

# MACROECONOMICS

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PowerPoint® Slides by Ron Cronovich

SEVENTH EDITION

## CHAPTER 6

# Unemployment

# In this chapter, you will learn:

...about the natural rate of unemployment:

- what it means
- what causes it

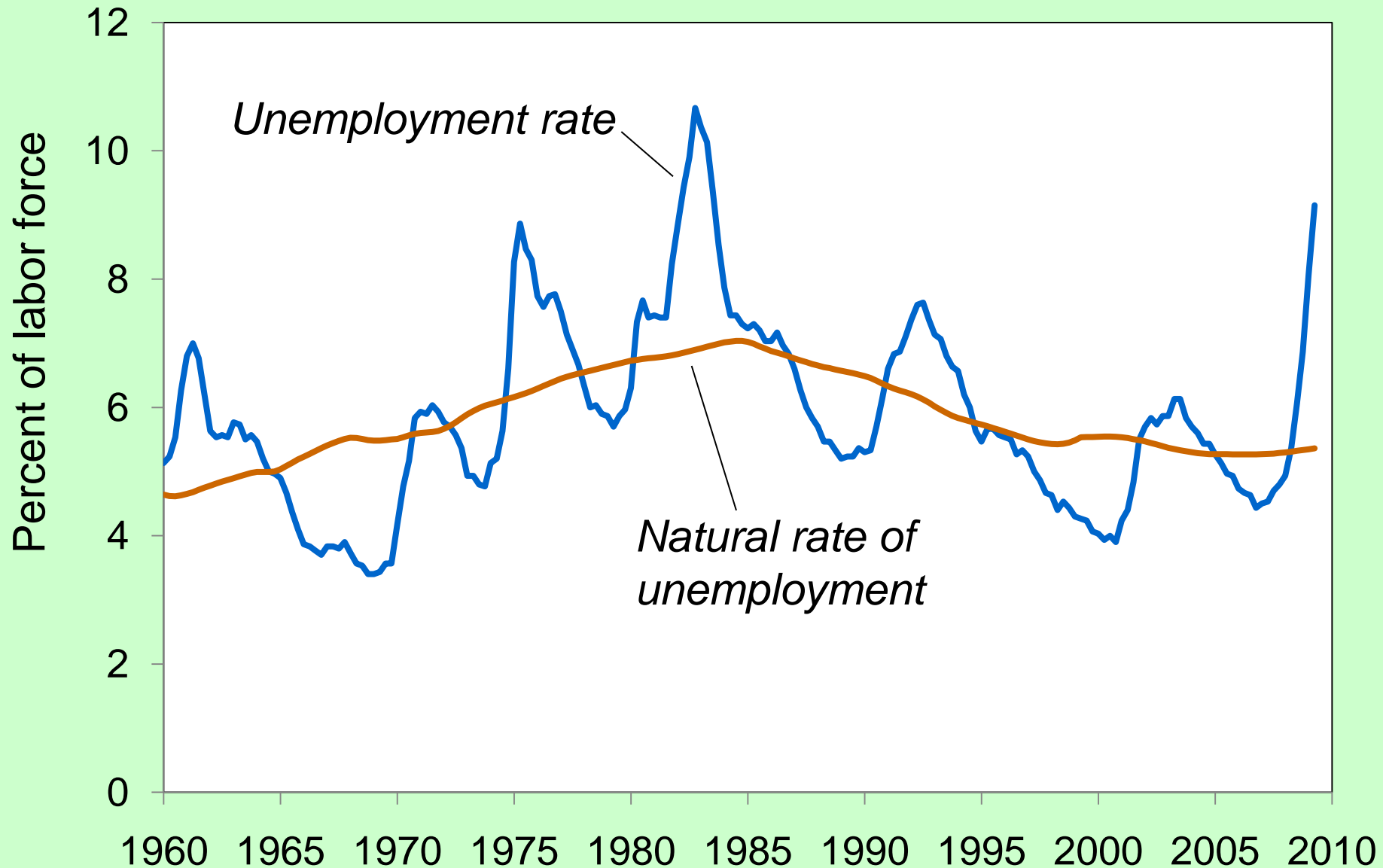
# Natural rate of unemployment

- **Natural rate of unemployment:**

The average rate of unemployment around which the economy fluctuates.

- In a recession, the actual unemployment rate rises above the natural rate.
- In a boom, the actual unemployment rate falls below the natural rate.

