THE MEDIUM RUN
CHAPTER 8:
THE LABOUR MARKET

8.2 Wage Determination

Collective bargaining is bargaining between firms and unions.

Common forces at work in the determination of wages include:

- Workers are typically paid a wage that exceeds their **reservation wage**, the wage that would make them indifferent between working or being unemployed.

- Wages typically depend on labour market conditions. The lower the unemployment rate, the higher the wages.

8.2 Wage Determination (Continued)

Bargaining

How much bargaining power a worker has depends on two factors.

- How costly it would be for the firm to replace him—the nature of the job.
- How hard it would be for him to find another job—labour market conditions.

8.2 Wage Determination (Continued)

Efficiency wages

Economists call the theories that link the *productivity* or the *efficiency* of workers to the wage they are paid **efficiency wage theories**.

These theories also suggest that wages depend on both the nature of the job and on labour-market conditions:

- Firms that see employee morale and commitment as essential to the quality of their work will pay more than firms in sectors where workers' activities are more routine.
- Labour market conditions will affect the wage.

Henry Ford and Efficiency Wages

In 1914, Henry Ford decided his company would pay every qualified employee a minimum of $5 per day for an eight-hour day. While the effects support efficiency wage theories, Ford probably had other objectives as well for raising his wages.

Table 8.1 Annual turnover and layoff rates (%) at Ford, 1913–1915

	1913	1914	1915
Turnover rate	**370**	**54**	**16**
Layoff rate	**62**	**7**	**0.1**

8.2 Wage Determination (Continued)

Wages, prices and unemployment

$$W = P^{e} F(u, z)$$
$$(-,+)$$

The aggregate nominal wage, *W*, depends on three factors:

- The expected price level, P^e
- The unemployment rate, *u*
- A catchall variable, *z*, that stands for all other variables that may affect the outcome of wage setting.

8.2 Wage Determination (Continued)

Wages, prices and unemployment

The expected price level

Both workers and firms care about *real wages (W/P),* not nominal *wages (W).*

- Workers do not care about how many dollars they receive but about how many goods they can buy with those dollars. They care about *W/P*.

- Firms do not care about the nominal wages they pay but about the nominal wages, *W*, they pay relative to the price of the goods they sell, *P*. They also care about *W/P*.

8.2 Wage Determination (Continued)

Wages, prices and unemployment

The unemployment rate

Also affecting the aggregate wage is the unemployment rate, *u*.

If we think of wages as being determined by bargaining, then higher unemployment weakens workers' bargaining power, forcing them to accept lower wages. Higher unemployment allows firms to pay lower wages and still keep workers willing to work.

8.2 Wage Determination (Continued)

Wages, prices and unemployment

The other factors

The third variable, *z*, is a catchall variable that stands for all the factors that affect wages, given the expected price level and the unemployment rate.

Unemployment insurance is the payment of unemployment benefits to workers who lose their jobs.

8.3 Price Determination

- The production function is the relation between the inputs used in production and the quantity of output produced.

- Assuming that firms produce goods using only labour, the production function can be written as:

$$Y = AN$$

Y = output
N = employment
A = labour productivity, or output per worker

Further, assuming that one worker produces one unit of output—so that $A = 1$, then, the production function becomes:

$$Y = N$$

8.3 Price Determination (Continued)

Firms set their price according to:

$$P = (1 + \mu)W$$

The term *u* is the **markup** of the price over the cost of production. If all markets were perfectly competitive, □ = 0, and $P = W$.

We can think of the mark-up as depending on the degree of competition in the product market.

$$\mu = f(PMR)$$
$$(+)$$

8.4 The Natural Rate of Unemployment

- In this section, we will look at the implications of wage and price determination for unemployment.

- Let's assume that nominal wages depend on the actual price level, P, rather than on the expected price level, P^e.

- Wage setting and price setting determine the equilibrium rate of unemployment.

