

# INTERMEDIATE MACROECONOMICS

## 5 – THE LABOR MARKET

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# Share 3 take-aways from the reading (textbook Chapter 7)

## The Labor Market

7

**T**hink about what happens when firms respond to an increase in demand by increasing production. Higher production leads to higher employment. Higher employment leads to lower unemployment. Lower unemployment leads to higher wages. Higher wages increase production costs, leading firms to increase prices. Higher prices lead workers to ask for higher wages. Higher wages lead to further increases in prices, and so on.

So far, we have simply ignored this sequence of events. By assuming a constant price level in the IS-LM model, we in effect assumed that firms were able and willing to supply any amount of output at a given price level. As long as our focus was on the *short run*, this assumption was fine. But, as our attention now turns to the *medium run*, we must now abandon this assumption, explore how prices and wages adjust over time, and how this affects output. This will be our task in this and the next two chapters.

At the center of the sequence of events described in the first paragraph is *the labor market*, which is the market in which wages are determined. This chapter focuses on the labor market. It has six sections:

◀ Recall the behavior of the price level in Figure 5-10.

## 5 – The Labor Market

- How are wages determined?
- How do labor market conditions affect wages?
- How are prices determined?
- What rate of unemployment will prevail over the medium-run?



## Section 5: The roadmap

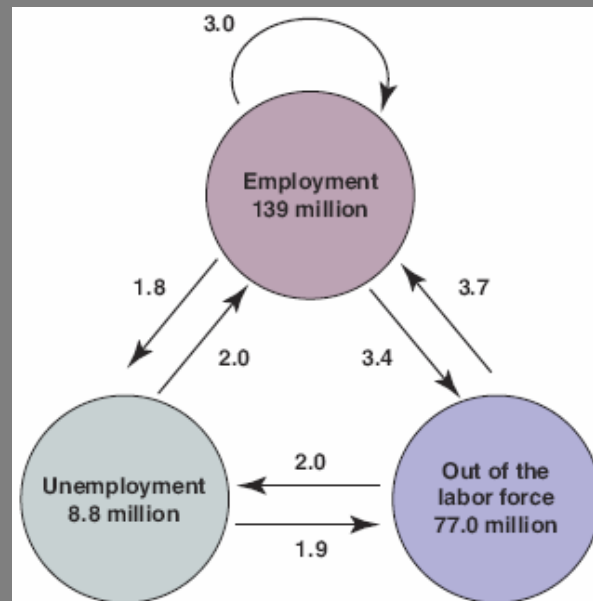
1. US labor market facts.
2. What determines wages and prices?
3. The equilibrium rate of unemployment.



## Section 5: The take-aways

- Most modern theories of wage determination imply that a higher unemployment rate leads to lower wages.
  - *wage-setting relation*
- The price set by a firm depends on its production costs and its market power.
  - *price-setting relation*
- Under some assumptions, wage-setting & price-setting determine an *equilibrium ('natural') unemployment rate*.

# 4.1 US LABOR MARKET FACTS



**Walmart**  
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**JANUARY 10 & 17 2019**

**TAYLOR 2912 HIRING EVENT**

10am - 3pm Thursday  
01/10/2019 & 01/17/2019

**Store Set Up/Remodel Team**  
Overnights 10 p.m. - 7 a.m. Shifts  
Day Warehouse Shifts 8 a.m. - 5 p.m.

MUST HAVE APPLICATION IN BEFORE EVENT AT  
WALMARTCAREERS.COM

# Refresher: key labor market measures

- **Unemployment rate** =  $\frac{\text{unemployment}}{\text{labor force}}$
- **Employment rate** =  $\frac{\text{employment}}{\text{working-age population}}$
- **Participation rate** =  $\frac{\text{labor force}}{\text{working-age population}}$



