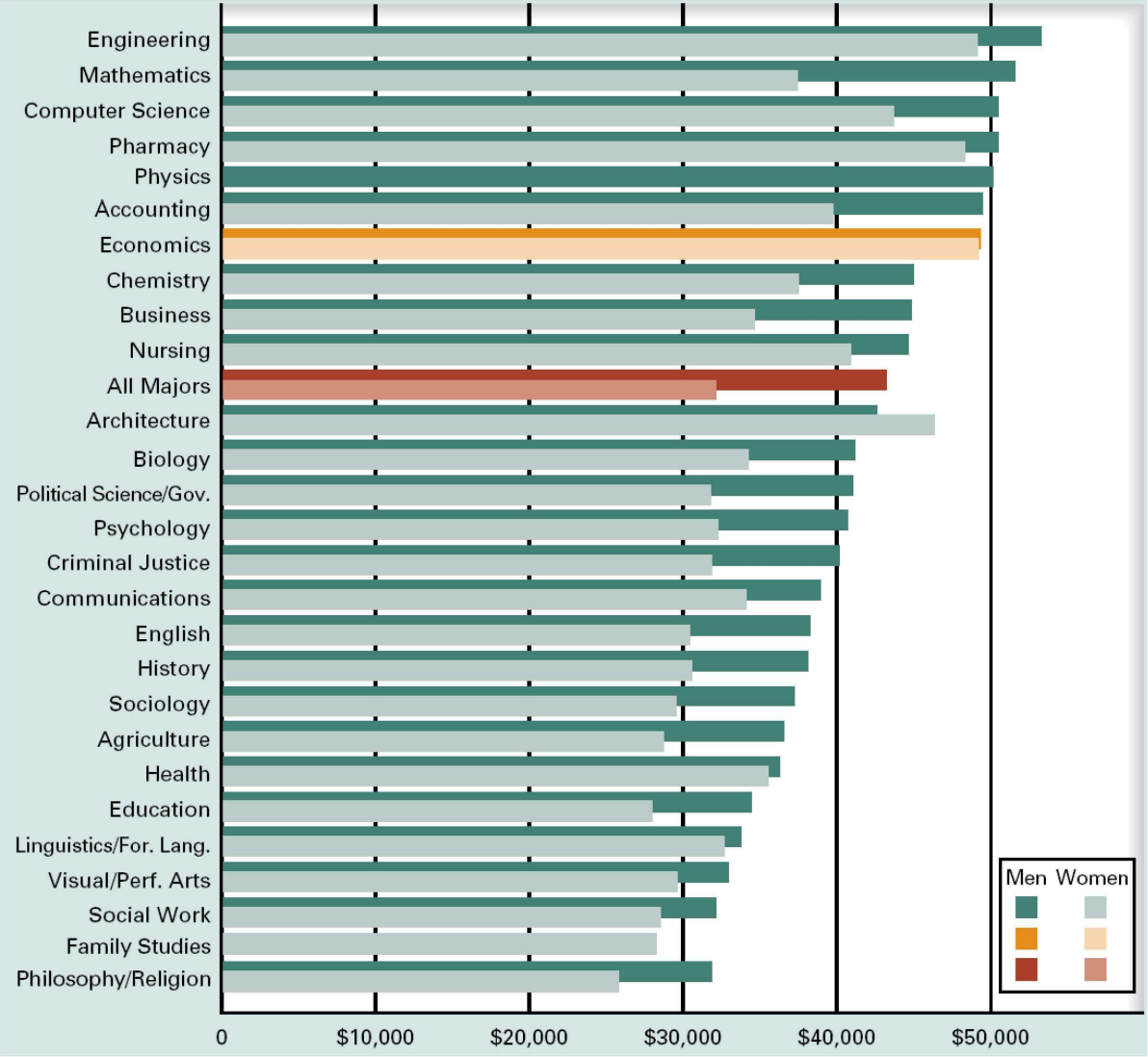
- College degree
  - Better jobs
  - Higher pay
  - Median annual earnings
    - Men: $43,199
    - Women: $32,155
- Major in economics
  - Rank: #7
  - No gap between men and women