8.4 The Natural Rate of Unemployment (Continued)

The wage-setting relation

Since P^e equals P, then:

$$W = P F(u, z)$$

We can divide both sides by the price level:

$$\frac{W}{P} = \underset{(-,+)}{F(u, z)}$$

This relation between the real wage and the rate of unemployment**—wage-setting relation**.

8.4 The Natural Rate of Unemployment (Continued)

Slide 8.14

The wage-setting relation

The natural rate of unemployment is the unemployment rate such that the real wage chosen in wage setting is equal to the real wage implied by price setting.

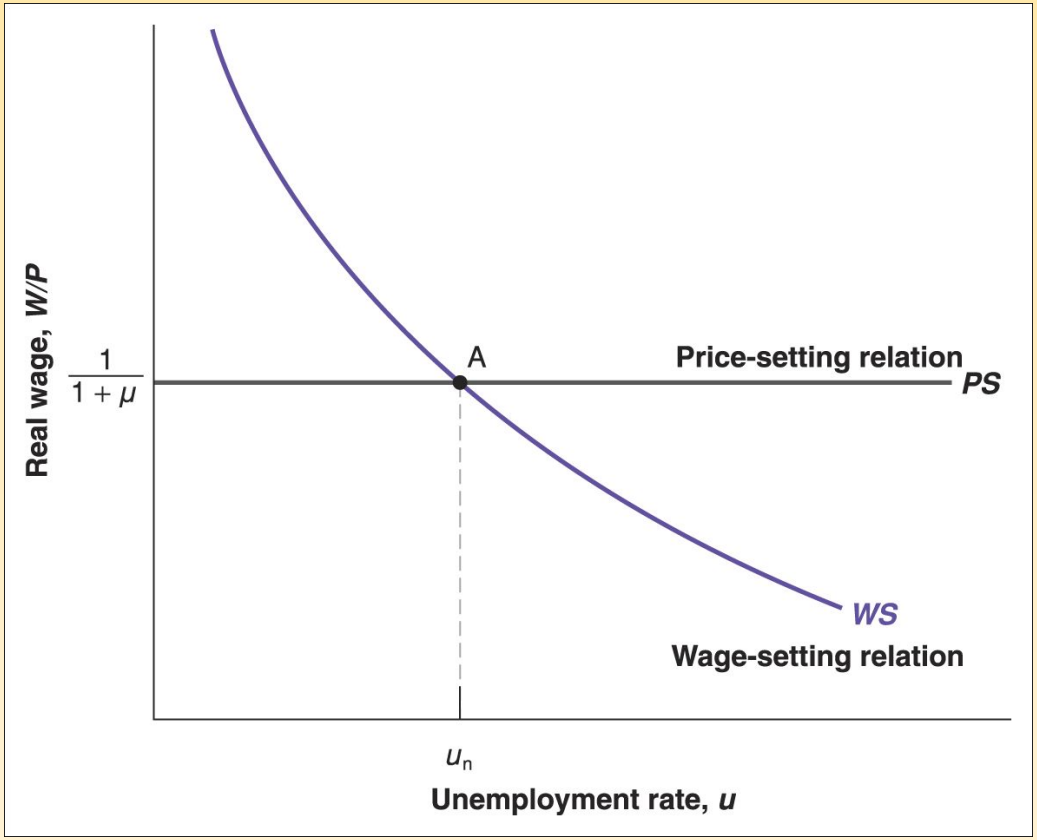

Figure 8.10 **Wages, prices and the natural rate of unemployment**

8.4 The Natural Rate of Unemployment (Continued)

The price-setting relation

The price-determination equation is:

$$P = (1 + \mu)W$$

If we divide both sides by *W*, we get:

$$\frac{P}{W} = (1 + \mu)$$

To state this equation in terms of the wage rate, we invert both sides:

$$\frac{W}{P} = \frac{1}{(1 + \mu)}$$

The price-setting relation

8.4 The Natural Rate of Unemployment (Continued)

The price-setting relation

- **The price-setting relation in Equation (8.6) is drawn as the horizontal line PS (for price setting) in Figure 8.10.**

- **The real wage implied by price setting is $1/(1 = \mu)$; it does not depend on the unemployment rate.**

8.4 The Natural Rate of Unemployment (Continued)

Equilibrium real wages and unemployment

Eliminating *W/P* from the wage-setting and the price-setting relations, we can obtain the equilibrium unemployment rate, or natural rate of unemployment, u_n:

$$F(u_n, z) = \frac{1}{1+\mu}$$

The equilibrium unemployment rate (u_n) is called the **natural rate of unemployment**.

