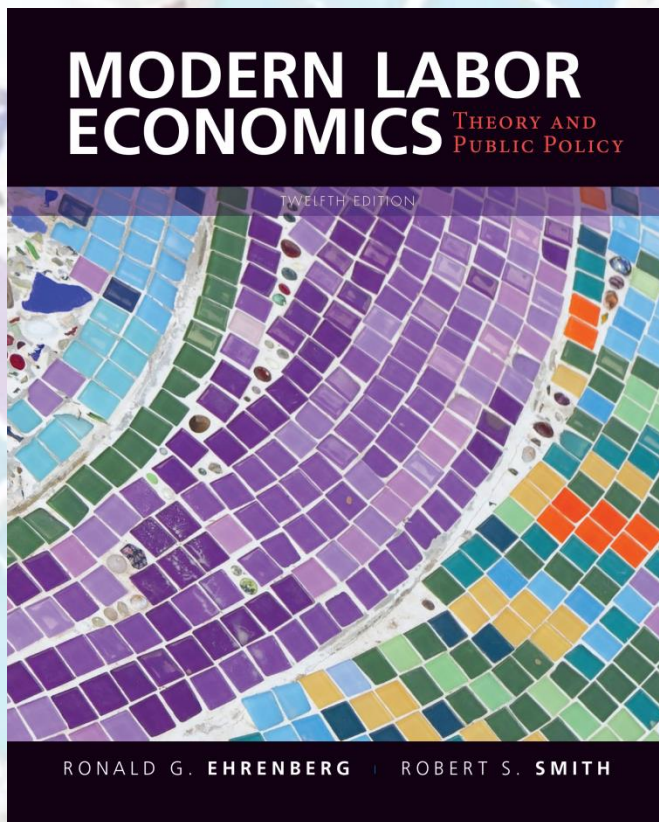# MODERN LABOR ECONOMICS

THEORY AND PUBLIC POLICY

12TH EDITION

CHAPTER 2

Overview of the Labor Market

PEARSON

Chapter Outline

The Labor Market: Definitions, Facts, and Trends

- The Labor Force and Unemployment
- Industries and Occupation: Adapting to Change
- The Earnings of Labor

How the Labor Market Works

- The Demand for Labor
- The Supply of Labor
- The Determination of the Wage

Applications of the Theory

- Who Is Underpaid and Who Is Overpaid?
- Unemployment and Responses to Technological Change Across Countries

PEARSON

2.1 The Labor Market: Definitions, Facts, and Trends

➢ The market that allocates workers to jobs and coordinates employment decision is the *labor market*, which could be:

- *national labor market*
- regional
- local
- external
- *internal labor market*
- primary
- secondary

2.1 The Labor Market: Definitions, Facts, and Trends

The Labor Force and Unemployment

➢ The Adult Working Population (*AWP*) consists of those who are over 16 years of age and are in the *labor force* (*LF*) and *not in labor force* (*NLF*).

$$AWP = LF + NLF$$

➢ The labor force consists of those (>16 years of age) who are *employed* (*E*) and those who are *unemployed* (*U*) but are actively seeking work or waiting to be recalled from layoff.

$$LF = E + U$$

➢ People who are not employed and are neither looking for work or waiting to be recalled from layoff are classified as not in labor force (*NLF*).

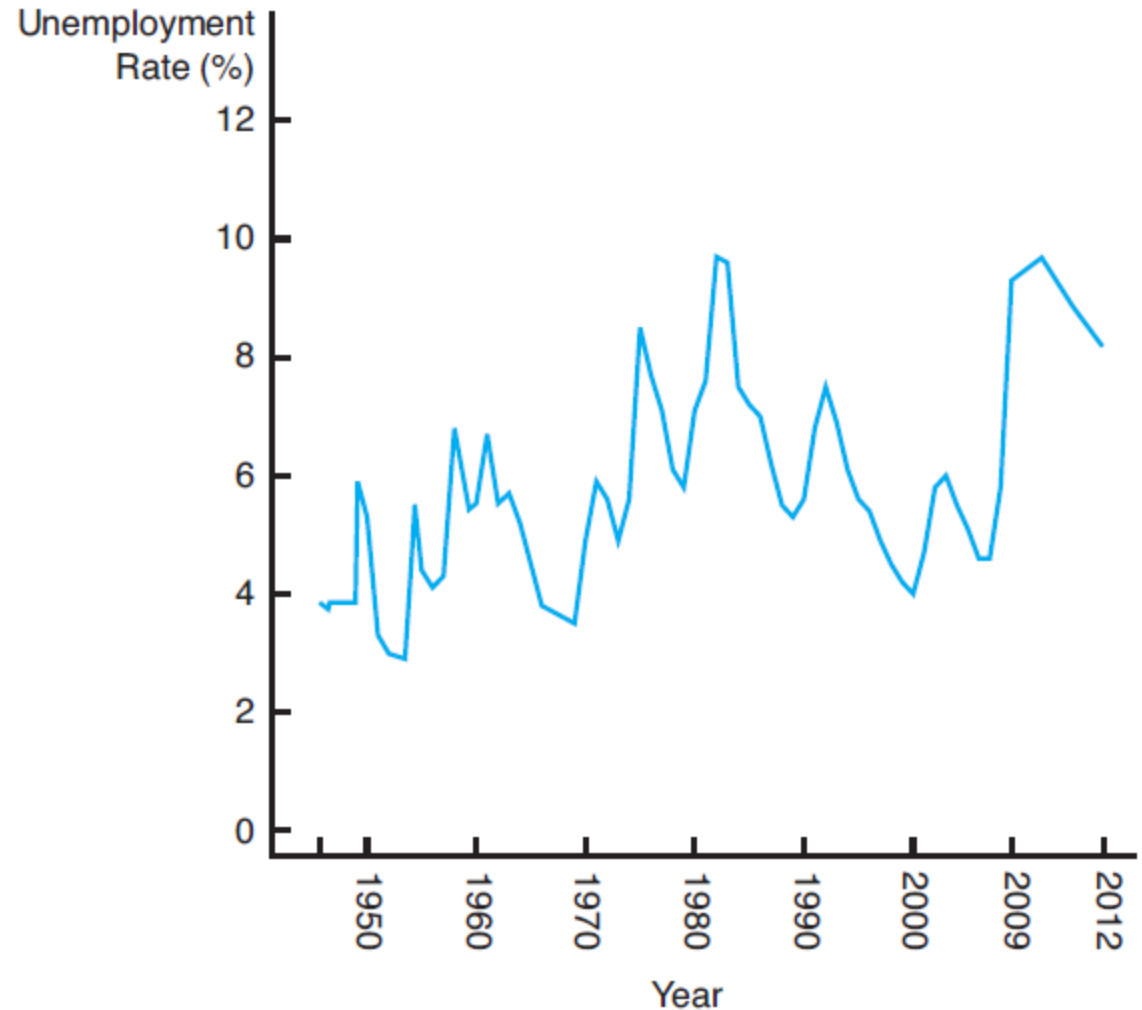# 2.1 The Labor Market: Definitions, Facts, and Trends

The Labor Force and Unemployment

➢ The labor market is very dynamic – **see Figure 2.1**
- Movements/Flows between *LF* and *NLF:*
  - Those who leave the labor force by *retiring* or by *dropping out.*
  - Those who have never worked who are *entering* the *LF*, while those who have dropped out are *reentering* the *LF.*
- Movements/Flows between *E* and *U*:
  - Employed workers become unemployed by *quitting* voluntarily or by *being laid off* – being involuntarily separated from firm either temporarily or permanently.
  - Unemployed workers obtain employment by *being newly hired* or by *being recalled* to a job from layoff.

Figure 2.2   Unemployment Rates for the Civilian Labor Force, 1947–2012 (detailed data in table inside front cover)

Unemployment rate is the ratio of those unemployed (*U*) to those in the labor force (*LF*):

- Varies from year to year, by region, by state, by gender, and by race
- Tends to be low when the labor market is *tight* and high when the labor market is *loose,* which happened in 2009.

2.1 The Labor Market: Definitions, Facts, and Trends

Industries and Occupations: Adapting to Change

➢ The labor-market changes occurring in a dynamic economy are sizable:

- • There are sectoral changes in jobs – some jobs have expanded over the years while some have contracted.

- • Industrial distribution shows:
  - – Employment in goods-producing industries (largely manufacturing) has fallen as a share of total nonfarm employment since the 1950s
  - – Private-sector services have experienced dramatic growth (expansion in wholesale and retail trade).

- • Workers and employers have adapted to these changes through the acquisitions of new skills and technology.

2.1 The Labor Market: Definitions, Facts, and Trends

The Earnings of Labor

➢ The price of labor that equilibrate the labor market is the wage rate.

Nominal and Real Wages

- The wage rate is the price of labor per working hour, which could measured in nominal and/or real terms:
    - *Nominal wage* – what workers get paid per hour in current dollars.
    - *Real wages* or the real purchasing power of a worker's earnings – nominal wages divided by some measure of prices (usually the consumer price index – CPI).

2.1 The Labor Market: Definitions, Facts, and Trends

The CPI

- Some of the problems with the use CPI as measure of changes in the purchasing power of workers are:
    - Consumer *change* the bundle of goods and services they buy over time in response to changes in prices but not reflected in the bundle with which the CPI is computed.
    - The *quality* of goods and services change over time but the CPI does not account for changes in quality.

- Given these and other problems, some economists believe that the CPI has overstated the inflation by as much as 1% point per year.

Wages, Earnings, Compensation, and Income

- *Wages* refer to the payment for a unit of time/hour worked.

- *Earnings* refer to wages multiplied by the number of time units/hours worked.

- *Employee Benefits* can be either *payments in kind* or *deferred*
  - Examples of *payments in kind* are employer-provided health care, health insurance, and paid vacation time.
  - Examples of *deferred payments* are employer-financed retirement benefits – Social Security taxes – set aside money that enables employees to receive pensions later.

- *Total compensation* consists of earnings plus employee benefits.

- *Income* received by a family includes earnings, benefits, and *unearned income*, which included dividends or interest received on investment and government transfer payments.