LO5

Exhibit 3

# Median Annual Earnings of 35- to 44-Year-Olds with Bachelor's as Highest Degree, by Major



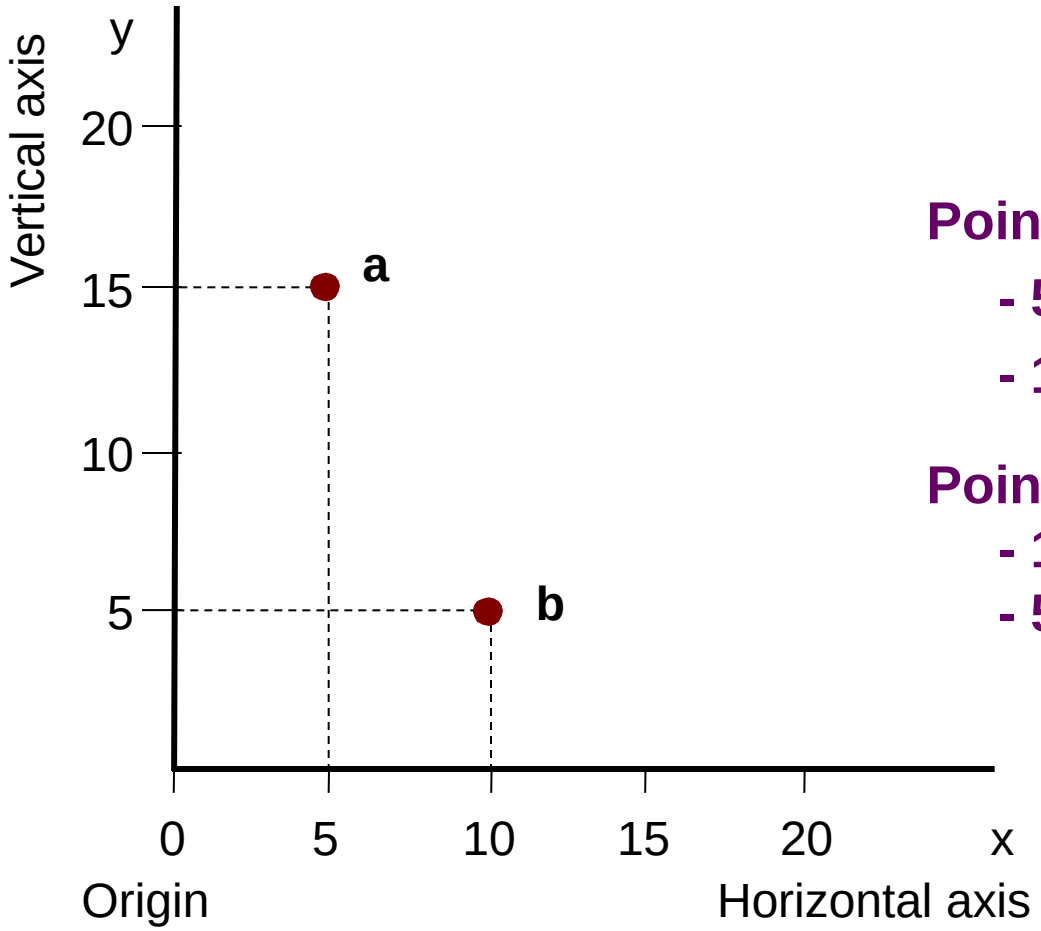
APPENDIX

# Understanding Graphs

- Origin
- Horizontal axis
- Vertical axis
- Graph
- Functional relation
  - Dependent variable
  - Independent variable