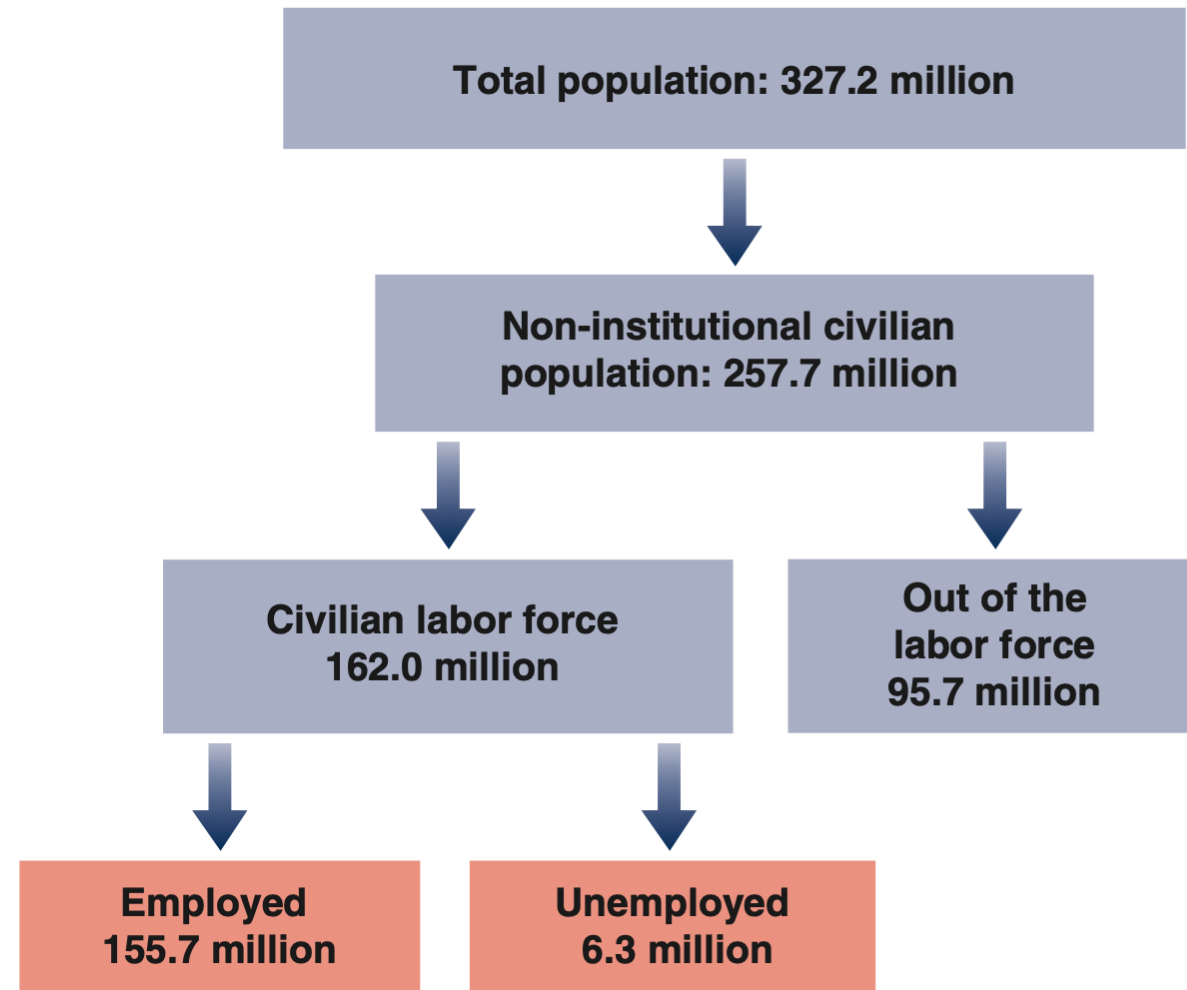
Monthly CPS survey.