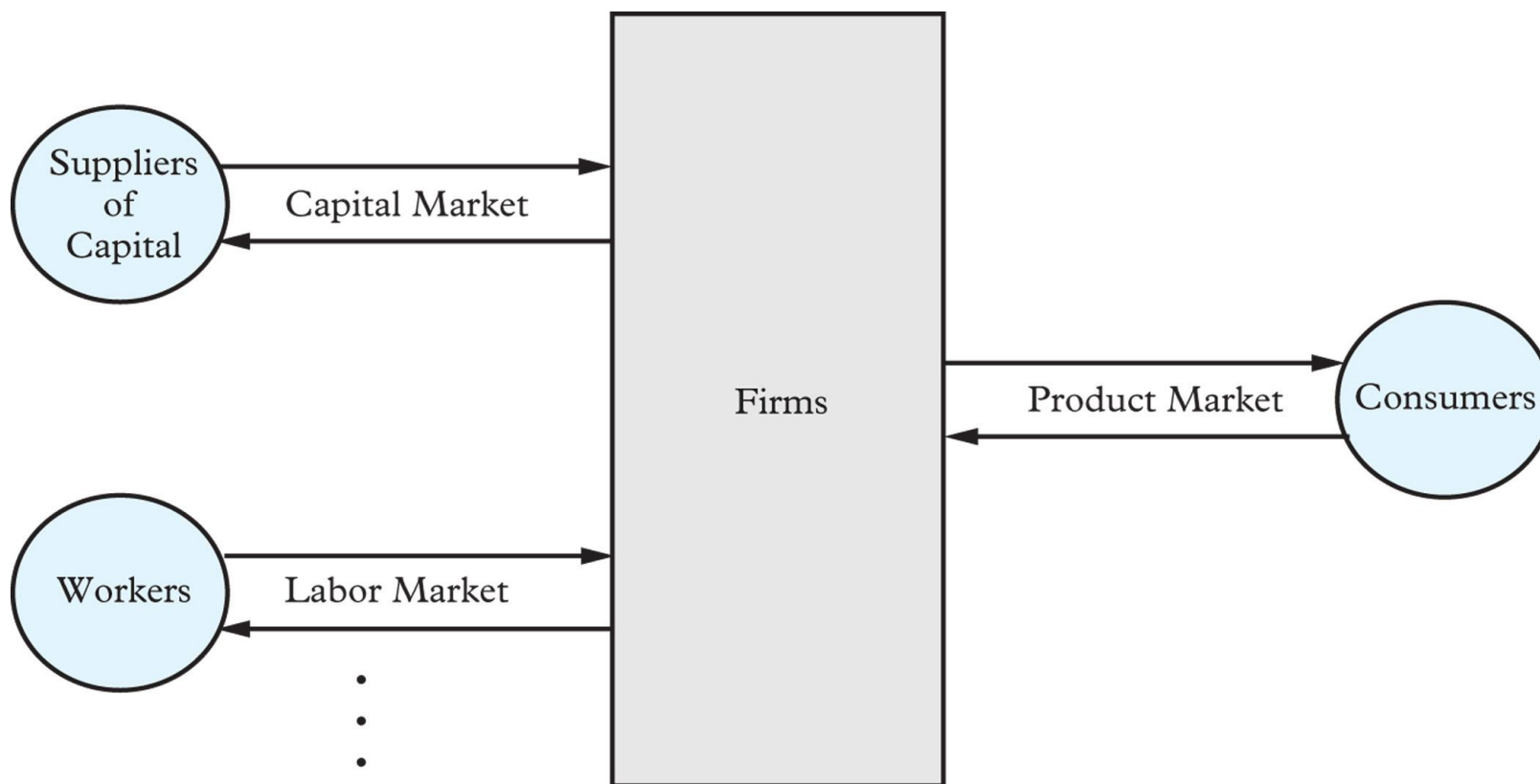# Figure 2.4 Relationship among Wages, Earnings, Compensation, and Income

| Wage Rate (pay per unit of time) | × | Units of Time Worked | = | Earnings |

$$+ \text{ Employee Benefits (in-kind or deferred payments)}$$

$$= \text{ Total Compensation}$$

$$+ \text{ Unearned Income (interest, dividends, government transfer payments)}$$

$$= \text{ Income}$$
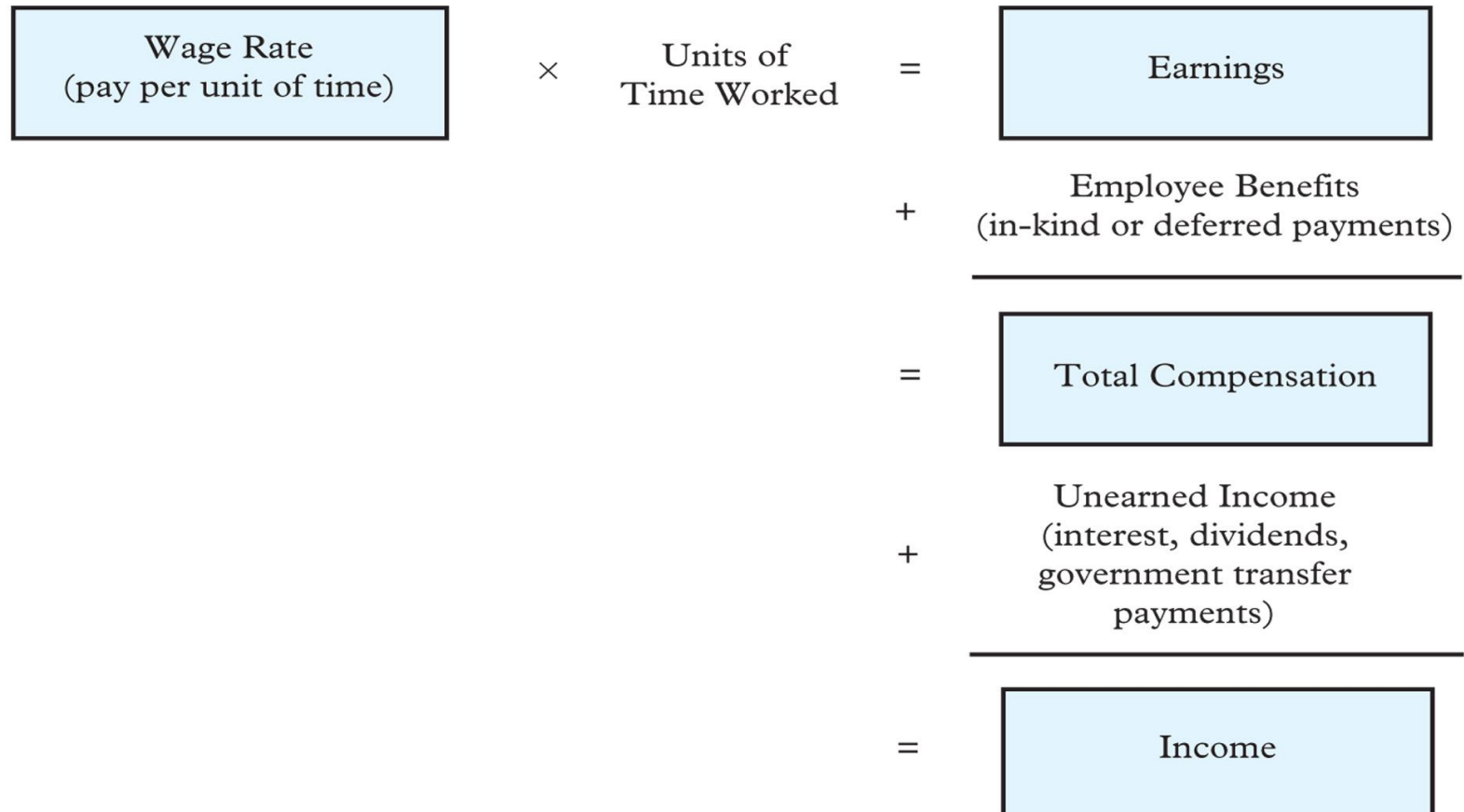
2.2 How the Labor Market Works

➢ Firms must successfully operate in the labor market, the capital market, and the product market if they are to survive

➢ Firms purchase inputs – labor (*L*) and capital (*K*) used in the production of goods and services – from the labor market and the capital market, respectively

➢ The study of the labor market begins and ends with an analysis of the demand for and the supply of labor
  • Employers/Firms demand for labor from different labor markets
  • Employees/Workers supply their labor services

➢ Remember that the major labor market outcomes are related to:

(a) the *terms of employment* (wages, compensation levels, working conditions) and

(b) the *levels of employment*.

Figure 2.5   The Markets in Which Firms Must Operate

Modern Labor Economics: Theory and Public Policy, Twelfth Edition
Ronald G. Ehrenberg • Robert S. Smith

2.2 How the Labor Market Works

The Demand for Labor

➢ Firms combine *L* and *K* to produce goods and services that are sold in the product market.

➢ Firms' total output (*Q*) and their mix of inputs (*L* and *K*) depend on three forces:
  • Output or product demand (Q^D).
  • The amount of *L* and *K* acquired at given prices: wages (*W*) for *L* and rental cost (r_K) or price (p_K) for *K*.
  • Choice of technology (*T*) available to firms.

Demand for labor: $L^D = f(W, Q^D, T)$

where L^D = labor demand or the desired level of employment by the firm, *W* = wage rate, Q^D = output or product demand, and *T* = technology.