Exhibit 4

# Basics of a Graph




**Point a:**

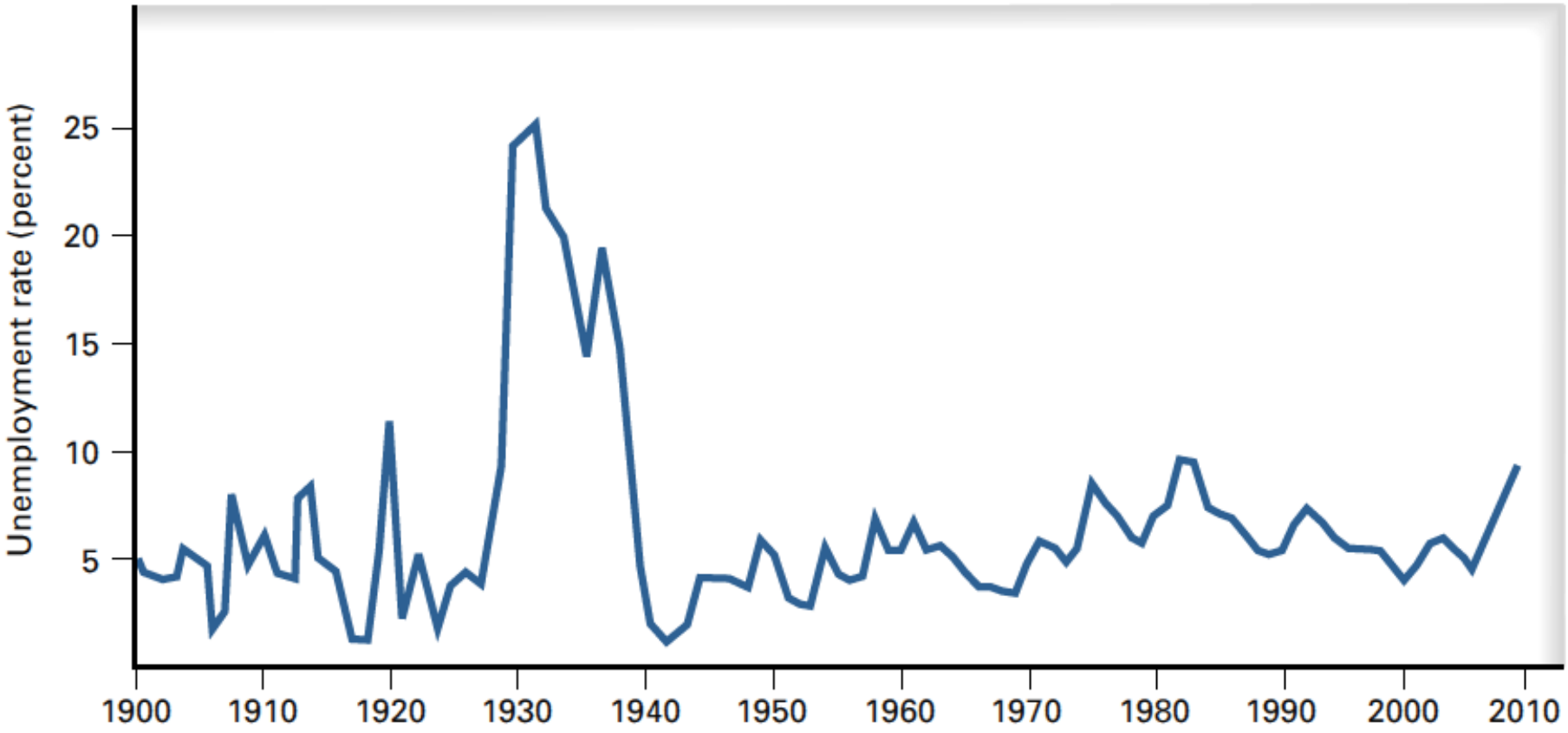
- 5 units X
- 15 units Y

**Point b:**

- 10 units X
- 5 units Y

# Exhibit 5

## U.S. Unemployment Rate Since 1900



APPENDIX

# Drawing Graphs

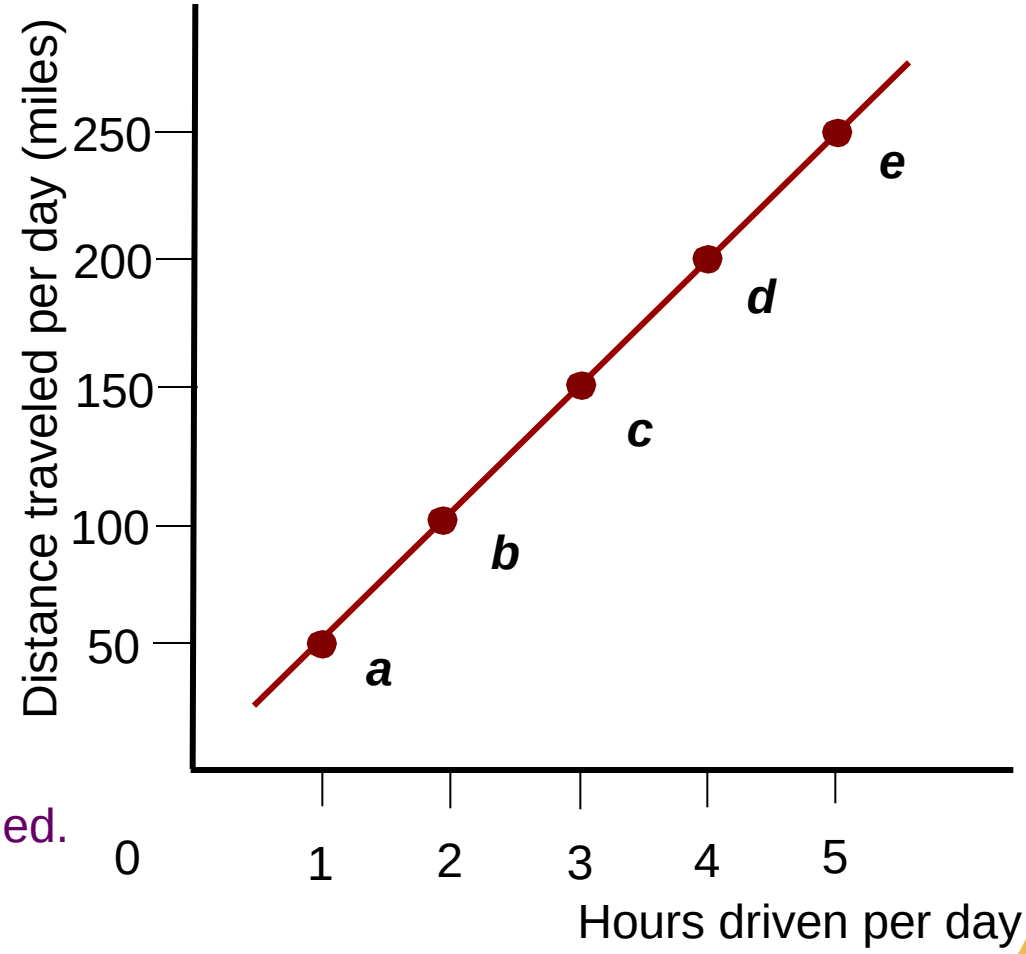
- Dependent variable
  - Depends on the independent variable
- Types of relations between variables
  - Positive; direct
  - Negative; inverse
  - Independent; unrelated

