

Microeconomic Theory

Basic Principles and Extensions, 9e

By
WALTER NICHOLSON

Slides prepared by
Linda Ghent
Eastern Illinois University
Edited by Yu Chen
Nanjing University

Chapter 1

ECONOMIC MODELS

Theoretical Models

- Economists use models to describe economic activities
- While most economic models are abstractions from reality, they provide aid in understanding economic behavior

Verification of Economic Models

- There are two general methods used to verify economic models:
 - **direct approach**
 - establishes the validity of the model's *assumptions*
 - **indirect approach**
 - shows that the model correctly *predicts* real-world events

Verification of Economic Models

- We can use the profit-maximization model to examine these approaches
 - is the basic assumption valid? do firms really seek to maximize profits?
 - can the model predict the behavior of real-world firms?
- No model can describe reality exactly!
- Key: A sufficiently simple model can sufficiently interpret the problem of our interest.

Features of Economic Models

- *Ceteris Paribus* (在其他条件不变的情况下) assumption
- Optimization assumption
- Distinction between positive(实证) and normative (规范) analysis

Ceteris Paribus Assumption

- *Ceteris Paribus* means “other things the same” – controlled experiment
- Economic models attempt to explain simple relationships
 - focus on the effects of only a few forces at a time
 - other variables are assumed to be unchanged during the period of study

Optimization Assumptions

- Many economic models begin with the assumption that economic actors are rationally pursuing some goal
 - consumers seek to maximize their utility
 - firms seek to maximize profits (or minimize costs)
 - government regulators seek to maximize public welfare

Optimization Assumptions

- Optimization assumptions generate precise, solvable models
- Optimization models appear to be perform fairly well in explaining reality

Positive-Normative Distinction

- Positive economic theories seek to explain the economic phenomena that is observed
- Normative economic theories focus on what “should” be done
 - Ethics (伦理) , Morality (道德) , Fairness (公平)

The Economic Theory of Value

- Early Economic Thought
 - “value” was considered to be synonymous with “importance”
 - since prices were determined by humans, it was possible for the price of an item to differ from its value
 - prices $>$ value were judged to be “unjust”

The Economic Theory of Value

- The Founding of Modern Economics
 - the publication of Adam Smith's *The Wealth of Nations* is considered the beginning of modern economics
 - distinguishing between “value” and “price” continued (illustrated by the diamond-water paradox)
 - the value of an item meant its “value in use”
 - the price of an item meant its “value in exchange”

The Economic Theory of Value

- Labor Theory of Exchange Value
 - the exchange values of goods are determined by what it costs to produce them
 - these costs of production were primarily affected by labor costs
 - therefore, the exchange values of goods were determined by the quantities of labor used to produce them
 - producing diamonds requires more labor than producing water