➢ If Q^D and T are held constant, then $L^D = g(W)$, **see Table 2.3.**

Wage Changes

• An increase in wage will lead to:
  ▪ A *scale* or *output effect* − the reduction in the scale of production or output due to the reduction in employment.
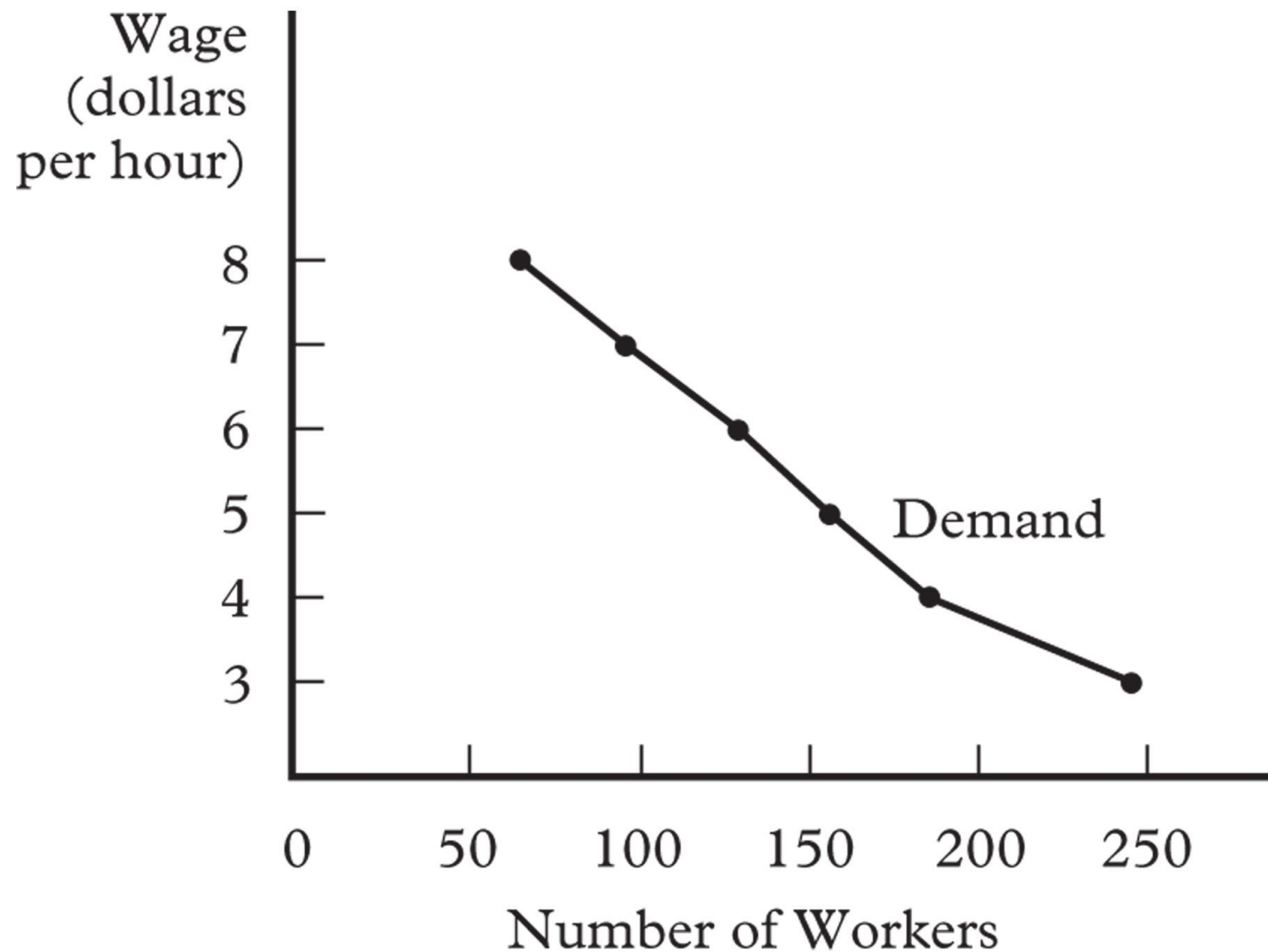 ▪ A *substitution effect* – capital is *substituted* for labor in the production process.

Table 2.3

Labor Demand Schedule for a Hypothetical Industry

Wage Rate ($)	Desired Employment Level
3.00	250
4.00	190
5.00	160
6.00	130
7.00	100
8.00	70

Figure 2.6 Labor Demand Curve (based on data in Table 2.3)

2.2 How the Labor Market Works

Changes in Other Forces Affecting Demand

- If the *demand for the product* (Q^D) increases, holding other factors (*L*, *W*, *K*, r_K or p_K, and *T*) constant, this will lead to *scale* or *output effect* as firms try to maximize profits; thus leading to an increase in labor demand.
  - The labor demand curve *shifts* to the right at every possible wage level indicated in Table 2.3 – **see Figure 2.7**.

- If *the supply of capital changed* and r_K or p_K fell by 50%, but other factors remained unchanged, more *K* would be used in production process – generates *two opposite effects* for L^D:
  - If the *scale effect* dominates, more workers will be required as well, thus L^D will shift to the right – **see Figure 2.8 (a)**.
  - If the *substitution effect* dominates as firm adopt more capital-intensive technologies in response to cheaper capital, L^D will shift to the left – **see Figure 2.8 (b)**.

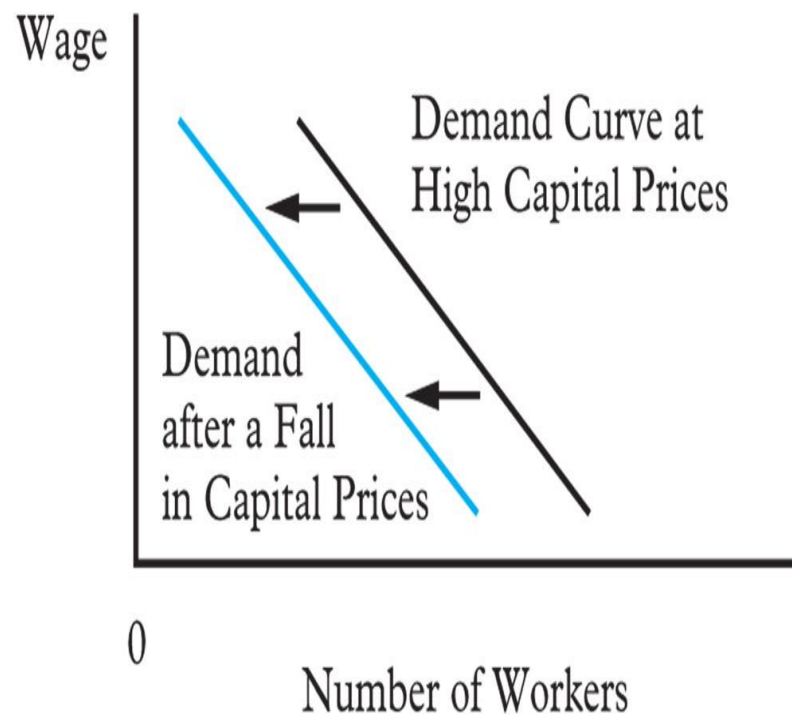# Figure 2.7   Shift in Demand for Labor Due to Increase in Product Demand
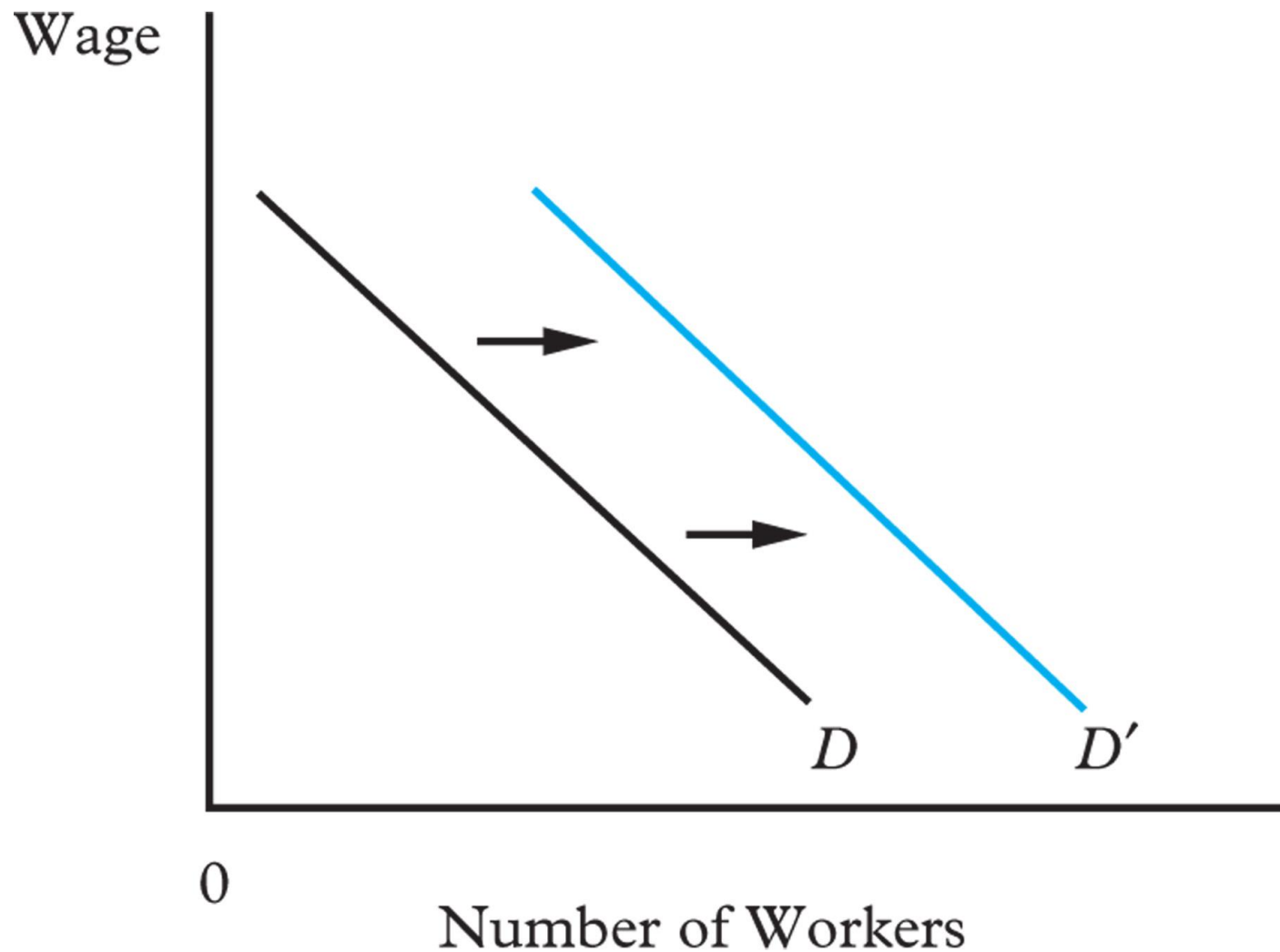
Figure 2.8 Possible Shifts in Demand for Labor Due to Fall in Capital Prices
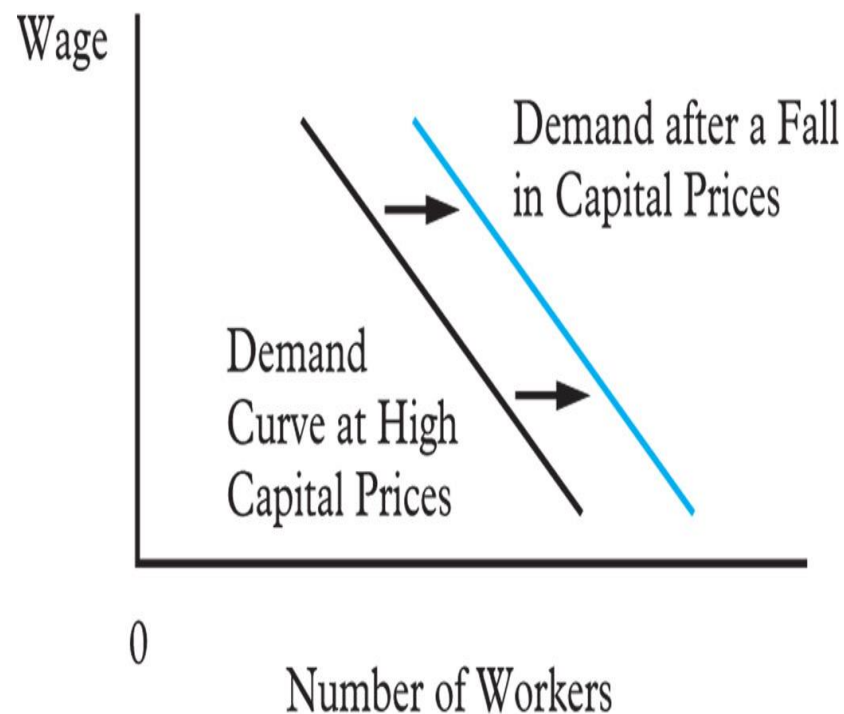
2.2 How the Labor Market Works