# Exhibit 6; Exhibit 7

## Schedule and Graph Relating Distance Traveled to Hours Driven

| | Hours driven per day | Distance traveled per day (miles) |
|---|---|---|
| *a* | 1 | 50 |
| *b* | 2 | 100 |
| *c* | 3 | 150 |
| *d* | 4 | 200 |
| *e* | 5 | 250 |

Points *a* through *e* depict different combinations of hours driven per day and the corresponding distances traveled. Connecting these points graphs a line.



APPENDIX

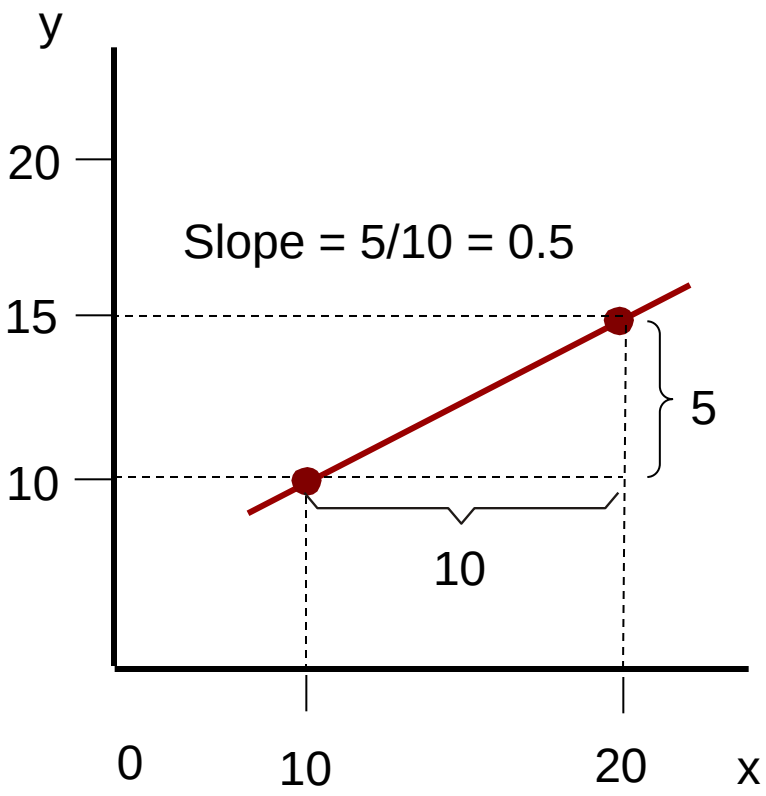
# Slopes of Straight Lines

- Slope
  - Change in vertical variable
  - For a given increase in horizontal variable
- Slope = Change in the vertical distance/ Increase in the horizontal distance
- Slope of a straight line
  - The same value along the line