# US Labor market: Key numbers

**Figure 7-1**

***Population, Labor Force, Employment, and Unemployment in the United States (in Millions), 2018***

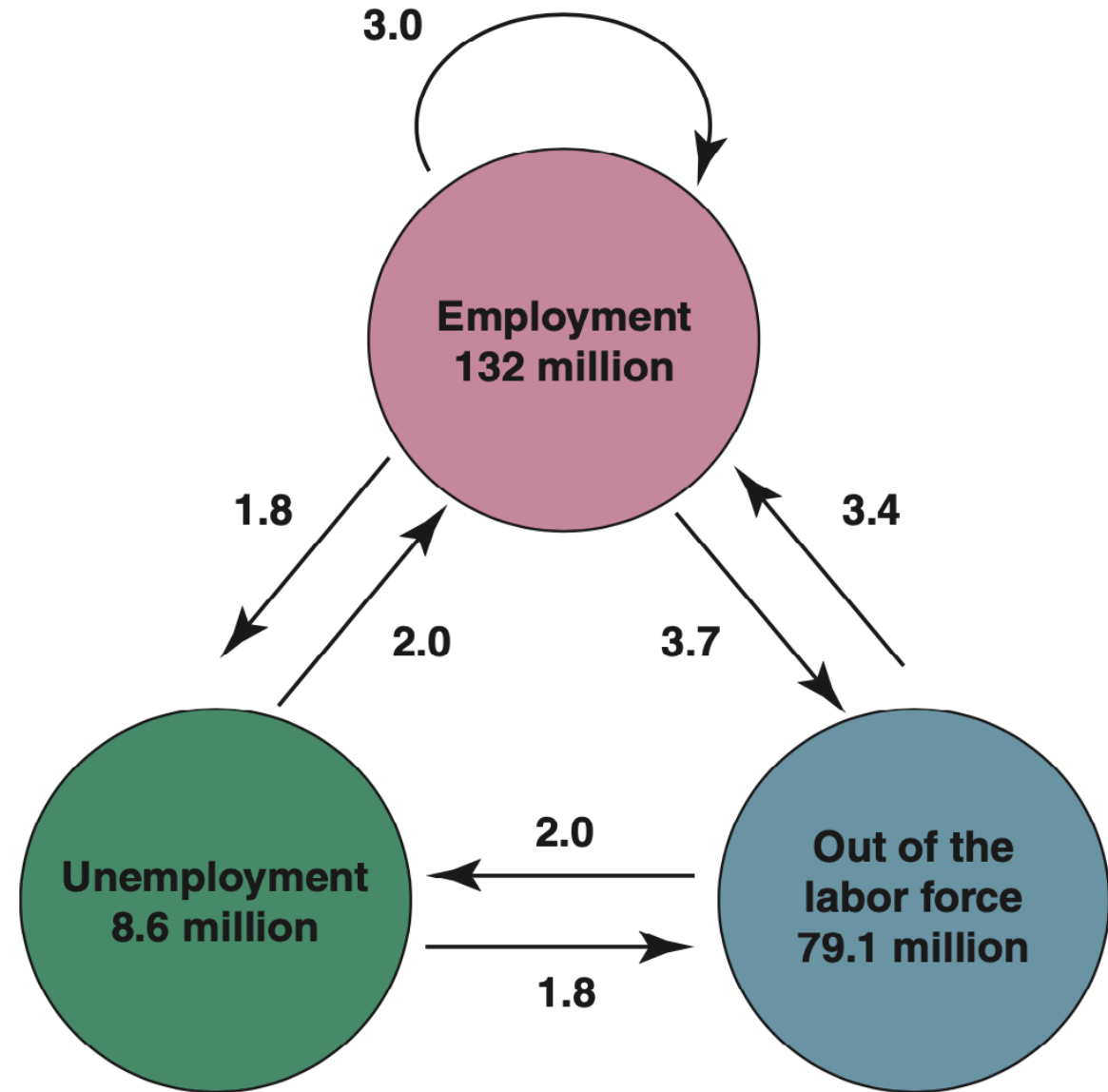
Source: Current Population Survey [www.bls.gov/cps/](http://www.bls.gov/cps/).





# Average monthly flows, 1994 to 2018

- Flows in and out of employment/unemployment are large
  - US labor market is dynamic.
- Flows in and out of labor force are also large.
  - Many *discouraged workers*.