Market, Industry, and Firm Demand

- The demand for labor can be analyzed on three levels
  - Firm level – to analyze the demand for labor *by a particular firm,* we see how an increase in the wage rate of machinists affects their level of employment by a particular aircraft manufacturer.
  - Industry level – to analyze the effect of this wage increase on the employment of machinists *in the entire aircraft industry,* we utilize an industry demand curve.
  - Market – to see how the wage increase affects the *entire labor market* for machinists in all industries in which they are used, we use a market demand curve.

Long Run versus Short run

- In the *short run*, employers find it difficult to substitute capital for labor (and vice versa); and this is also true for product demand.

- It takes *time* to fully adjust consumption and production behavior.

PEARSON

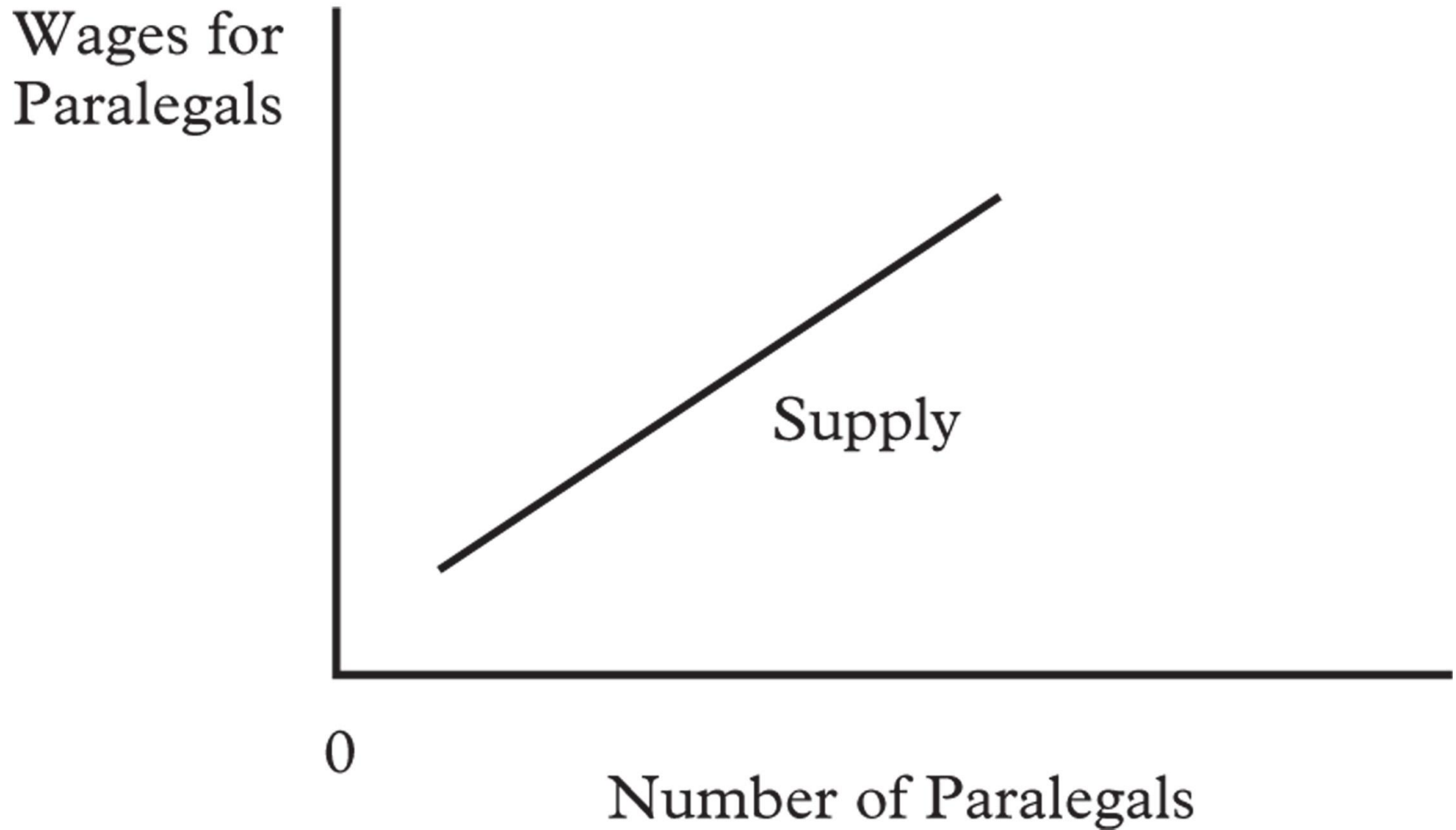# 2.2 How the Labor Market Works

The Supply of Labor

➤ The simplifying assumption here is that workers have already decided to work, but they must choose their:
- Occupation
- Employer

Market Supply

- If the market wage for legal assistants (or "paralegals") increases and the salaries and wages in *other* occupations are held constant, more workers would want to become paralegals:
  - Labor supply of paralegals will be upward-sloping – **see Figure 2.9**
  - The quantity of labor supply will be positively related to the wage rate, holding other wages constant.

- Other factors such as changes in the wage rate of insurance agents, but the wage rate (W) of paralegals is unchanged, the L^S curve of paralegals will shift to the left – **see Figure 2.10**.

Figure 2.9 Market Supply Curve for Paralegals
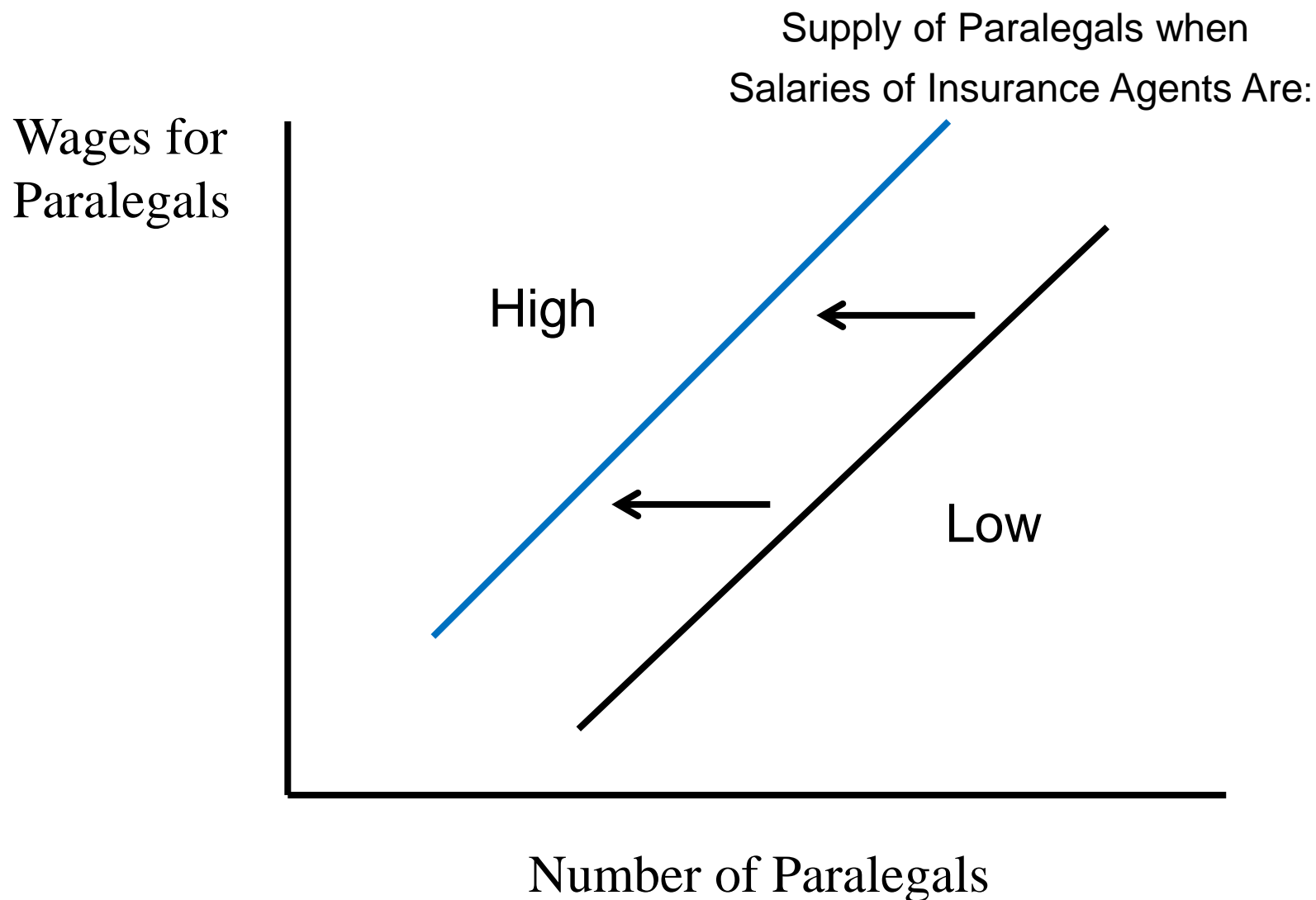
2.2 How the Labor Market Works

Supply to Firms

- We assume that the labor market for paralegals is perfectly competitive, and that no firm will offer a wage that is above or below what the market wage indicates – firms are *wage takers*:
  - Labor supply curves of paralegals to *a firm* are *horizontal* – **see Figure 2.11**.
  - At the on-going wage of W_0, employers can hire all the paralegals they need and each employer faces S_0 supply curve.
  - If the paralegal wage falls from W_0 to W_1, employers can still hire as much as they want at the lower wage, and each firm's or employer's labor supply curve becomes S_1 with the same slope as the supply curve S_0.
- Note that a fall in the wage rate of paralegal does not mean withdrawals from the paralegal profession into the insurance agent market because they are not perfect substitutes.