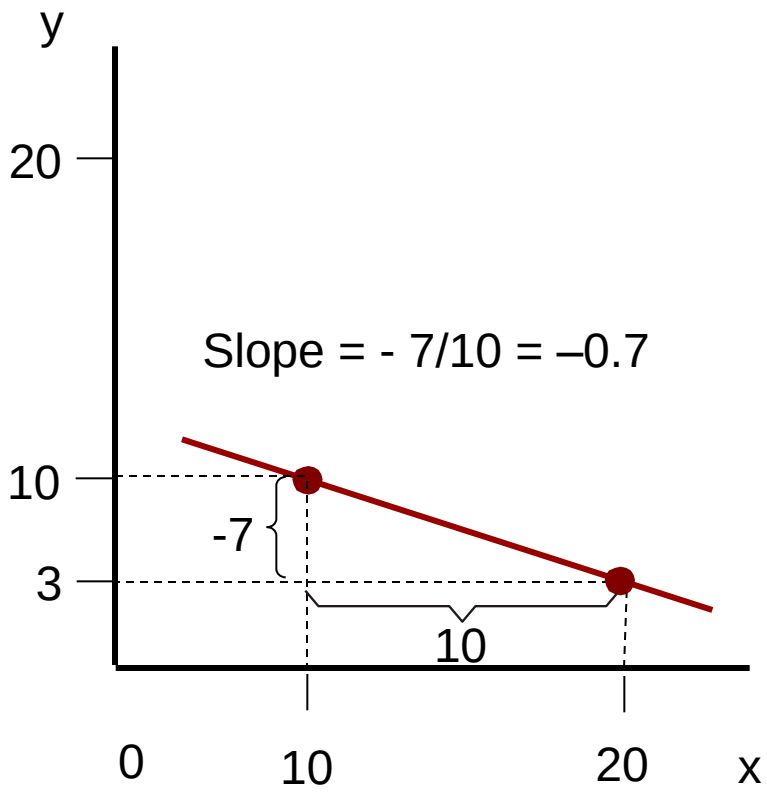
# Exhibit 8(a), (b)