# US monthly unemployment rate – 1948 to 2022



# 4.2 WHAT DETERMINES WAGES AND PRICES?





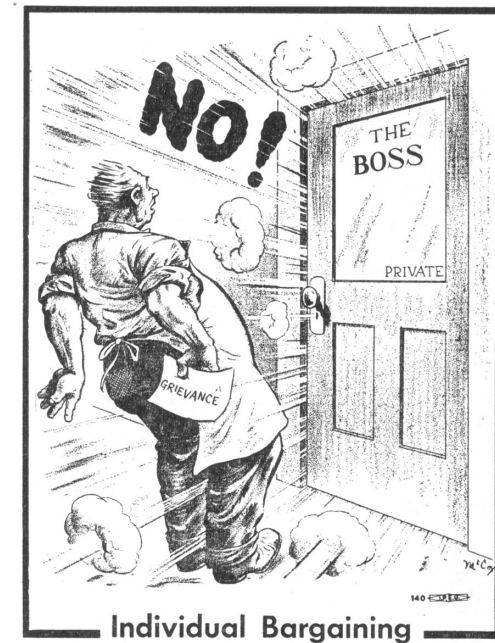
# Wage determination

## collective bargaining

- unions negotiate on behalf of workers.
- national/industry/firm level.
- small in USA today (<10% of workers).
- bigger in Japan and some European countries.

## individual bargaining

- Often the employer just makes a take-it-or-leave-it offer (especially for low paying jobs).



# Theories of what determines wages

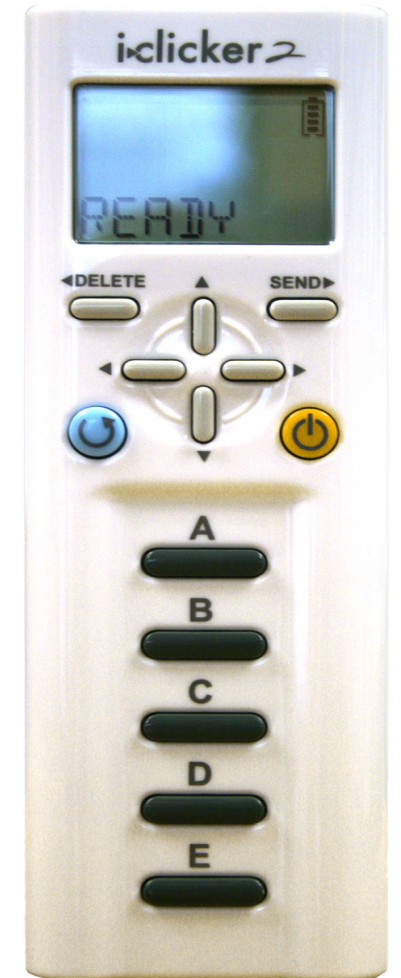
- Define a *reservation wage*.
- Firms pay more than the *reservation wage*.
  - ‘*bargaining*’ reasons.
  - ‘*efficiency wage*’ reasons
- Both imply that wages depend on labor market conditions.



# iClicker question

Consider the jobs of a delivery person and a computer network administrator. In which of these jobs does a worker have more bargaining power, and why?

- A. Network administrator, because there are many workers with the same skills.
- B. Delivery person, because there are many workers with the same skills.
- C. Delivery person, because they are harder to replace.
- D. Network administrator, because they are harder to replace.





# Henry Ford, Jeff Bezos & efficiency wages

- If efficiency wage theories are right, then higher wages should lead to lower quits & higher productivity.
- **1914**: Henry Ford raises wages from \$2.30 to \$5 a day.
- Results were consistent with efficiency wage theory.

Table 1 Annual Turnover and Layoff Rates (%) At Ford, 1913–1915			
	1913	1914	1915
Turnover rate (%)	370	54	16
Layoff rate (%)	62	7	0.1

**2018-2022**: Amazon & Target voluntarily raise their min wage to \$15.

# A wage determination equation

- Expected real wage:

$$\frac{W}{P^e} = F(u, z)$$

(−, +)

- Nominal wage:

$$W = P^e \times F(u, z)$$

(−, +)

# Production function

- A simplified world: only one good, produced using only labor.

- *Production function:*

$$Y = AN$$

$Y$  = output;

$N$  = employment;

$A$  = productivity (output x worker)



- Assume productivity  $A$  constant & equal to  $q$ . Then

$$Y = N$$



# Price determination

- Production function:

$$Y = N$$

- Marginal cost of production:

$$MC = W$$

- > Firms set their price according to

$$P = (1 + m)W$$

(mark-up size  $m$  depends on market power.)