Figure 2.11   Supply of Paralegals to a Firm at Alternative Market Wages
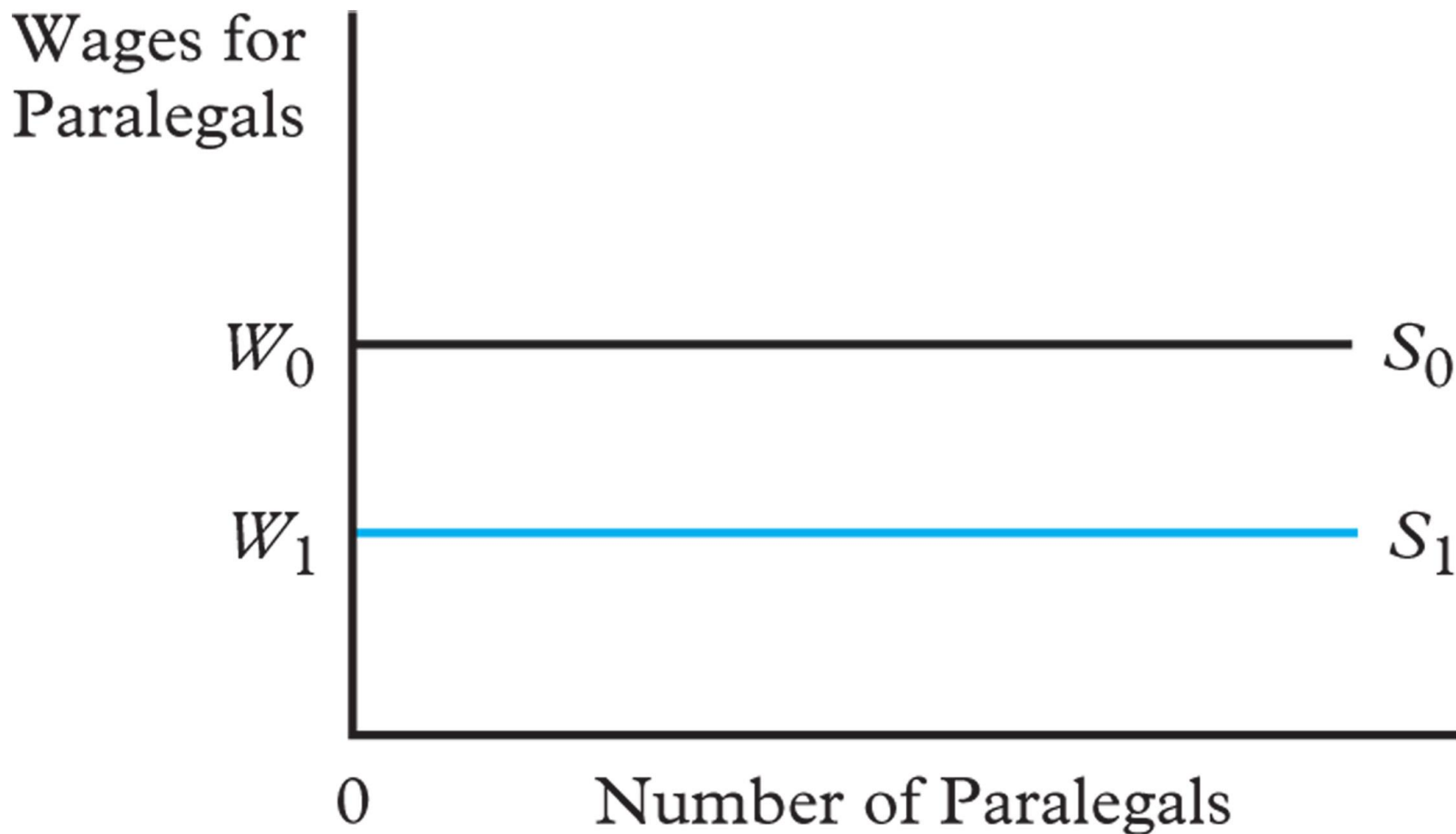
2.2 How the Labor Market Works

The Determination of the Wage

➤ The wage rate that prevails in the labor market depends on L^D and L^S, regardless of whether labor unions and/or nonmarket factors are involved – **see Figure 2.12**.

The Market-Clearing Wage

- The wage rate (W_e) at which L^D equals L^S is the market-clearing wage – that is, no labor surplus and/or no labor shortage.

- For any wage (W_1) lower than W_e: $L^D > L^S \rightarrow EDL$, and with adjustments from employers/demanders, wage rises to W_e.

- For any wage (W_2) higher than W_e: $L^D < L^S \rightarrow ESL$, and with adjustments from workers/suppliers, wage falls to W_e.