# Actual and natural rates of unemployment in the U.S., 1960-2009



# A first model of the natural rate

Notation:

$L$  = # of workers in labor force

$E$  = # of employed workers

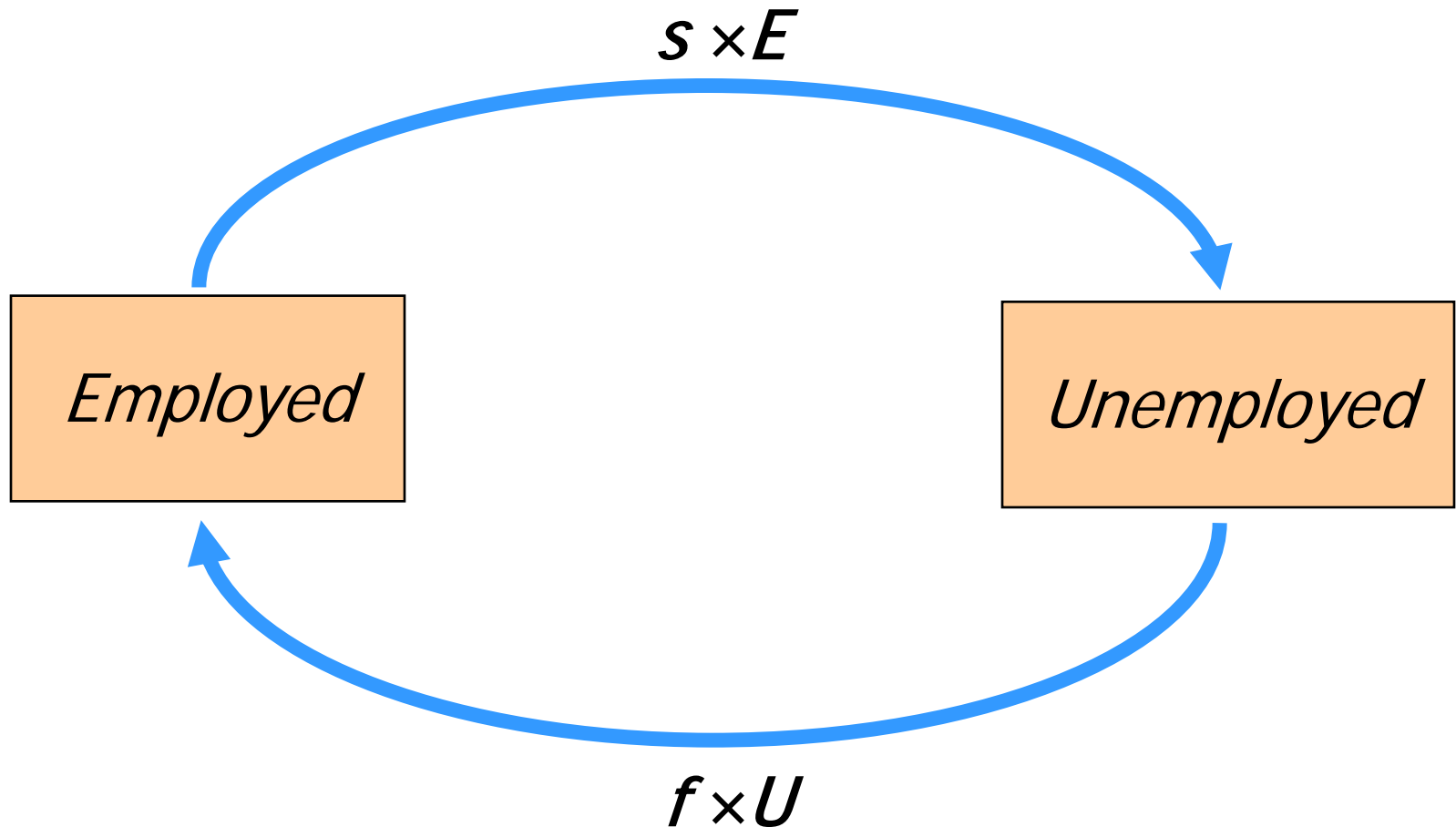
$U$  = # of unemployed

$U/L$  = unemployment rate

# Assumptions:

1.  $L$  is exogenously fixed.
2. During any given month,  
 $s$  = **rate of job separations**,  
the fraction of employed workers  
that become separated from their jobs  
 $f$  = **rate of job finding**,  
fraction of unemployed workers  
that find jobs  
 $s$  and  $f$  are exogenous

# *The transitions between employment and unemployment*




# The steady state condition


- Definition: the labor market is in **steady state**, or long-run equilibrium, if the unemployment rate is constant.
- The steady-state condition is:

$$s \times E = f \times U$$

*# of employed people who lose or leave their jobs*



*# of unemployed people who find jobs*





# Finding the “equilibrium” U rate

$$\begin{aligned}f \times U &= s \times E \\&= s \times (L - U) \\&= s \times L - s \times U\end{aligned}$$

Solve for  $U/L$ :

$$(f + s) \times U = s \times L$$

SO,

$$\frac{U}{L} = \frac{s}{s + f}$$

# Example:

- Each month,
  - 1% of employed workers lose their jobs ( $s = 0.01$ )
  - 19% of unemployed workers find jobs ( $f = 0.19$ )
- Find the natural rate of unemployment:

$$\frac{U}{L} = \frac{s}{s + f} = \frac{0.01}{0.01 + 0.19} = 0.05, \text{ or } 5\%$$

# Policy implication

- A policy will reduce the natural rate of unemployment only if it lowers  $s$  or increases  $f$ .