## Alternative Slopes for Straight Lines

*(a) Positive relation*

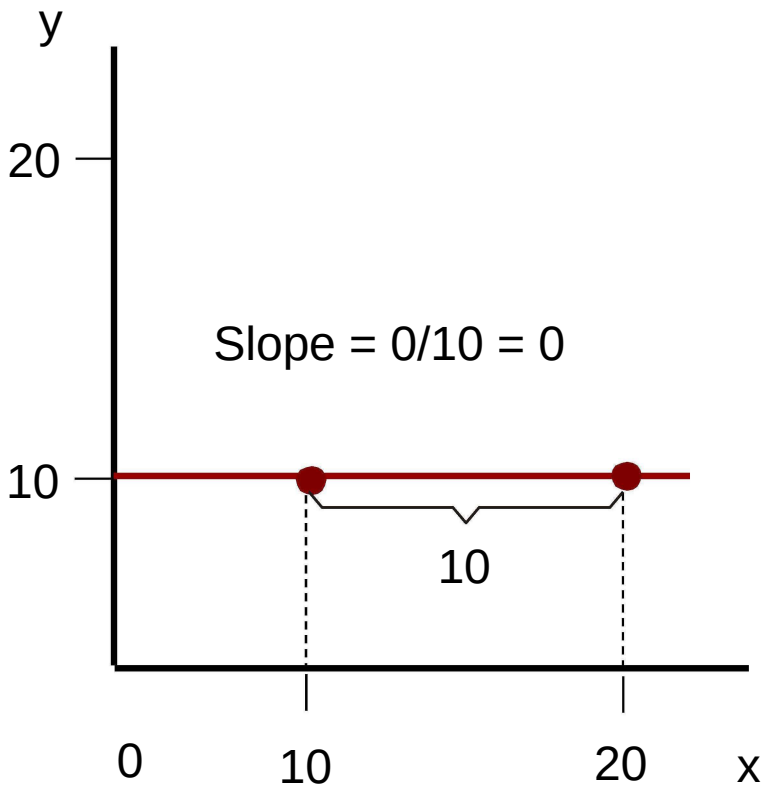



*(b) Negative relation*

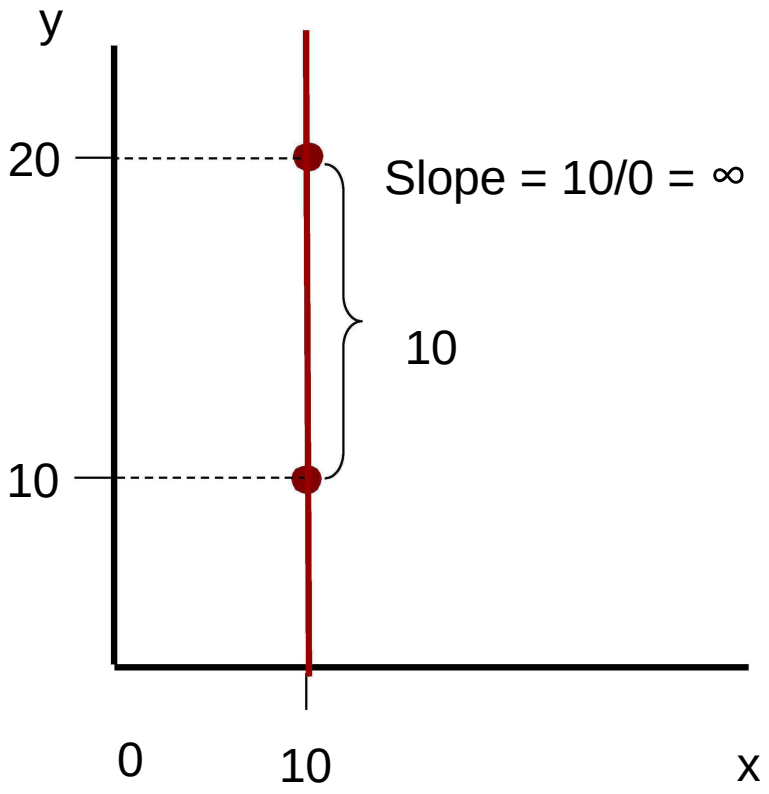


# Alternative Slopes for Straight Lines

*(c) No relation: zero slope*




*(d) No relation: infinite slope*



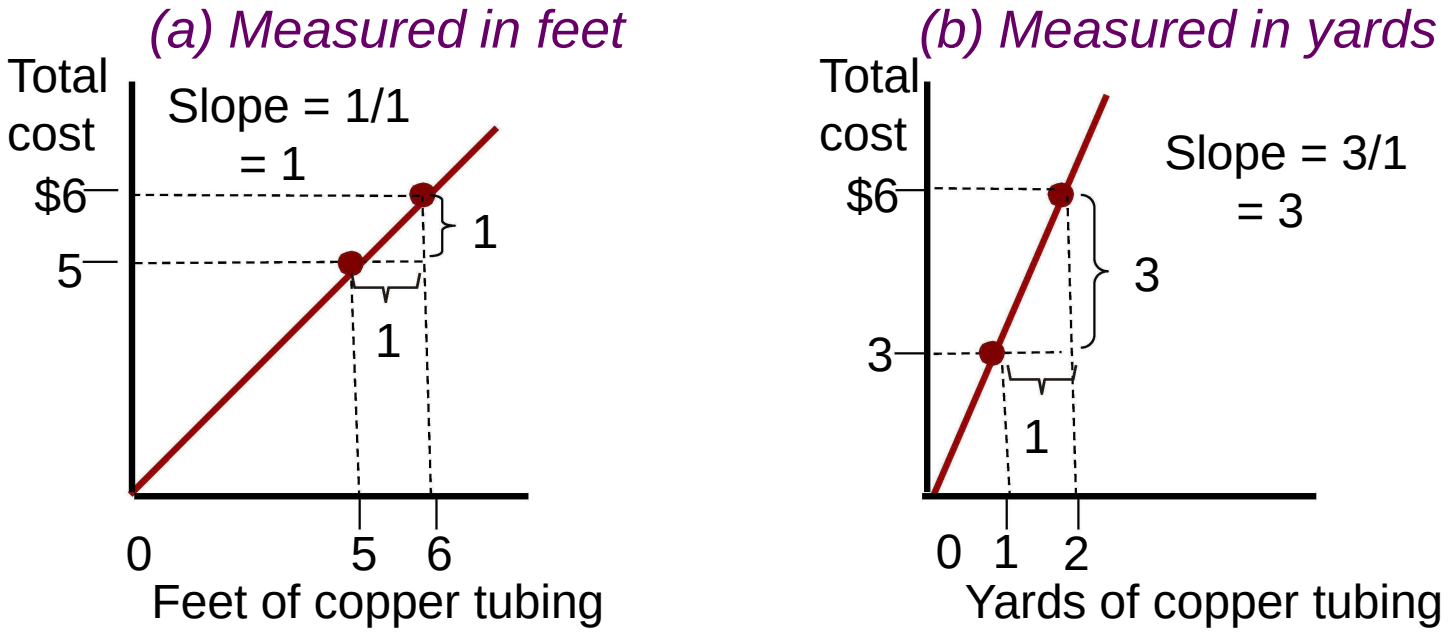
APPENDIX

# Slope, Units of Measurement, Marginal Analysis

- Value of slope
  - Depends on units of measurement
  - Measures marginal effects

# Exhibit 9

## Slope Depends on the Unit of Measure




(a) Output is measured in feet of copper tubing.
(b) Output is measured in yards.
The cost: $1 per foot.
Slope is different: copper tubing is measured using different units