- W_e becomes the *going wage* that individual employers and employees face – **see Figures 2.12 and 2.13**.
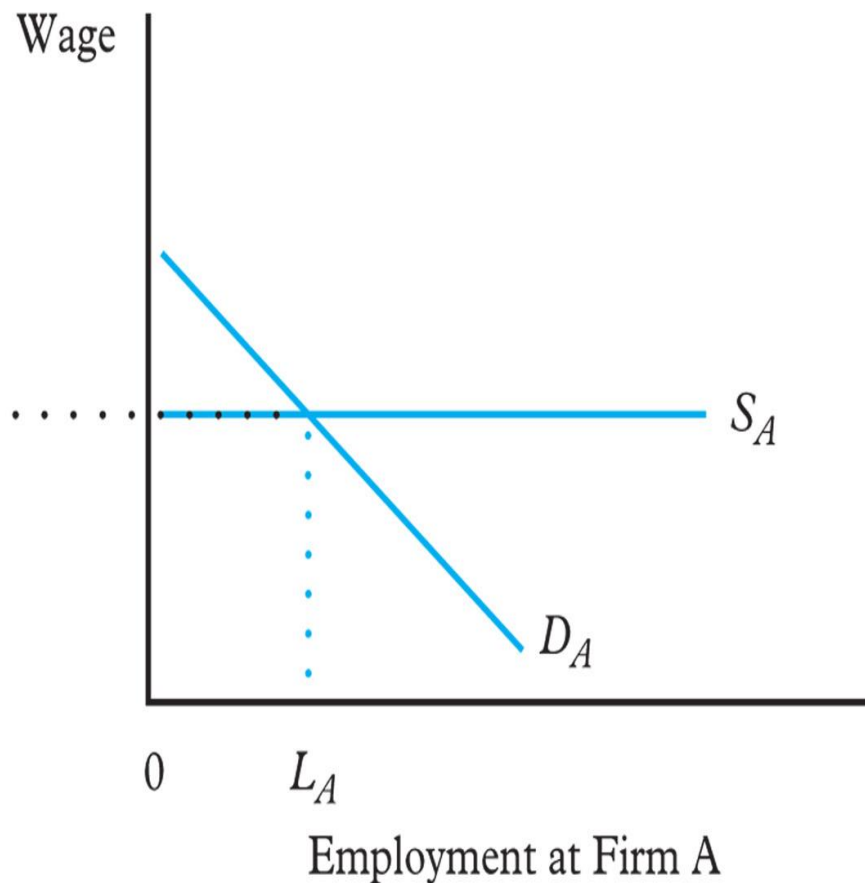
Figure 2.12   Market Demand and Supply
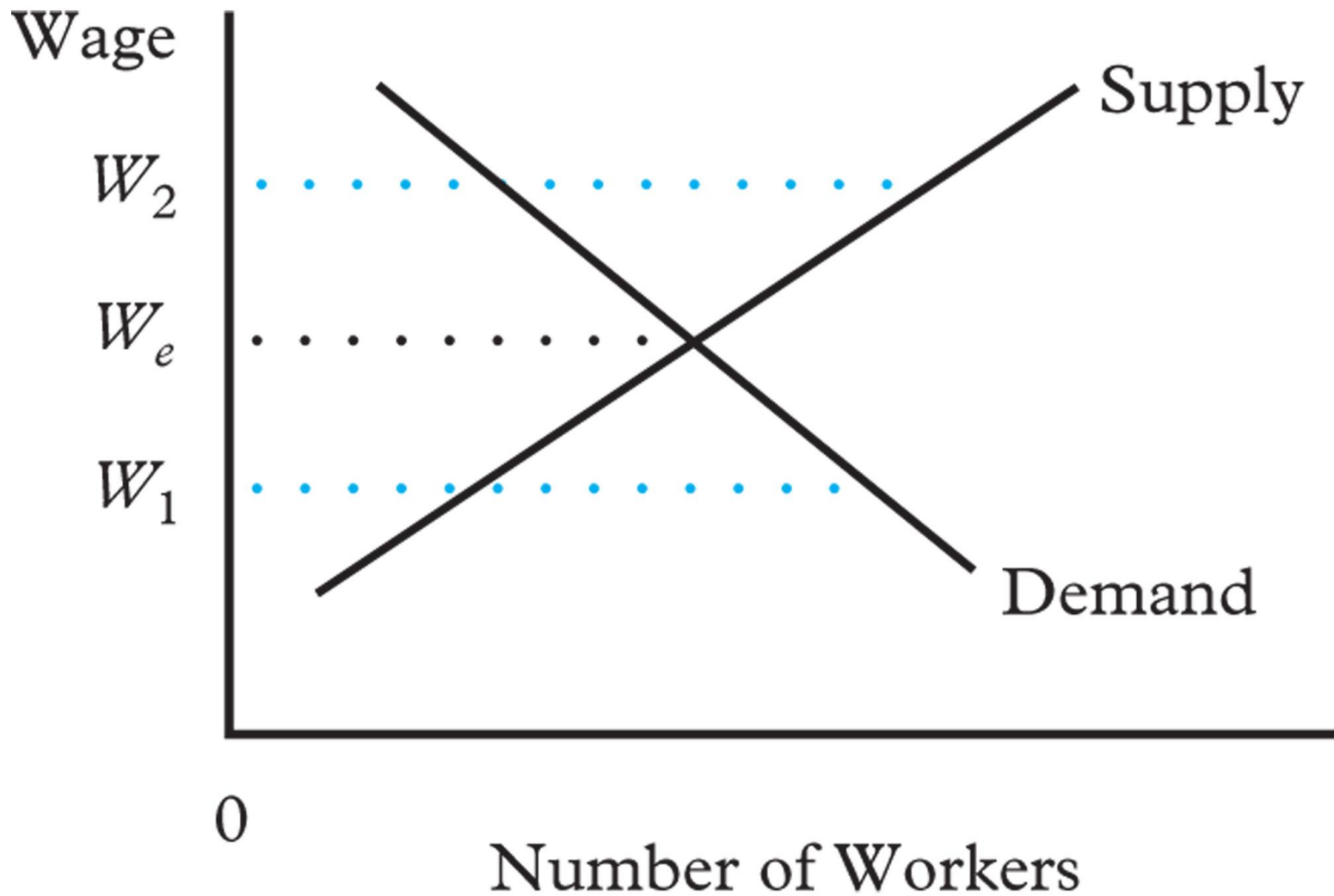
# Figure 2.13 Demand and Supply at the "Market" and "Firm" Levels
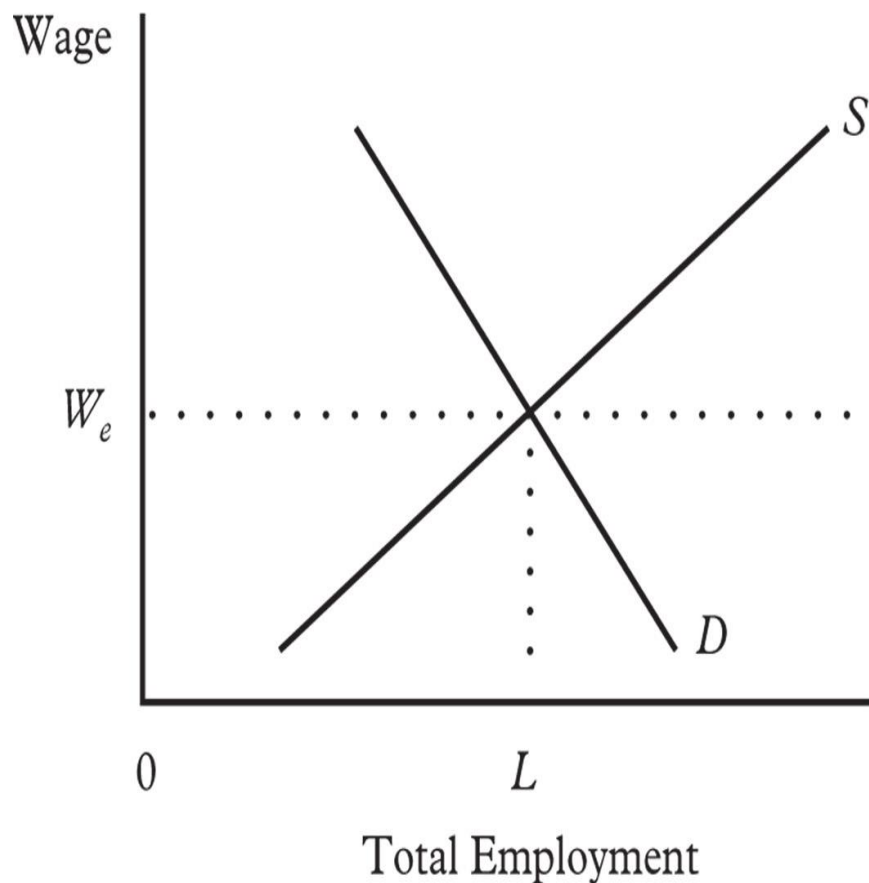
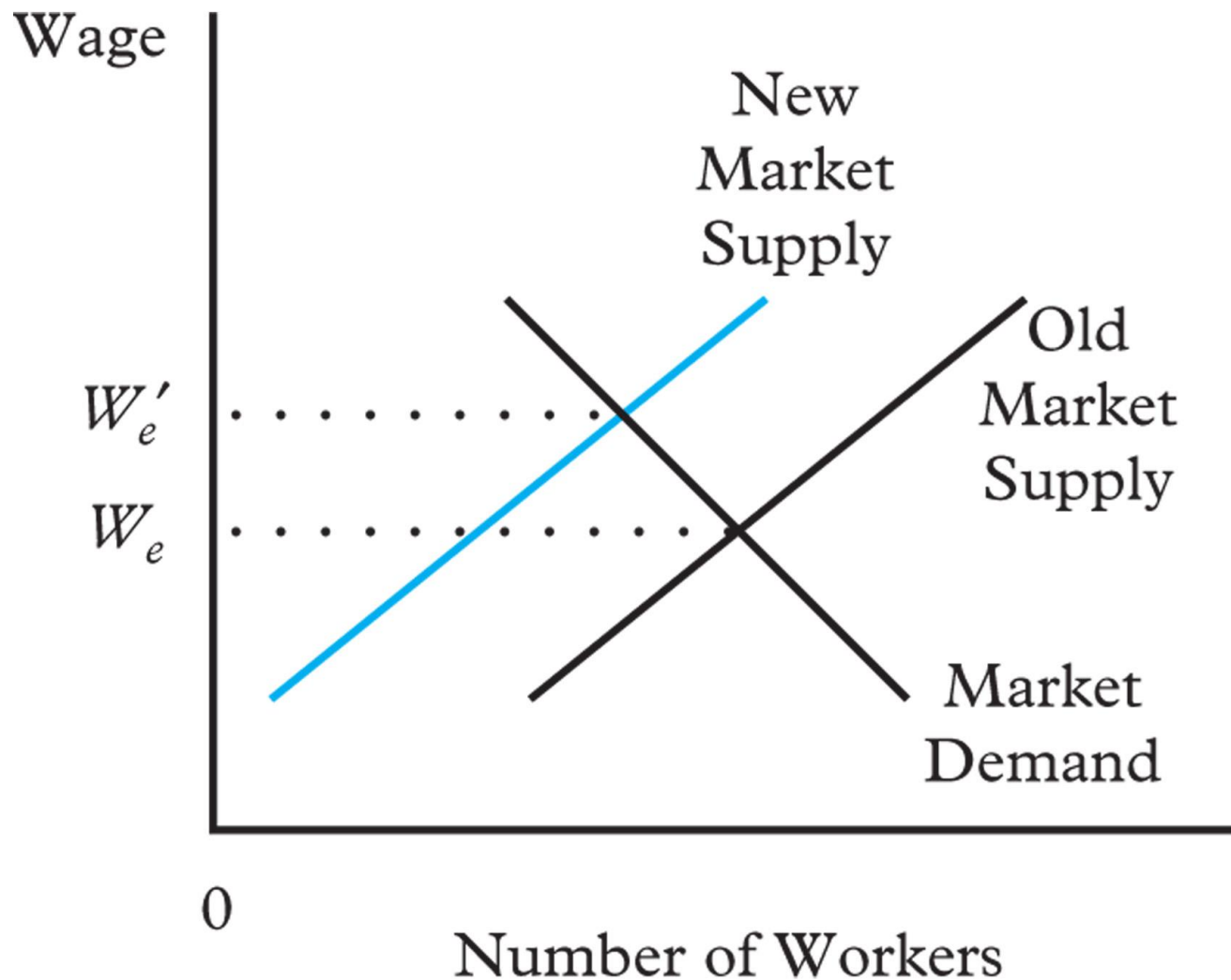# 2.2 How the Labor Market Works

Disturbing the Equilibrium

- Changes in labor demand or changes in labor supply or the simultaneous changes in labor demand and supply will change the equilibrium wage (W_e) and employment (L):
  - If L^D shifts to the right, W_e rises to W_e* – **see Figure 2.14**.
  - If L^S shifts to the left, W_e rises to W_e' – **see Figure 2.15**.

- If the L^S curve shifts to the right – **see Figure 2.16** – or the L^D curve shifts to the left, market wage will fall from W_e to W_e''.