# 4.3 THE EQUILIBRIUM RATE OF UNEMPLOYMENT



# Price determination & wage determination

- Wage determination:

$$\frac{W}{P^e} = F(u, z)$$

(−, +)

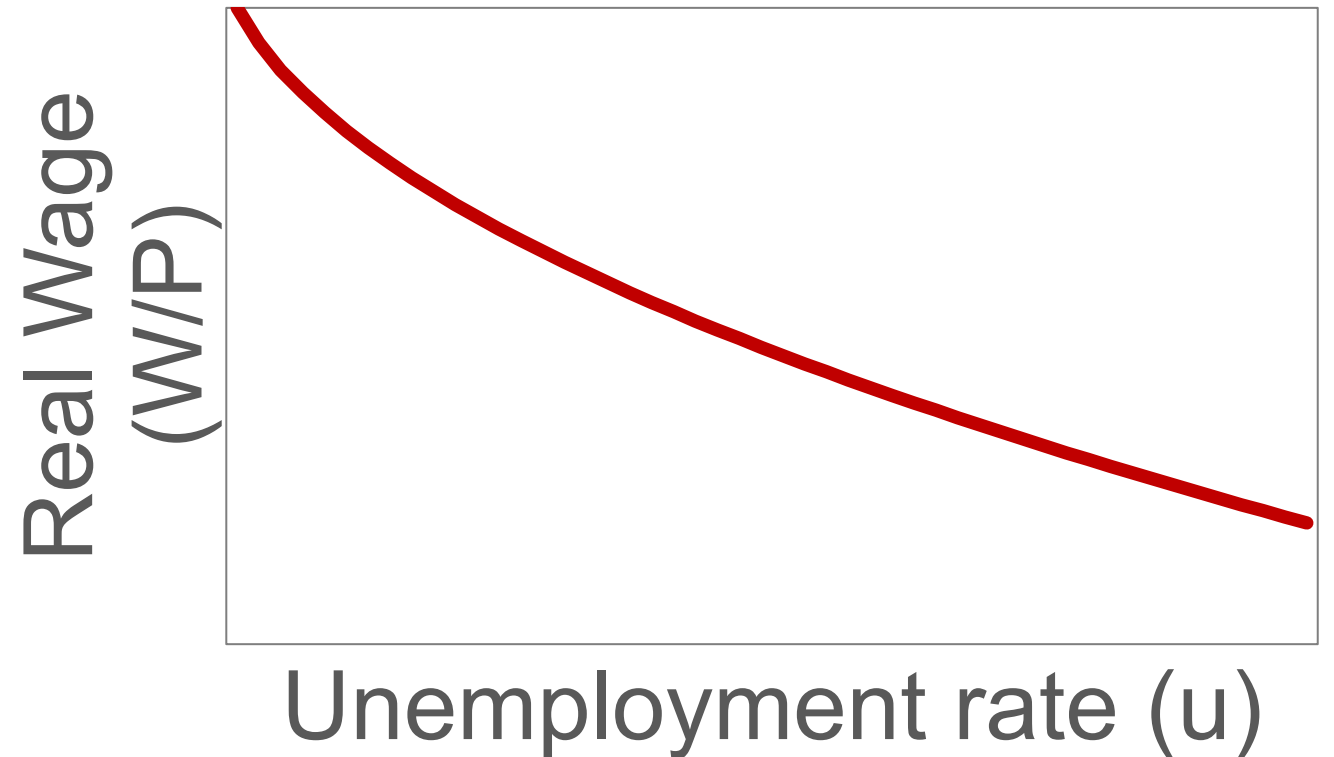
- Price determination:

$$P = (1 + m)W$$

If we assume  $P=P^e$ , we can combine these two conditions.