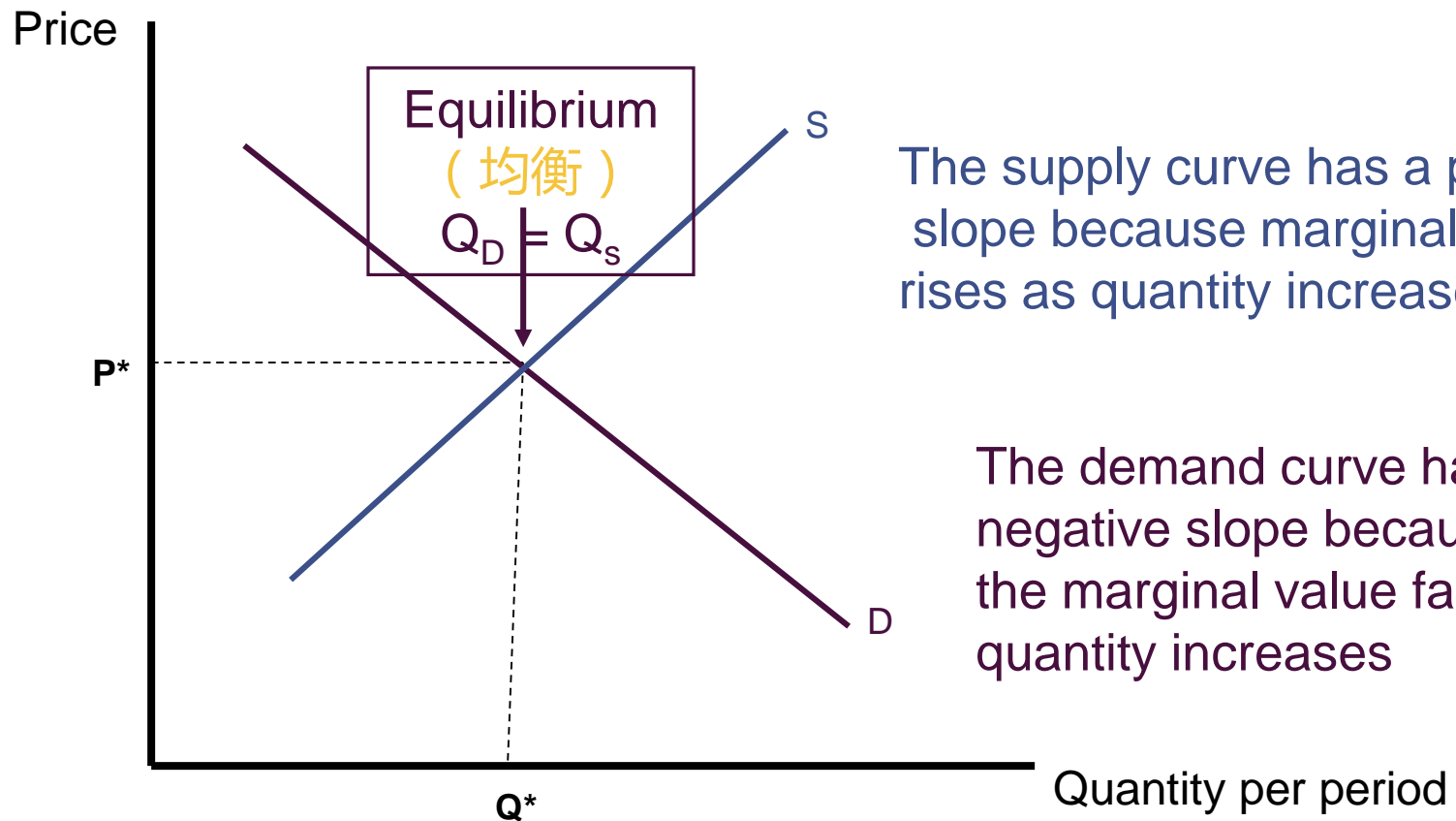
The Economic Theory of Value

- The Marginalist Revolution (边际革命)
 - the exchange value of an item is not determined by the total usefulness of the item, but rather the usefulness of the *last unit consumed*
 - because water is plentiful, consuming an additional unit has a relatively low value to individuals

The Economic Theory of Value

- Marshallian Supply-Demand Synthesis
 - Alfred Marshall showed that supply and demand simultaneously operate to determine price
 - prices reflect both the marginal evaluation that consumers place on goods and the marginal costs of producing the goods
 - water has a low marginal value and a low marginal cost of production ✓ Low price
 - diamonds have a high marginal value and a high marginal cost of production ✓ High price

Supply-Demand Equilibrium



The supply curve has a positive slope because marginal cost rises as quantity increases

The demand curve has a negative slope because the marginal value falls as quantity increases

Supply-Demand Equilibrium

$$q_D = 1000 - 100p$$

$$q_S = -125 + 125p$$

$$\text{Equilibrium} \Rightarrow q_D = q_S$$

$$1000 - 100p = -125 + 125p$$

$$225p = 1125$$

$$p^* = 5$$

$$q^* = 500$$

Supply-Demand Equilibrium

- A more general model is

$$q_D = a + bp$$

$$q_S = c + dp$$

$$\text{Equilibrium} \Rightarrow q_D = q_S$$

$$a + bp = c + dp$$

$$p^* = \frac{a - c}{d - b}$$

Supply-Demand Equilibrium

A shift in demand will lead to a new equilibrium:

$$Q'_D = 1450 - 100P$$

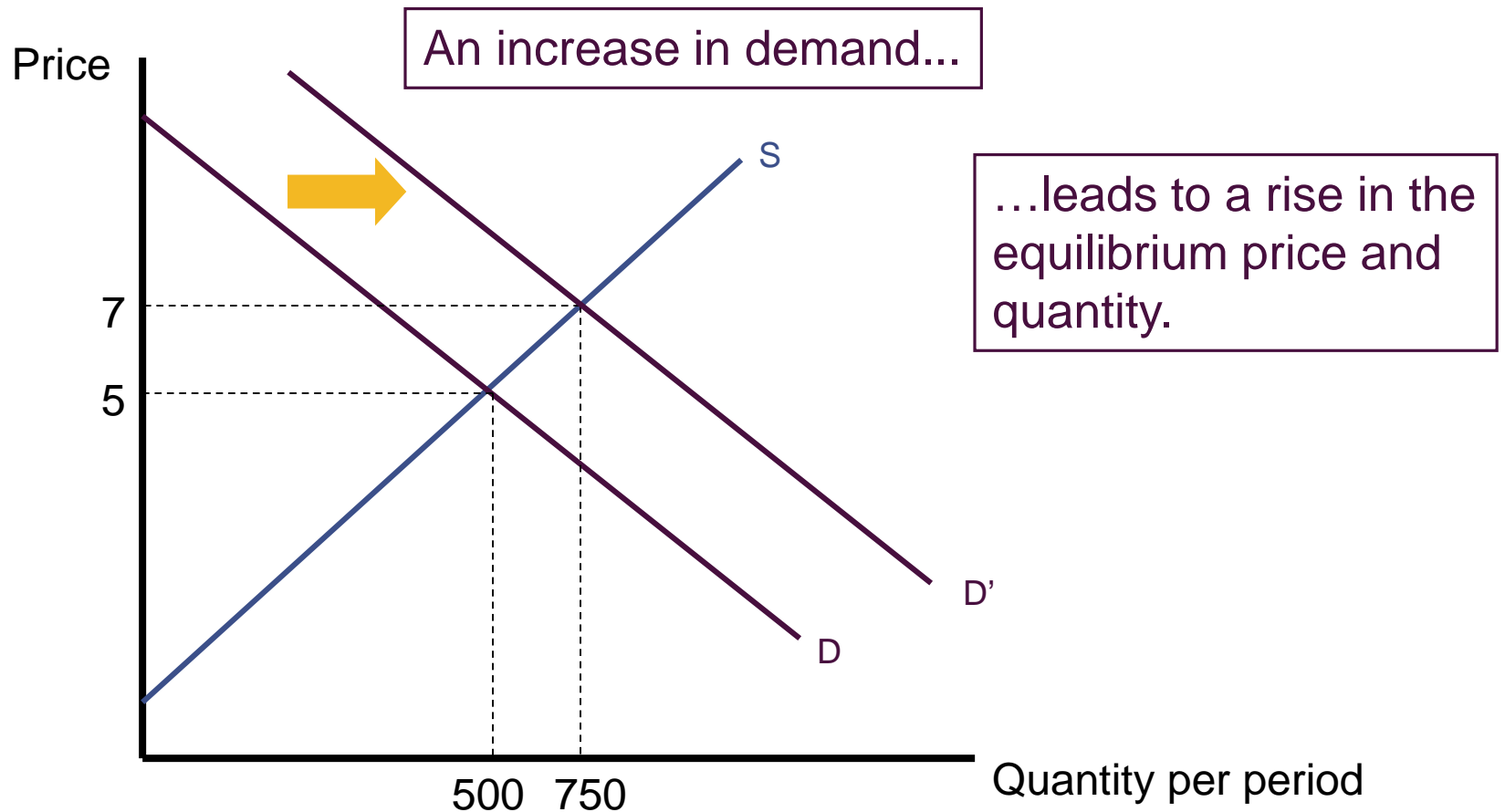
$$Q'_D = 1450 - 100P = Q_S = -125 + 125P$$