- If L^S shifts to the left and this is accompanied by a rightward shift in L^D, market wage will rise dramatically with *net* employment increase – **see question # 1 under Review Questions**.
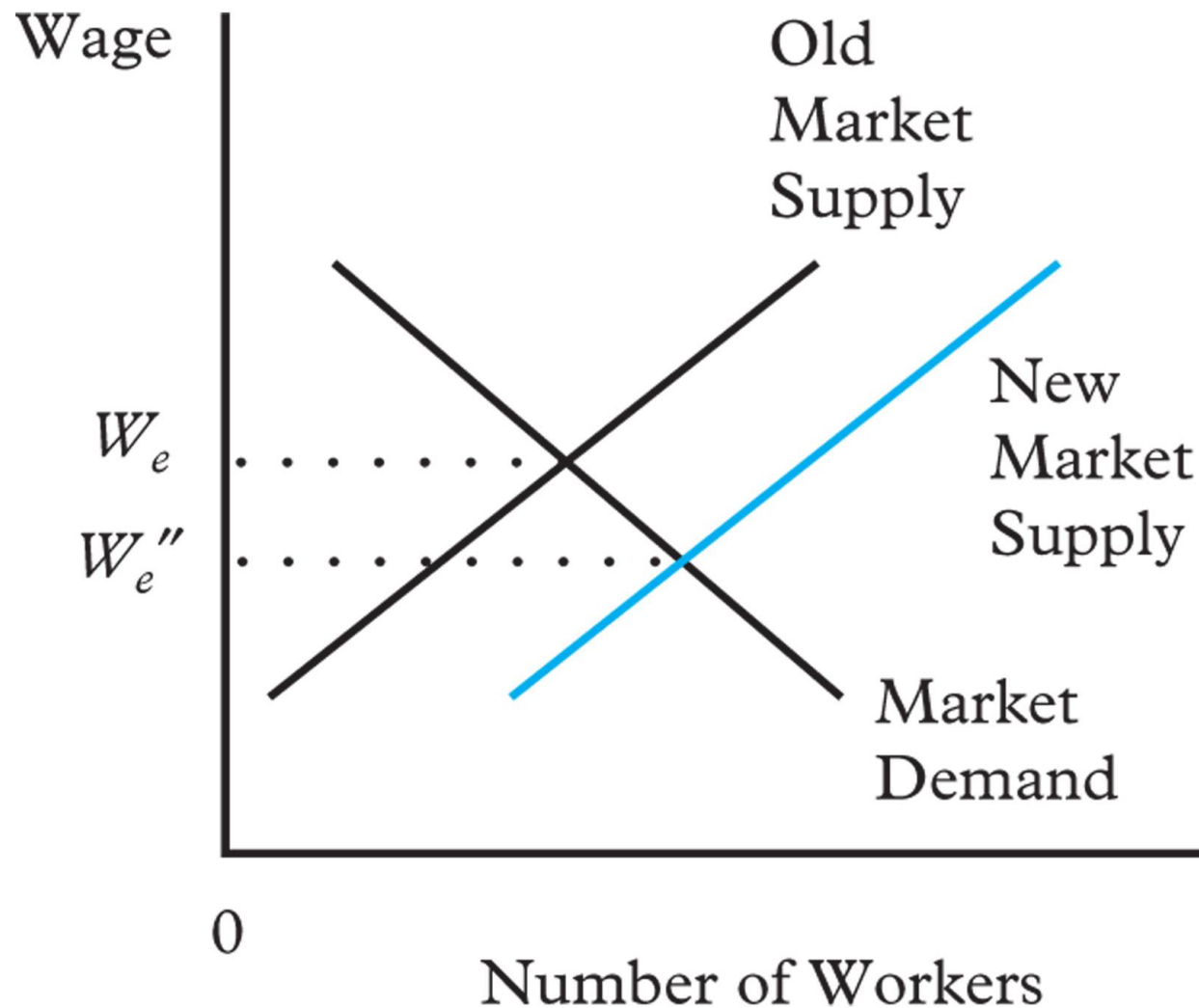
Figure 2.14   New Labor Market Equilibrium after Demand Shifts Right
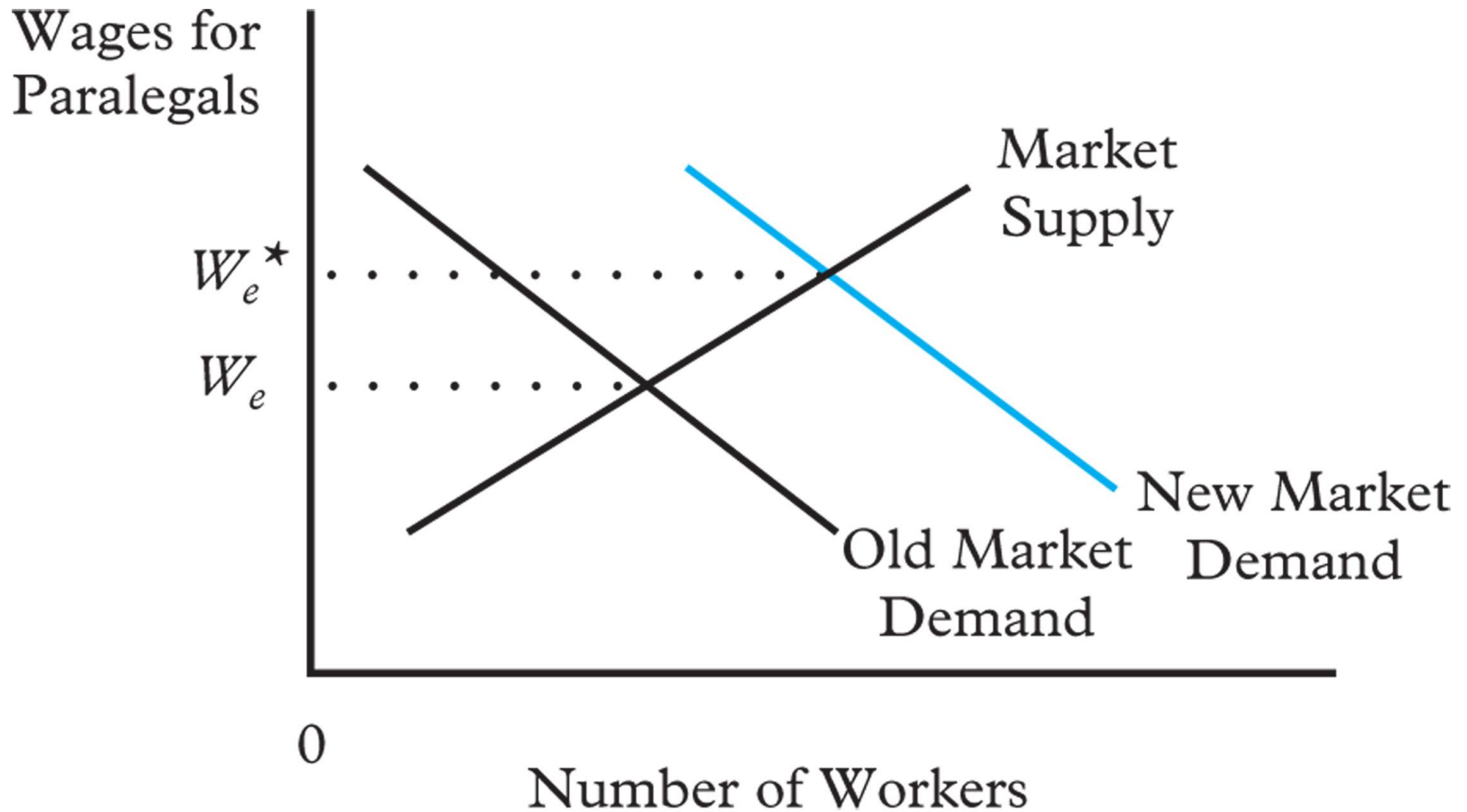
Figure 2.15   New Labor Market Equilibrium after Supply Shifts Left

Figure 2.16   New Labor Market Equilibrium after Supply Shifts Right

2.2 How the Labor Market Works

Disequilibrium and Nonmarket Influences

- The labor market is subject to forces that impede the adjustment of both wages and employment to changes in supply or demand:
  - Changing jobs often requires an employee to invest in new skills or bear the costs of moving.
  - Hiring workers can involve an initial investment in search and training, while firing them or cutting their wages can be perceived as unfair, which may affect moral and productivity.

- Other barriers to adjustment are rooted in *nonmarket* forces:
  - Government programs or laws such as minimum wage laws usually serve to keep wages *above* market levels, which could result in widespread *unemployment*.
  - Customs or institutions (labor unions) also constrain the choices of individuals and firms.
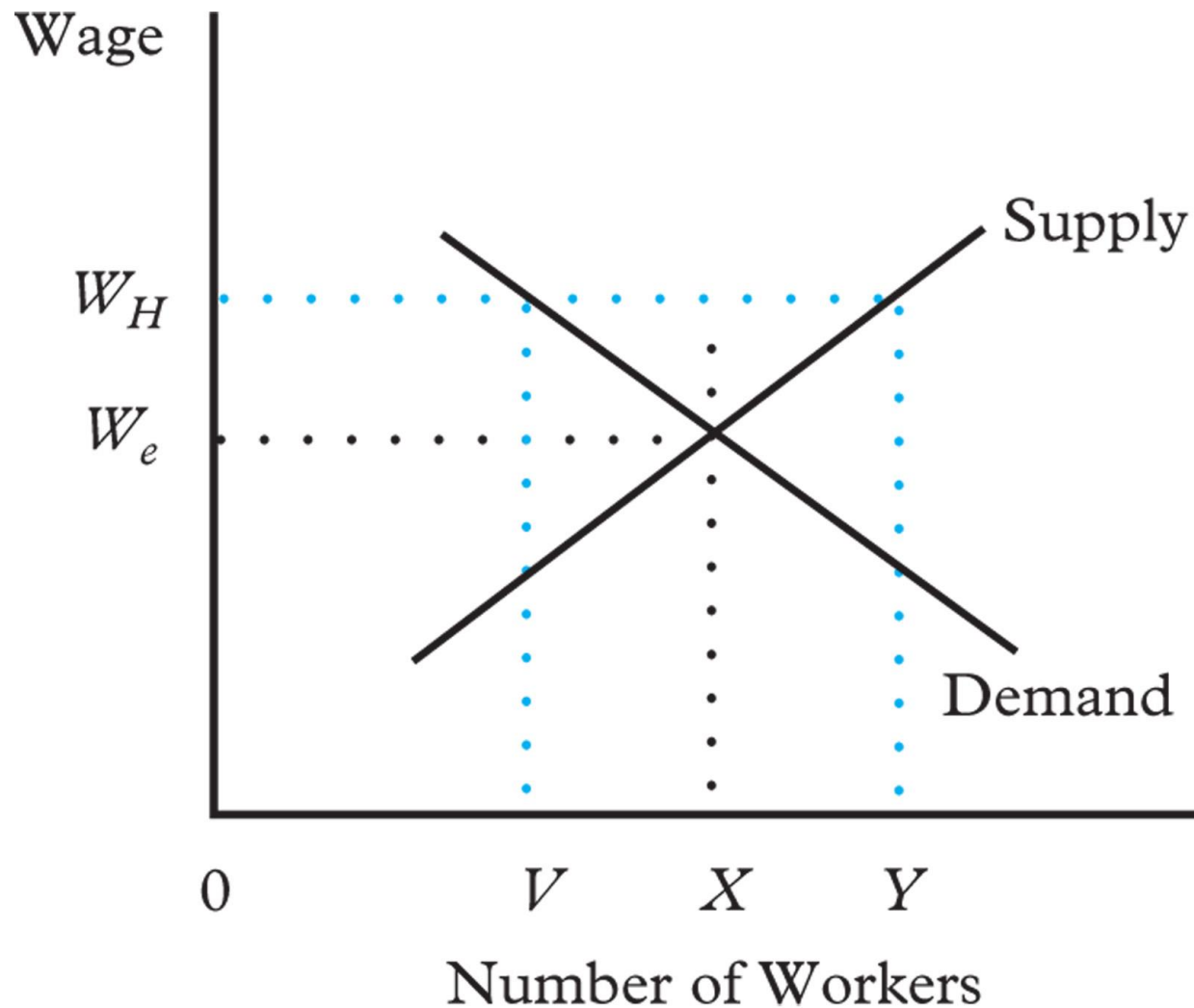
2.3 Applications of the Theory

Who Is Underpaid and Who Is Overpaid?