# The wage-setting relation

- Assume expectations are correct:  $P = P^e$ .
- Then  $\frac{W}{P} = F(u, z)$   
(-, +)



# The price-setting relation

- Price determination:

$$P = (1 + m)W$$

- Divide by  $W$ :

$$\frac{P}{W} = 1 + m$$

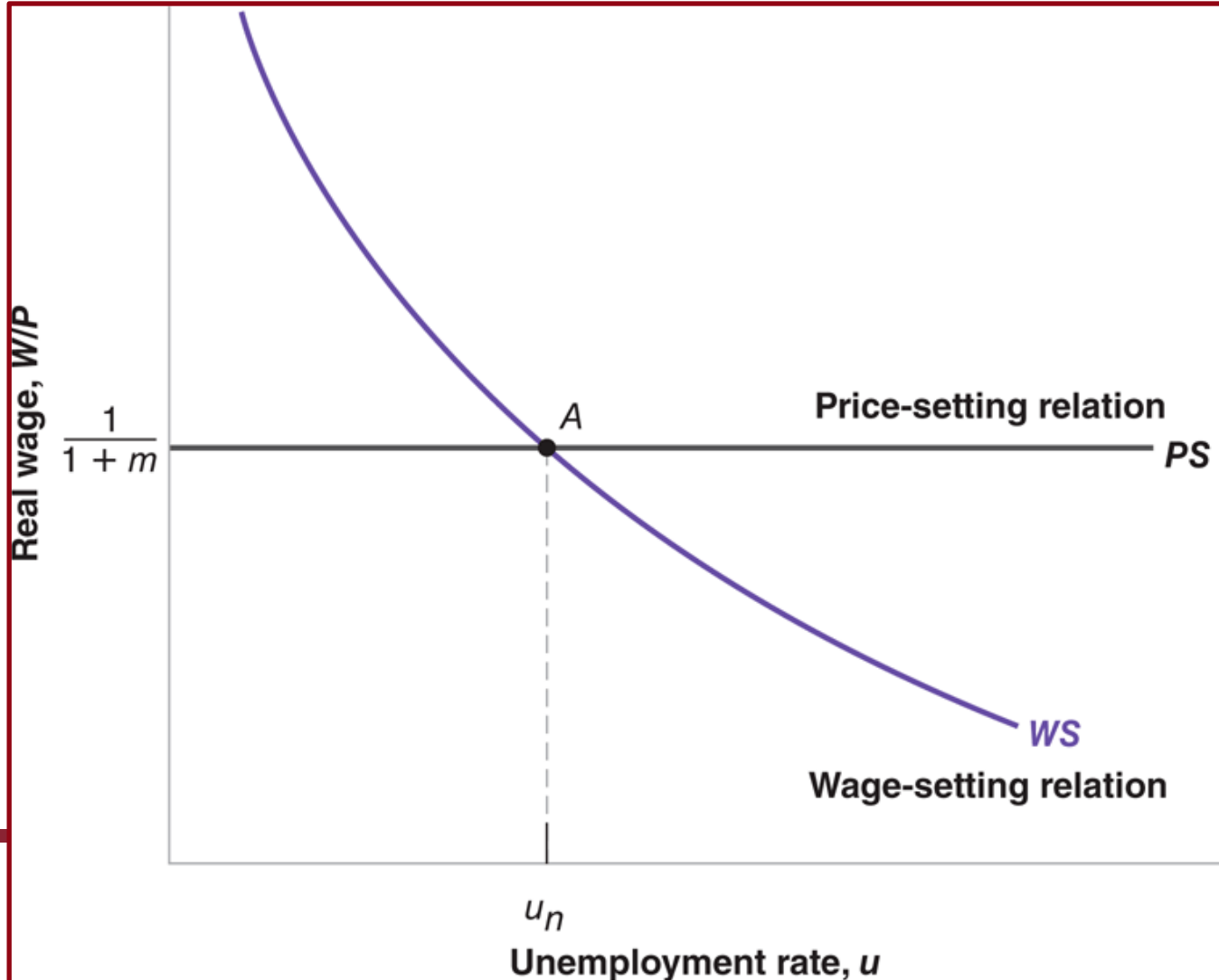
- Invert both sides:

$$\frac{W}{P} = \frac{1}{1 + m}$$





# The equilibrium (or 'natural') rate of unemployment

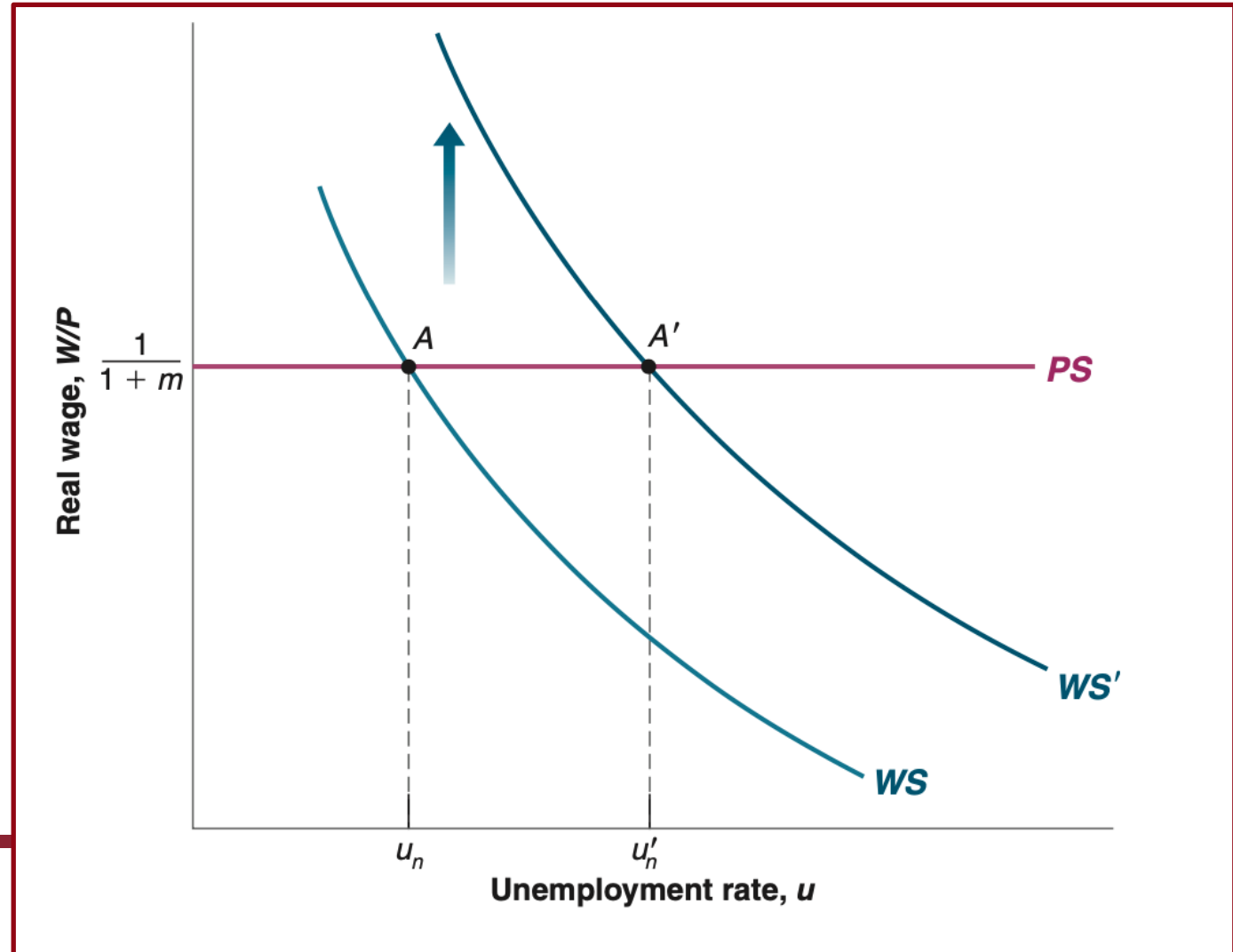


$u_n$  = the unemployment rate such that the real wage chosen in wage setting is equal to the real wage implied by price setting.