# Why is there unemployment?

- If job finding were instantaneous ( $f = 1$ ), then all spells of unemployment would be brief, and the natural rate would be near zero.
- There are two reasons why  $f < 1$ :
  1. job search
  2. wage rigidity

# Job search & frictional unemployment

- **frictional unemployment**: caused by the time it takes workers to search for a job
- occurs even when wages are flexible and there are enough jobs to go around
- occurs because
  - workers have different abilities, preferences
  - jobs have different skill requirements
  - geographic mobility of workers not instantaneous
  - flow of information about vacancies and job candidates is imperfect

# Sectoral shifts

- def: Changes in the composition of demand among industries or regions.
- *example: Technological change*  
more jobs repairing computers,  
fewer jobs repairing typewriters
- *example: A new international trade agreement*  
labor demand increases in export sectors,  
decreases in import-competing sectors
- These scenarios result in frictional unemployment

# Examples of sectoral shifts

- Industrial revolution (1800s):  
agriculture declines, manufacturing soars
- Energy crisis (1970s):  
demand shifts from larger cars to smaller ones
- Health care spending as % of GDP:  
1960: 5.2%                      2000: 13.8%  
1980: 9.1%                      2007: 16.2%

*In our dynamic economy,  
smaller sectoral shifts occur frequently,  
contributing to frictional unemployment.*

# Public policy and job search

Govt programs affecting unemployment include:

- ***Govt employment agencies***  
disseminate info about job openings to better match workers & jobs.
- ***Public job training programs***  
help workers displaced from declining industries get skills needed for jobs in growing industries.



# Unemployment insurance (UI)

- UI pays part of a worker's former wages for a limited time after losing his/her job.
- UI increases search unemployment, because it reduces
  - the opportunity cost of being unemployed
  - the urgency of finding work
  - $f$
- Studies: The longer a worker is eligible for UI, the longer the duration of the average spell of unemployment.

# Benefits of UI

- By allowing workers more time to search, UI may lead to better matches between jobs and workers, which would lead to greater productivity and higher incomes.