$$225P = 1575$$

$$P^* = 7$$

$$Q^* = 750$$

Supply-Demand Equilibrium



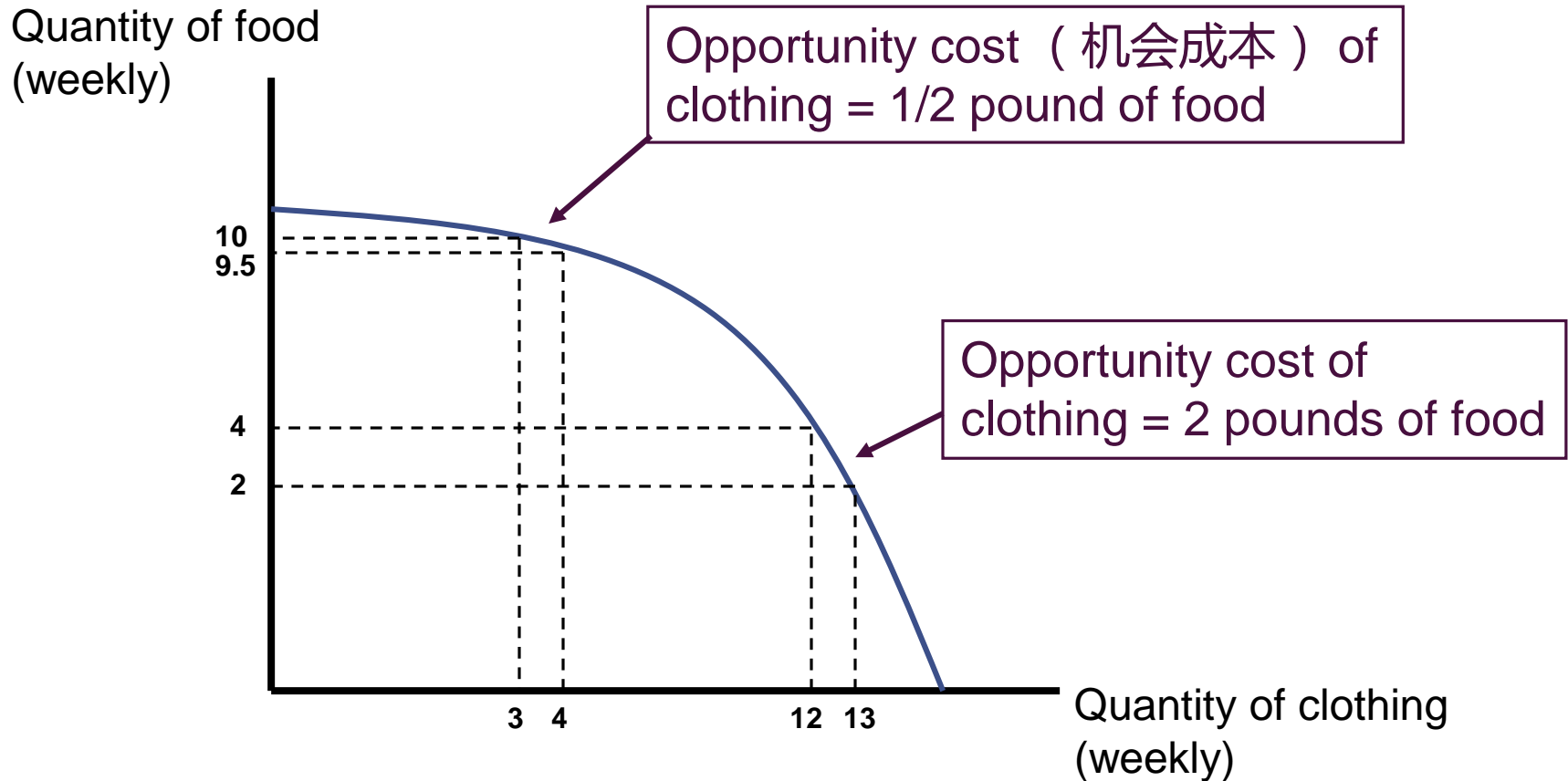
The Economic Theory of Value

- General Equilibrium (一般均衡) Models
 - the Marshallian model is a **partial equilibrium (局部均衡)** model
 - focuses only on one market at a time
 - to answer more general questions, we need a model of the entire economy
 - need to include the interrelationships between markets and economic agents

The Economic Theory of Value

- The **production possibilities frontier** (**生产可能性边界**) can be used as a basic building block for general equilibrium models
- A production possibilities frontier shows the combinations of two outputs that can be (most possibly) produced with an economy's resources

A Production Possibility Frontier



A Production Possibility Frontier

- The production possibility frontier reminds us that resources are scarce (稀缺)
- **Scarcity (稀缺性)** means that we must make choices
 - each choice has opportunity costs
 - the opportunity costs depend on how much of each good is produced

A Production Possibility Frontier

- Suppose that the production possibility frontier can be represented by

$$2x^2 + y^2 = 225$$

- To find the slope, we can solve for Y

$$y = \sqrt{225 - 2x^2}$$

- If we differentiate

$$\frac{dy}{dx} = \frac{1}{2}(225 - 2x^2)^{-1/2} \cdot (-4x) = \frac{-4x}{2y} = \frac{-2x}{y}$$

A Production Possibility Frontier

$$\frac{dy}{dx} = \frac{1}{2}(225 - 2x^2)^{-1/2} \cdot (-4x) = \frac{-4x}{2y} = \frac{-2x}{y}$$

- when $x=5$, $y=13.2$, the slope = $-2(5)/13.2 = -0.76$
- when $x=10$, $y=5$, the slope = $-2(10)/5 = -4$
- the slope rises as y rises

The Economic Theory of Value

- Welfare Economics
 - tools used in general equilibrium analysis have been used for normative analysis concerning the **desirability of various economic outcomes**
 - economists Francis Edgeworth and Vilfredo Pareto helped to provide a precise definition of economic efficiency and demonstrated the conditions under which markets can attain that goal

Modern Tools

- Clarification of the basic behavioral assumptions about individual and firm behavior
- Creation of new tools to study markets
- Incorporation of *uncertainty* and *imperfect information* into economic models
- Increasing use of computers to analyze data

Important Points to Note:

- Economics is the study of how scarce resources are allocated among alternative uses
 - economists use simple models to understand the process

Important Points to Note:

- The most commonly used economic model is the supply-demand model
 - shows how prices serve to balance production costs and the willingness of buyers to pay for these costs

Important Points to Note:

- The supply-demand model is only a partial-equilibrium model
 - a general equilibrium model is needed to look at many markets together

Important Points to Note:

- Testing the validity of a model is a difficult task
 - are the model's assumptions reasonable?
 - does the model explain real-world events?