$u_n$  should prevail on average in the medium term

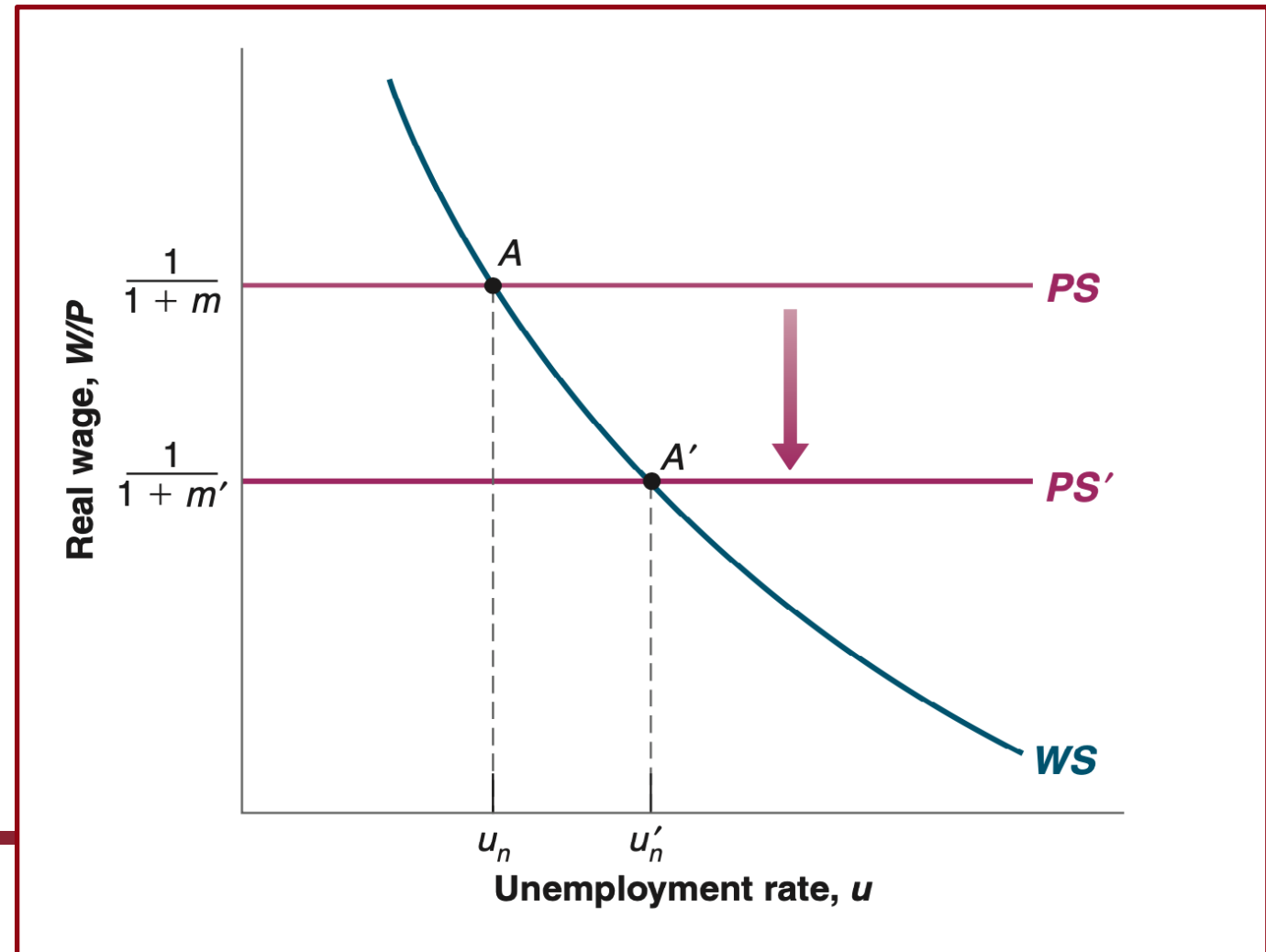
# Effect of an increase in unemployment benefits

- Increases workers bargaining power.
- Corresponds to an increase in  $z$ .
- Shifts the wage-setting curve up.
- Higher  $u_n$



# Effect of an increase in firms' market power

- Increase in market power means higher  $m$ .
- Shifts the price-setting curve down.
- Higher  $u_n$



# The theory of the 'natural' rate of unemployment

- According to this theory, in the medium-run  $u$  gravitates towards  $u_n$ .
- The theory relies on some important assumptions:
  - 1) On average in the medium-run  $P = P^e$ .
  - 2) Domestic wages are the main determinant of production costs.
  - 3) Productivity ( $A$ ) and mark-ups ( $m$ ) are fixed and exogenous to labor market conditions.
- The theory implies that there is also a 'natural' level of output.
- But in the short-run we can have  $P \neq P^e$  and output and unemployment can deviate from their 'natural' rates.