8.4 The Natural Rate of Unemployment (Continued)

Equilibrium real wages and unemployment

The positions of the wage-setting and price-setting curves, and thus the equilibrium unemployment rate, depend on both z and μ.

- At a given unemployment rate, higher unemployment benefits lead to a higher real wage. A higher unemployment rate is needed to bring the real wage back to what firms are willing to pay.

- By letting firms increase their prices given the wage, less stringent enforcement of antitrust legislation leads to a decrease in the real wage.

8.4 The Natural Rate of Unemployment (Continued)

Slide 8.19

Equilibrium real wages and unemployment

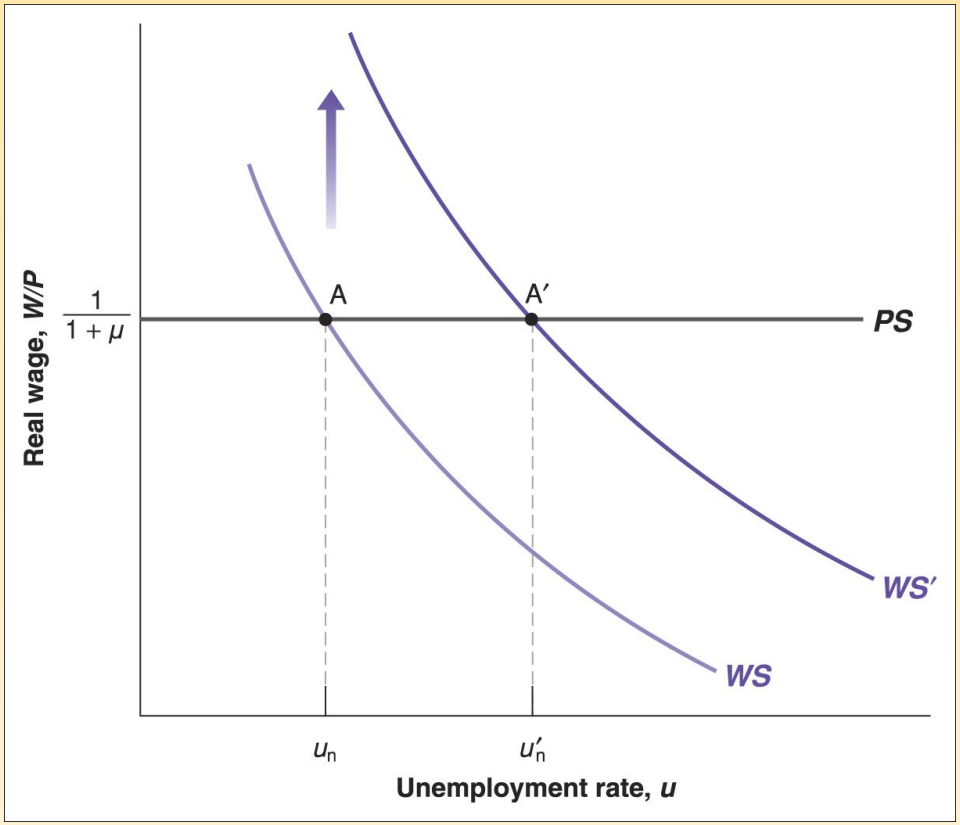

Figure 8.11 **Unemployment benefits and the natural rate of unemployment**

An increase in unemployment benefits leads to an increase in the natural rate of unemployment.