# Why is there unemployment?

The natural rate of unemployment:  $\frac{U}{L} = \frac{s}{s + f}$

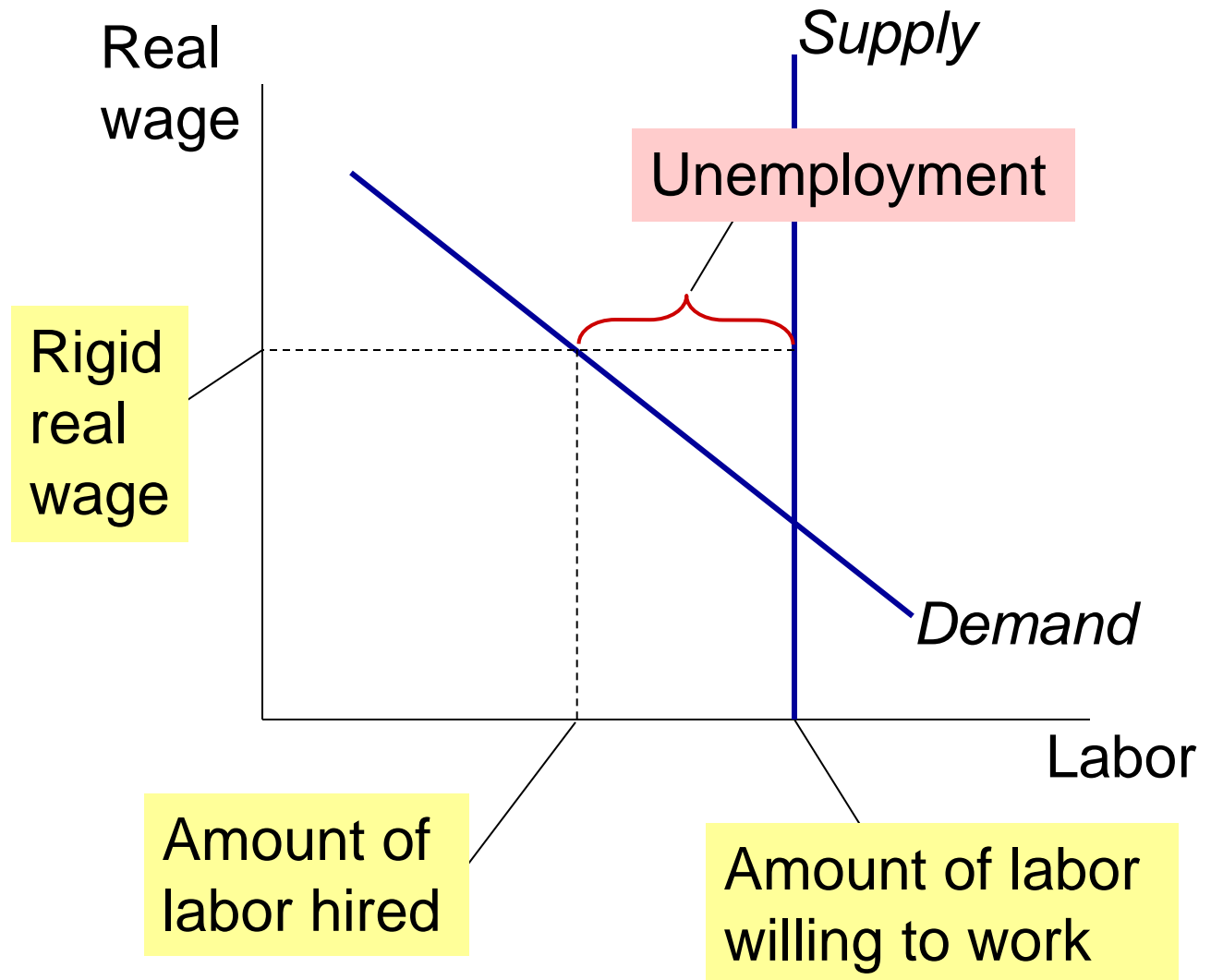
- Two reasons why  $f < 1$ :

*DONE* ✓ 1. job search

*Next* → 2. wage rigidity

# Unemployment from real wage rigidity

If real wage is stuck above its eq'm level, then there aren't enough jobs to go around.



# Unemployment from real wage rigidity

If real wage is stuck above its eq'm level, then there aren't enough jobs to go around.

Then, firms must ration the scarce jobs among workers.

**Structural unemployment:**  
The unemployment resulting from real wage rigidity and job rationing.

# Reasons for wage rigidity

1. Minimum wage laws
2. Labor unions
3. Efficiency wages

# 1. The minimum wage

- The min. wage may exceed the eq'm wage of unskilled workers, especially teenagers.
- Studies: a 10% increase in min. wage reduces teen unemployment by 1-3%
- But, the min. wage cannot explain the majority of the natural rate of unemployment, as most workers' wages are well above the min. wage.

## 2. Labor unions

- Unions exercise monopoly power to secure higher wages for their members.
- When the union wage exceeds the eq'm wage, unemployment results.
- **Insiders:** Employed union workers whose interest is to keep wages high.
- **Outsiders:** Unemployed non-union workers who prefer eq'm wages, so there would be enough jobs for them.



# Union membership and wage ratios by industry, 2008

<i>industry</i>	<i># employed (1000s)</i>	<i>U % of total</i>	<i>wage ratio</i>
Private sector (total)	108,073	7.6%	123.2
Government (total)	21,305	36.8	120.5
Construction	7,652	15.6	151.8
Mining	776	6.9	102.1
Manufacturing	15,131	11.4	108.6
Retail trade	14,987	5.2	106.6
Transportation	4,639	21.3	126.3
Finance, insurance	6,536	1.3	88.7
Professional services	11,967	2.1	97.4
Education	3,657	13.8	117.1
Health care	15,184	8.0	116.0

$$\text{wage ratio} = 100 \times (\text{union wage}) / (\text{nonunion wage})$$

### 3. Efficiency wage theory

- Theories in which higher wages increase worker productivity by:
  - attracting higher quality job applicants
  - increasing worker effort, reducing “shirking”
  - reducing turnover, which is costly to firms
  - improving health of workers  
*(in developing countries)*
- Firms willingly pay above-equilibrium wages to raise productivity.
- Result: structural unemployment.



# Chapter Summary

## 1. The natural rate of unemployment

- definition: the long-run average or “steady state” rate of unemployment
- depends on the rates of job separation and job finding

## 2. Frictional unemployment

- due to the time it takes to match workers with jobs
- may be increased by unemployment insurance



# Chapter Summary

## 3. Structural unemployment

- results from wage rigidity: the real wage remains above the equilibrium level
- caused by: minimum wage, unions, efficiency wages