➤ The concepts of underpayment and overpayment have to do with the *social* issue of producing goods and services in the least-costly way, hence the comparison of overpayment and underpayment with *market-clearing wage*.

Above-Market Wages

- Workers whose wages are higher than the market-clearing wage are considered to be *overpaid* – two implications:
  - Employers are paying more than necessary to produce their output: ($W_H > W_e$).
  - More workers want jobs than they can find: $Y > V \rightarrow ESL$ – **see Figure 2.17**.
- Wage reduction close to the level dictated by the market would be *Pareto-improving*.

Figure 2.17   Effects of an Above-Market Wage

2.3 Applications of the Theory

Below-Market Wages

- Employees whose wages are below market-clearing levels are considered to be *underpaid*:

  - At below-market wages, employers face labor shortages due to $W_L < W_e$ – **see Figure 2.18**.

  - If workers are made to work at W_L wage, it will be difficult for employers to find and keep workers, and those who remain will be dissatisfied and resentful; therefore, production of goods and services will be affected – **see Example 2.2**.

  - If wages were to increase close the market-clearing level (W_e), more workers will be attracted to the market and output would rise as employment would increase from V to X.

Figure 2.18 Effects of a Below-Equilibrium Wage
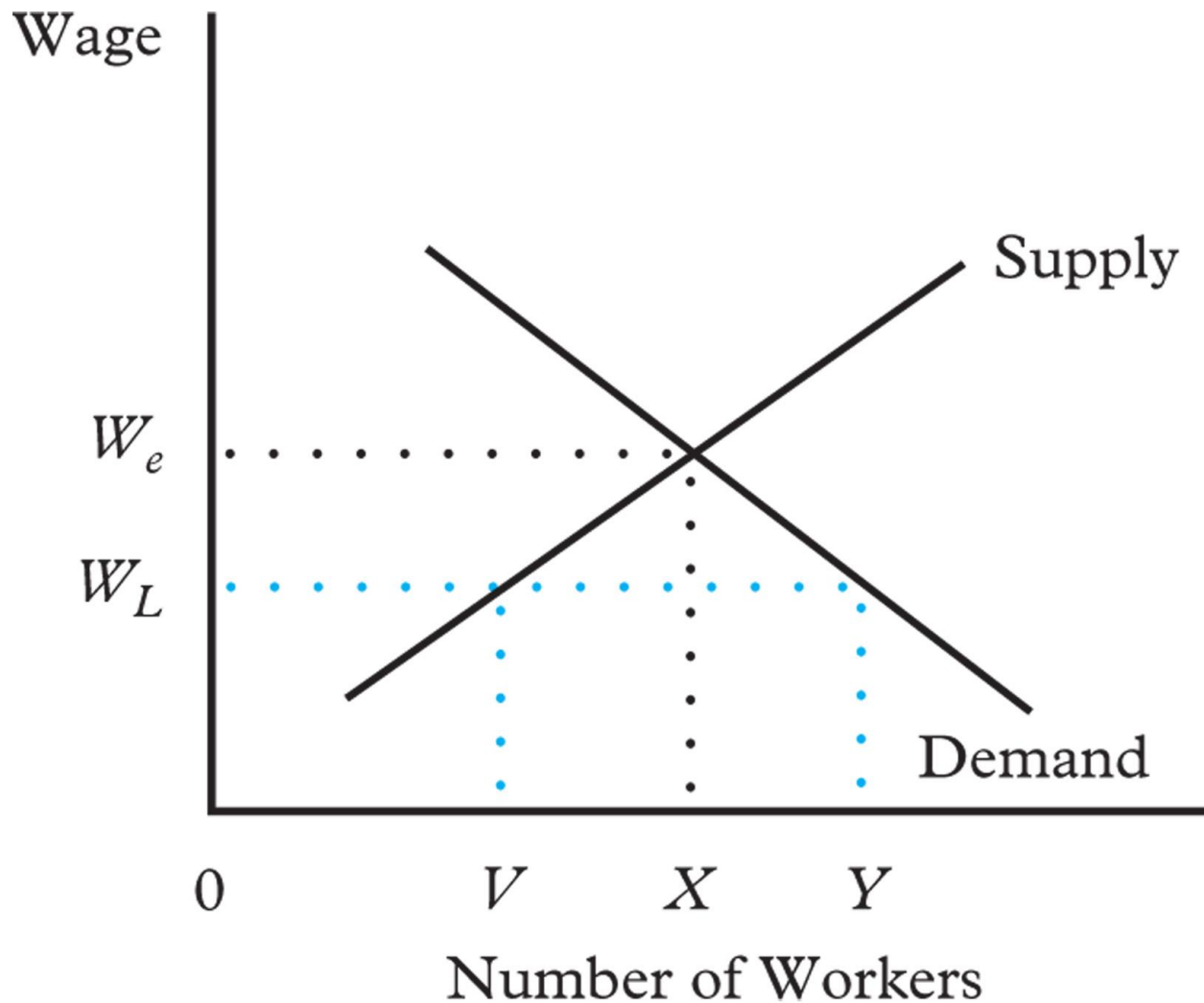
2.3 Applications of the Theory

Economic Rents

- With respect to the labor market, economic rents can be defined as the difference between the wage workers are actually paid on a job and the workers' *reservation wages*.
    - Economic rents sum the area between the market-clearing wage and the labor supply curve – **see Figure 2.19**.

- The labor supply curve of any occupation or industry is a schedule of reservation wages that indicates the labor forthcoming at each wage level – each worker potentially has a different reservation wage, hence rents will differ for each.

- The reservation wage of a worker is the wage below which the worker would refuse (or quit) the job in question.
    - It is the opportunity cost to the individual worker for giving up hours of leisure for market work.

Figure 2.19 Labor Supply to the Military: Different Preferences Imply Different "Rents"
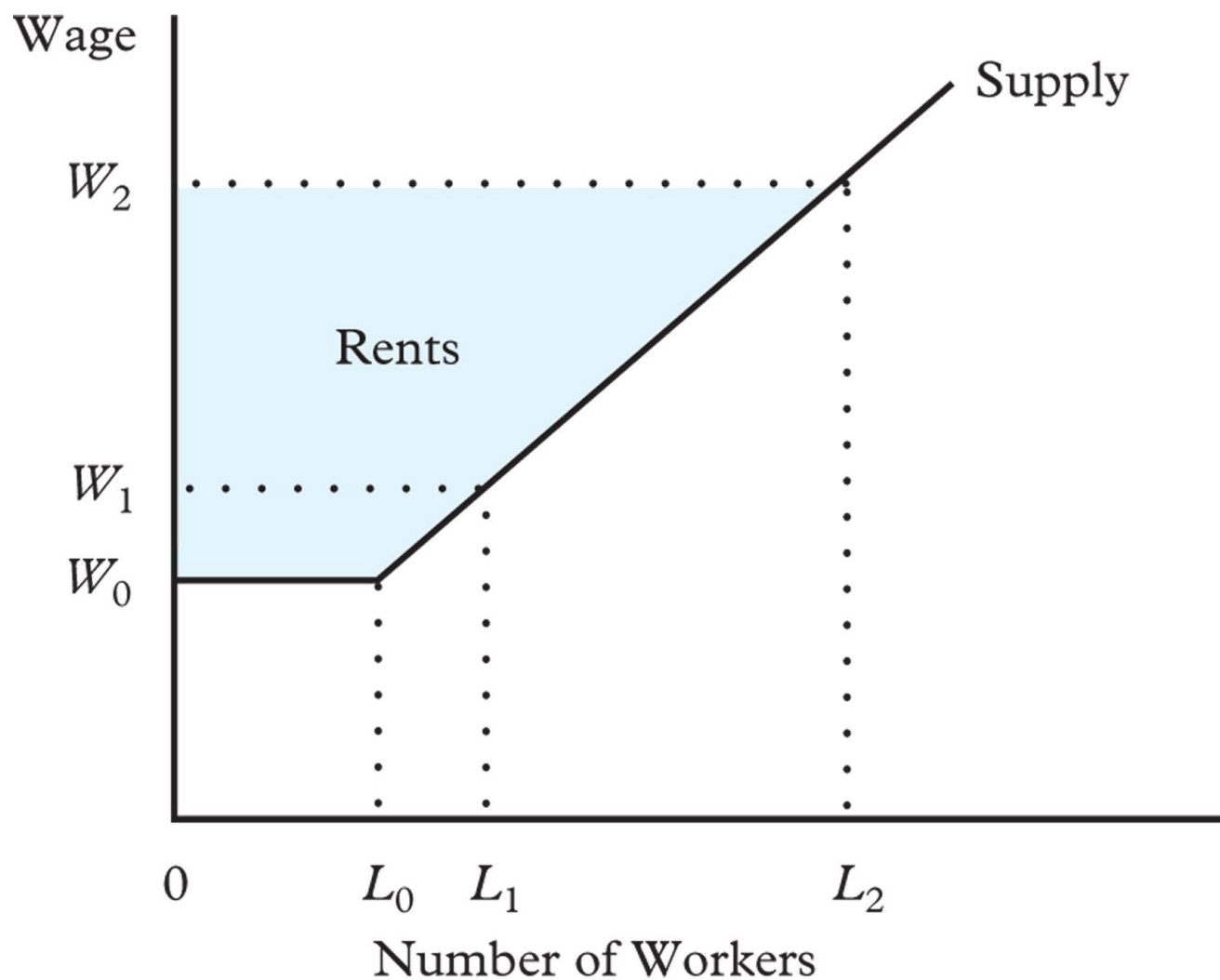
2.3 Applications of the Theory

Unemployment and Responses to Technological Change Across Countries

➢ The strength of nonmarket forces: government programs, laws, customs or institutions (labor unions) varies across countries.

➢ Theoretically, if wages are held above the market-clearing levels, there will be excess supply of labor (*ESL* or *unemployment*), and this *ESL* or *unemployment* would worsen if the labor demand curve *shifts to the left*.

➢ Nonmarket forces, which can prolong the duration of unemployment, are probably much stronger in most of Europe than in North America.
   - Unemployment rates are much higher in most European countries because of their generous unemployment compensation programs and laws (severance pay).