1.1 DEFINITIONS AND QUESTIONS

All economic questions and problems arise because human wants exceed the resources available to satisfy them.

**Scarcity**
The condition that arises because the available resources are insufficient to satisfy wants.

**Economics**
Studies the choices that individuals, businesses, government, and entire societies make as they cope with scarcity.

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- **Microeconomics**
  - **Microeconomics**: The study of the choices that individuals and businesses make, the way these choices interact, and the influence that governments exert on these choices.

- **Macroeconomics**
  - **Macroeconomics**: The study of the aggregate (or total) effects on the national economy and the global economy of the choices that individuals, businesses, and governments make.

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- **Microeconomic Questions**
  - **What?**
    - What goods and services get produced and in what quantities?
  - **How?**
    - How are goods and services produced?
  - **For Whom?**
    - For whom are the various goods and services produced?
1.2 ECONOMICS: A SOCIAL SCIENCE

Goal of economists is to discover how the economic world works. Economists distinguish between:
• Positive statements: What is
• Normative statements: What ought to be

The task of economic science:
To discover and catalog positive statements that are consistent with what we observe in the world and that enable us to understand how the economic world works.

The task can be broken into three steps:
• Observing and measuring
• Model building
• Testing

Observing and Measuring
Items such as:
• Quantities of resources
• Wages and work hours
• Prices and quantities of goods and services
• Taxes and government spending
• Volume of international trade

Model Building
Economic model
A description of some aspect of the economic world that includes only those features of the world that are needed for the purpose at hand.
1.2 ECONOMICS: A SOCIAL SCIENCE

- Testing
  A model’s predictions might correspond to or conflict with the data.

- Economic theory
  A generalization that summarizes what we understand about the economic choices that people make and the economic performance of industries and nations.

1.2 ECONOMICS: A SOCIAL SCIENCE

- Unscrambling Cause and Effect
  The central idea that economists use to unscramble cause and effect is *ceteris paribus*.

  - *Ceteris Paribus*
    - *Ceteris paribus* means “other things being equal.”

    But *ceteris paribus* can be a problem in economics when testing a model.

1.3 THE ECONOMIC WAY OF THINKING

- Rational Choice
  Using the available resources to most effectively satisfy the wants of the person making the choice.

- Cost: What You Must Give Up
  - Opportunity cost
    - The highest-valued alternative forgone.

    - Sunk Cost
      - A previously incurred and irreversible cost.

- Statistical Investigations
  - Correlation
    - The tendency for the values of two variables to move in a predictable and related way.

  - *Post hoc fallacy*
    - The error of reasoning that a first event causes a second event because the first occurred before the second.
1.3 THE ECONOMIC WAY OF THINKING

- **Benefit**: Gain Measured by What You Are **Willing to Give Up**
  - **Benefit**: The gain or pleasure that something brings.

- **On the Margin**
  - **Margin**: A choice that is made by comparing all the relevant alternatives systematically and incrementally.

### Marginal Cost
The cost of a one-unit increase in an activity

### Marginal Benefit
What you gain when you get one more unit of something.

### Making a Rational Choice
When we take those actions for which marginal benefit exceeds or equals marginal cost.
APPENDIX CHECKLIST

1. Interpret a scatter diagram, a time-series graph, and a cross-section graph.
2. Interpret the graphs used in economic models.
3. Define and calculate slope.
4. Graph relationships among more than two variables.

APPENDIX: MAKING AND USING GRAPHS

Basic Idea
A graph enables us to visualize the relationship between two variables.

To make a graph set two lines perpendicular to each other:
- The horizontal line is called the x-axis.
- The vertical line is called the y-axis.
- The common zero point is called the origin.

Interpreting Data Graphs

Scatter diagram
A graph of the value of one variable against the value of another variable.

Time-series graph
A graph that measures time on the x-axis and the variable or variables in which we are interested on the y-axis.

Figure A1.1 How to make a graph
The horizontal axis (x-axis) measures temperature.

The vertical axis (y-axis) measures ice cream consumption.
**APPENDIX: MAKING AND USING GRAPHS**

**Trend**
A general tendency for the value of a variable to rise or fall.

**Cross-section graph**
A graph that shows the values of an economic variable for different groups in a population at a point in time.

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![Figure A1.2(b)](image)

Figure A1.2(b) shows a scatter diagram.

As the price per minute falls, the number of minutes called increases.

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![Figure A1.2(c)](image)

Figure A1.2(c) shows a times-series graph.

The graph shows when the price of coffee:
- Was high and low.
- Increased and decreased.
- Changed quickly and slowly.
APPENDIX: MAKING AND USING GRAPHS

Figure A1.2(d) shows a cross-section graph. The graph shows the average income per person in ten metropolitan areas in 1995.

APPENDIX: MAKING AND USING GRAPHS

Interpreting Graphs Used in Economics

Positive relationship or direct relationship
A relationship between two variables that move in the same direction.

Linear relationship
A relationship that graphs as a straight line.

Figure A1.3(a) shows a positive (direct) relationship. As the speed increases, the distance traveled increases.