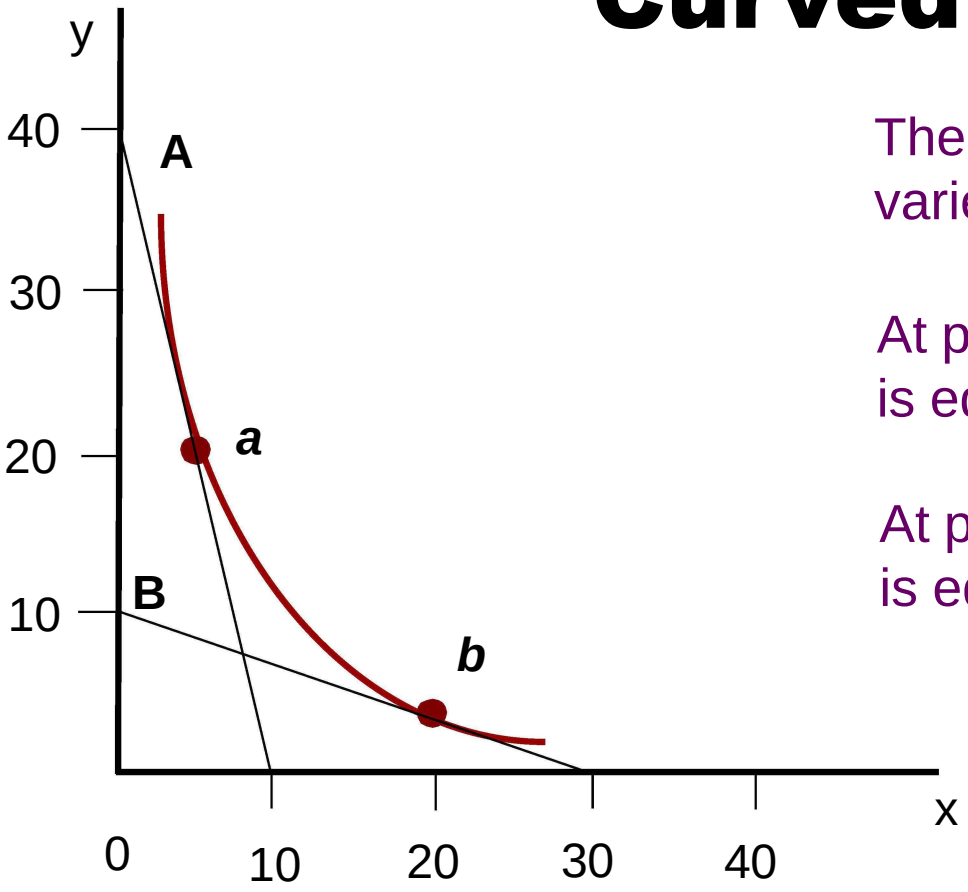
APPENDIX

# The Slopes of Curved Lines

- Differs along the curve
- Slope of a curved line at one point
  - Slope of the tangent

# Exhibit 10

## Slope at Different Points on a Curved Line



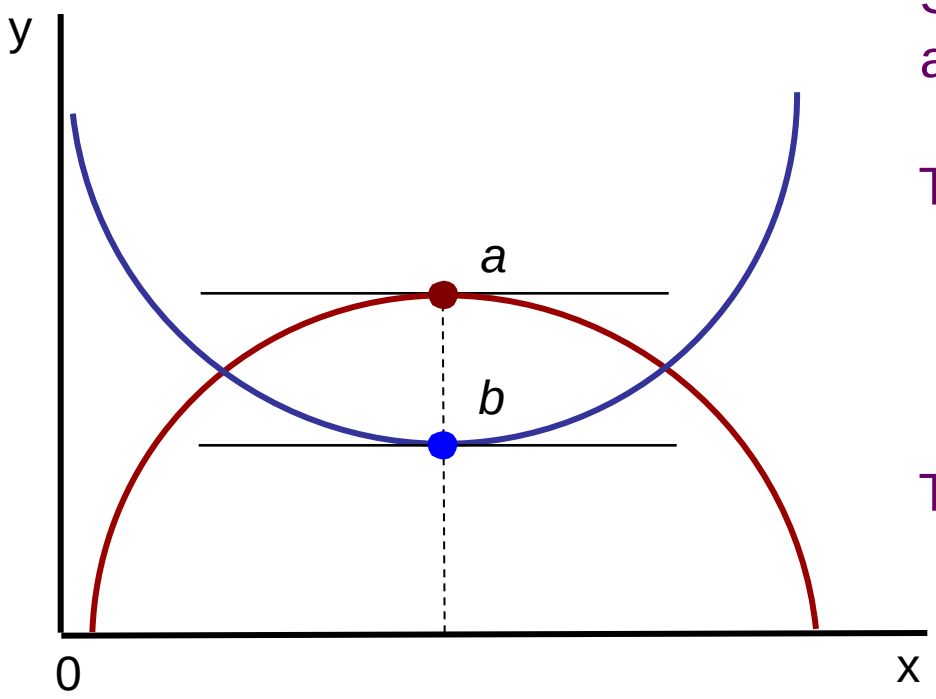

The slope of a curved line varies from point to point.