8.4 The Natural Rate of Unemployment (Continued)

Slide 8.20

Equilibrium real wages and unemployment

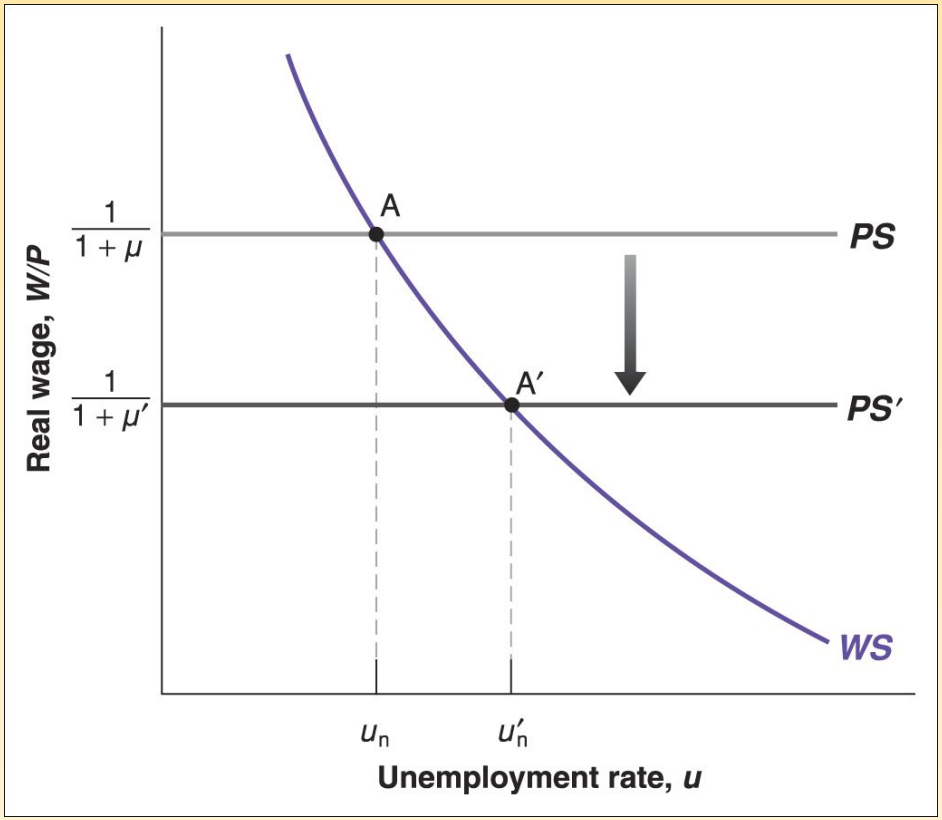

Figure 8.12 **Mark-ups and the natural rate of unemployment**

An increase in mark-ups decreases the real wage and leads to an increase in the natural rate of unemployment.

8.4 The Natural Rate of Unemployment (Continued)

Equilibrium real wages and unemployment

Because the equilibrium rate of unemployment reflects the structure of the economy, a better name for the natural rate of unemployment is the structural rate of unemployment.

8.4 The Natural Rate of Unemployment (Continued)

From unemployment to employment

Associated with the natural rate of unemployment is a **natural level of employment**.

$$u = \frac{U}{L} = \frac{L - N}{L} = 1 - \frac{N}{L}$$

Employment in terms of the labour force and the unemployment rate equals:

$$N = L(1 - u)$$

The natural level of employment, N_n, is given by:

$$N_n = L(1 - u_n)$$

8.4 The Natural Rate of Unemployment (Continued)

From employment to output

Associated with the natural level of employment is the natural level of output, and since (Y=N):

$$Y_n = N_n = L(1 - u_n)$$

The natural level of output satisfies the following:

$$F\left(1 - \frac{Y_n}{L}, z\right) = \frac{1}{1+\mu}$$

In words, the natural level of output is such that, at the associated rate of unemployment $u_n = 1 - \frac{Y_n}{L}$, the real wage chosen in wage setting is equal to the real wage implied by price setting.