Figure A1.3(b) shows a positive (direct) relationship. As the speed increases, the distance traveled increases.
APPENDIX: MAKING AND USING GRAPHS

Figure A1.3(b) shows a positive (direct) relationship.

As the distance sprinted increases, recovery time increases.

Figure A1.3(c) shows a positive (direct) relationship.

As study time increases, the number of problems worked increases.

Negative relationship or inverse relationship

A relationship between two variables that move in opposite directions.

Figure A1.4(a) shows a negative (inverse) relationship.

As the time playing tennis increases, the time playing squash decreases along a straight line.
APPENDIX: MAKING AND USING GRAPHS

Figure A1.4(b) shows a negative (inverse) relationship.

As the journey length increases, the cost per mile of the trip falls along a curve that becomes less steep.

Figure A1.4(c) shows a negative (inverse) relationship.

As leisure time increases, the number of problems worked decreases along a curve that becomes steeper.

Figure A1.5(a) shows a maximum point.

As the rainfall increases:
1. The curve slopes upward as the yield per acre rises.
2. The curve is flat at point A, the maximum yield.
3. Then slopes downward as the yield per acre falls.

Figure A1.5(a) shows a minimum point.

As the speed increases:
1. The curve slopes downward as the cost per mile falls.
2. The curve is flat at point B, the minimum cost per mile.
3. The curve slopes upward as the cost per mile rises.
Figure A1.6(a) shows variables that are unrelated. As the price of bananas increases, the student's grade in economics remains at 75 percent. The curve is horizontal.

Figure A1.6(b) shows variables that are unrelated. As rainfall in California increases, the output of French vineyards remains at 3 billion gallons. The curve is vertical.

The Slope of a Relationship

Slope
The change in the value of the variable measured on the y-axis divided by the change the value of the variable measured on the x-axis.

\[ \text{Slope} = \frac{\Delta y}{\Delta x} \]
1. When \( x \) is 4, \( y \) is –3.

2. Slope \( \frac{y}{x} \) is \(-3/4\).

Figure A1.7(b) shows a negative slope.

Figure A1.7(c) shows the slope of a curve at a point. Slope of the curve at A equals the slope of the red line tangent to the curve at A.

1. When \( x \) is 4, \( y \) is –3.

2. Slope \( \frac{y}{x} \) is \(-3/4\).

Slope of the curve at A equals the slope of the red line tangent to the curve at A.

**Figure A1.8(a)** shows the relationship between price and consumption, temperature remaining the same.

**Figure A1.8(b)** shows the relationships between ice cream consumed, the temperature, and the price of ice cream.

### Relationships Among More Than Two Variables

To graph a relationship that involves more than two variables, we use the *ceteris paribus* assumption.

**Ceteris Paribus**

"other things remaining the same."

Figure A1.8 shows the relationships between ice cream consumed, the temperature, and the price of ice cream.
APPENDIX: MAKING AND USING GRAPHS

Figure A1.8(b) shows the relationship between temperature and consumption, price remaining the same.

Figure A1.8(c) shows the relationship between price and temperature, consumption remaining the same.

APPENDIX: MAKING AND USING GRAPHS

CHAPTER CHECKLIST

1. Define economics, distinguish between microeconomics and macroeconomics, and explain the questions of microeconomics.
2. Describe the work of economists as social scientists.
3. Explain five core ideas that define the economic way of thinking.
4. Explain why economics is worth studying.
1.2 ECONOMICS: A SOCIAL SCIENCE

Economist take three complimentary approaches:
- Natural experiments
- Statistical investigations
- Economic experiments

Natural Experiments
A situation that arises in the ordinary course of economic life in which the one factor of interest is different and other things are equal.

1.2 ECONOMICS: A SOCIAL SCIENCE

Economic Experiments
Economic experiments put real subjects in a decision making situation and vary the influence of interest to discover how the subjects respond to one factor at a time. A relatively new approach.

1.3 THE ECONOMIC WAY OF THINKING

Five core ideas:
- Rational choice
- Cost
- Benefit
- Margin
- Incentives

1.3 THE ECONOMIC WAY OF THINKING

Responding to Incentives
Incentive
An inducement to take a particular action.
1.4 WHY ECONOMICS IS WORTH STUDYING

Two main benefits from studying economics are:
• Understanding
• Expanded career opportunities

**Understanding**
Economic ideas is all around you. You cannot ignore them.
As you progress with you study of economics, you’ll gain a deeper understanding of what is going on around you.

**Expanded Career Opportunities**
Most students of economics don’t become economists. But knowledge of economics is vital in many fields such as banking, finance, business, management, insurance, real estate, law, government, journalism, health care and the arts.
Economics graduates are not the highest-paid professional, but they are close to the top.

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**Figure 1.1**
Graduates in disciplines that teach problem identifying and solving and strategic brokering are top of the earnings distribution:
• engineering
• computer science
• economics

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**The Costs of Studying Economics**
The main cost of studying economics is forgone leisure time.
Most students find that economics is difficult and that it takes time to master.
The trick is practice, or learning by doing.

**Benefits Versus Costs**
Weigh up your benefits and costs!