At point *a*, the slope of the curve is equal to the slope of the tangent *A*.

At point *b*, the slope of the curve is equal to the slope of the tangent *B*.

# Exhibit 11

## Curves with Both Positive and Negative Slopes




Some curves have both positive and negative slopes.

The U-shaped curve has:
- negative slope to the left of *b*
- slope of 0 at point *b*
- positive slope to the right of *b*.

The hill-shaped curve has:
- positive slope to the left of *a*
- slope of 0 at point *a*
- negative slope to the right of *a*.

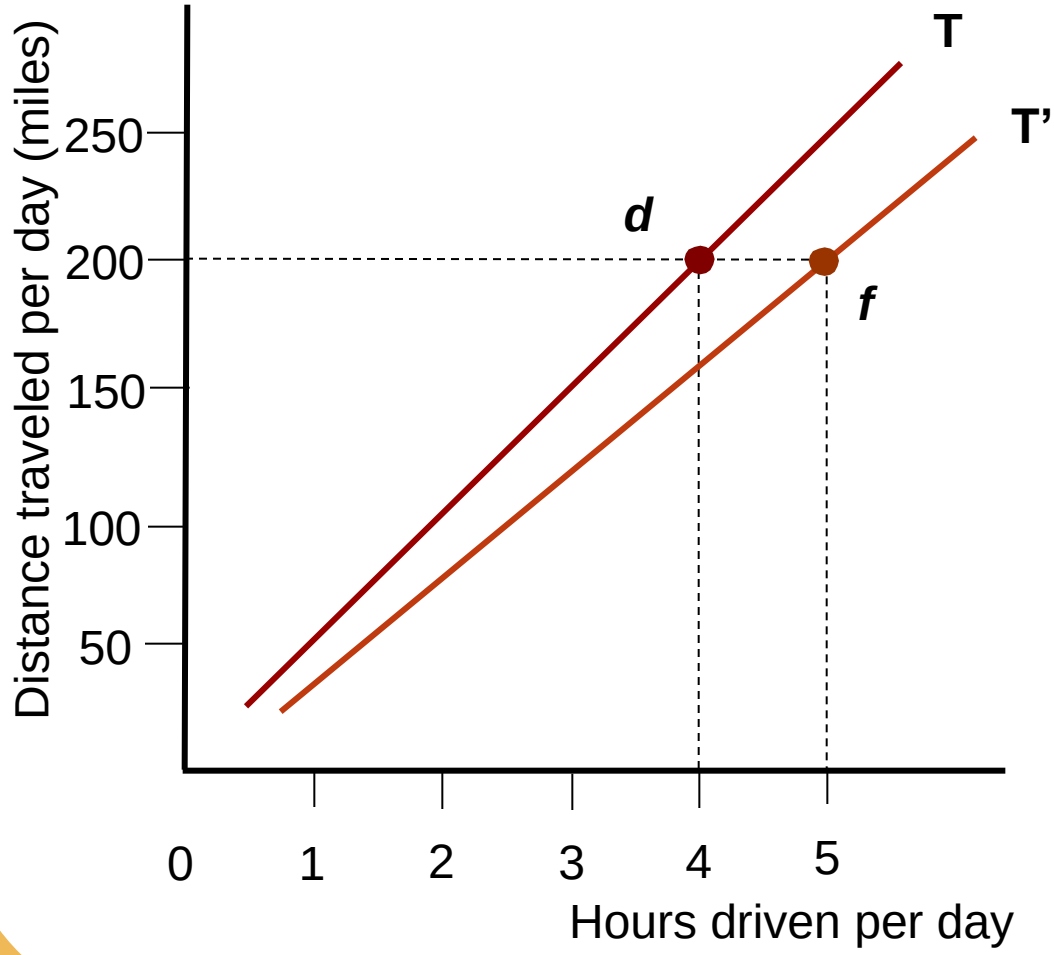
APPENDIX

# Line Shifts

- **Change assumptions**
  - **Changed relationship between variables**
  - **Line shift**

# Exhibit 12

## Shift of Line Relating Distance Traveled to Hours Driven




Line T

hours driven/day and distance traveled/day

average speed = 50 mph

Line T'

hours driven/day and distance traveled/day

average speed = 40 mph