7

# MACROECONOMICS

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# Unemployment and the Labor Market

*Modified by Ming Yi* | 

# IN THIS CHAPTER, YOU WILL LEARN:

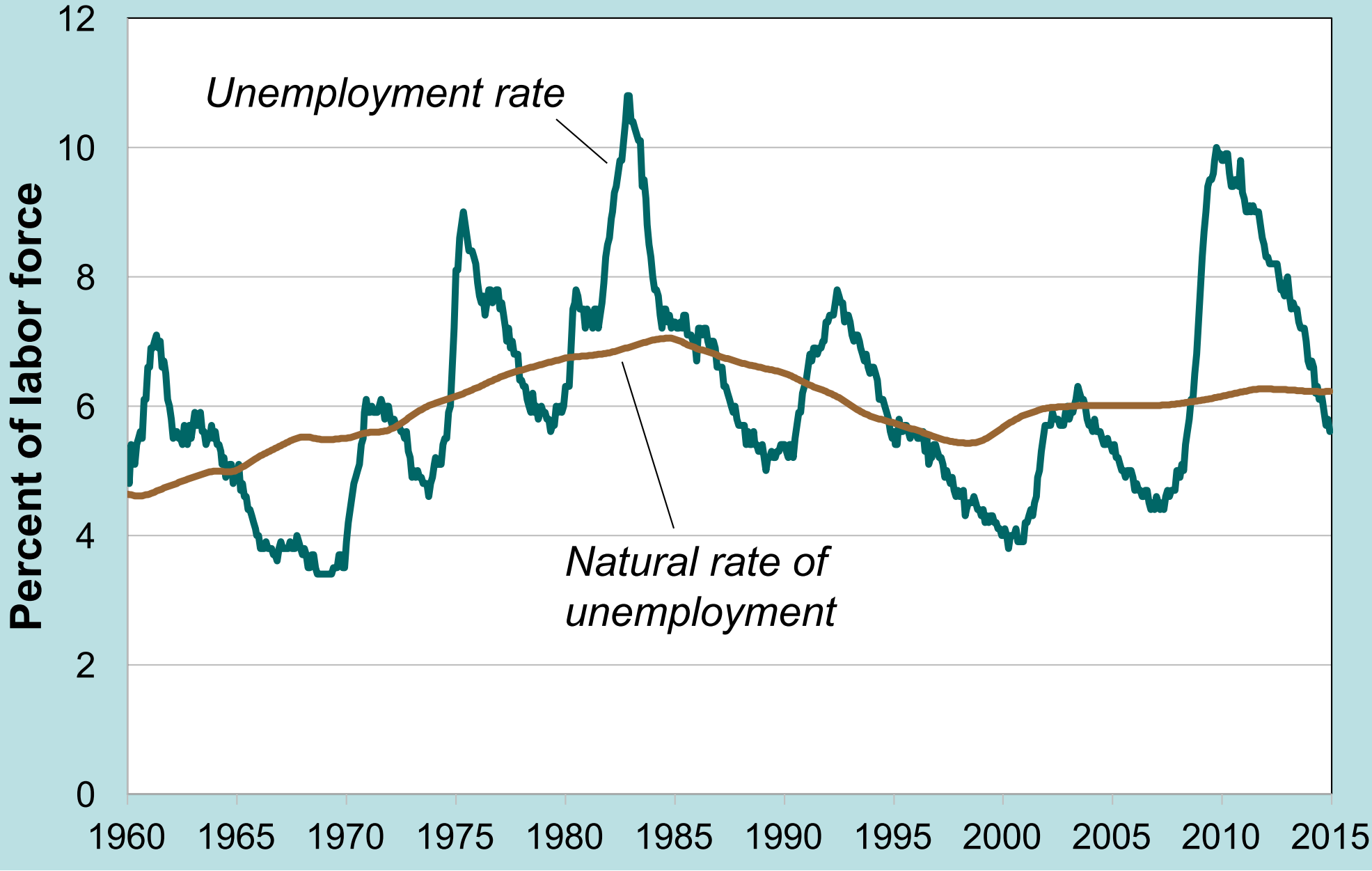
…about the natural rate of unemployment:

- what it means
- what causes it
- understanding its behavior in the real world

# 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, U.S., 1960–2014



## HOUSEHOLD DATA

### Table A-15. Alternative measures of labor underutilization [Percent]

| Measure | Not seasonally adjusted | | | Seasonally adjusted | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Jan. 2016 | Dec. 2016 | Jan. 2017 | Jan. 2016 | Sept. 2016 | Oct. 2016 | Nov. 2016 | Dec. 2016 | Jan. 2017 |
| U-1 Persons unemployed 15 weeks or longer, as a percent of the civilian labor force | 2.1 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 1.8 | 1.9 | 1.9 |
| U-2 Job losers and persons who completed temporary jobs, as a percent of the civilian labor force | 2.7 | 2.3 | 2.7 | 2.3 | 2.5 | 2.3 | 2.2 | 2.3 | 2.3 |
| U-3 Total unemployed, as a percent of the civilian labor force (official unemployment rate) | 5.3 | 4.5 | 5.1 | 4.9 | 4.9 | 4.8 | 4.6 | 4.7 | 4.8 |
| U-4 Total unemployed plus discouraged workers, as a percent of the civilian labor force plus discouraged workers | 5.7 | 4.8 | 5.5 | 5.3 | 5.3 | 5.1 | 5.0 | 5.0 | 5.1 |
| U-5 Total unemployed, plus discouraged workers, plus all other persons marginally attached to the labor force, as a percent of the civilian labor force plus all persons marginally attached to the labor force | 6.5 | 5.5 | 6.2 | 6.2 | 6.0 | 5.9 | 5.8 | 5.7 | 5.8 |
| U-6 Total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to the labor force | 10.5 | 9.1 | 10.1 | 9.9 | 9.7 | 9.5 | 9.3 | 9.2 | 9.4 |

NOTE: Persons marginally attached to the labor force are those who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the past 12 months. Discouraged workers, a subset of the marginally attached, have given a job-market related reason for not currently looking for work. Persons employed part time for economic reasons are those who want and are available for full-time work but have had to settle for a part-time schedule. Updated population controls are introduced annually with the release of January data.

# 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:

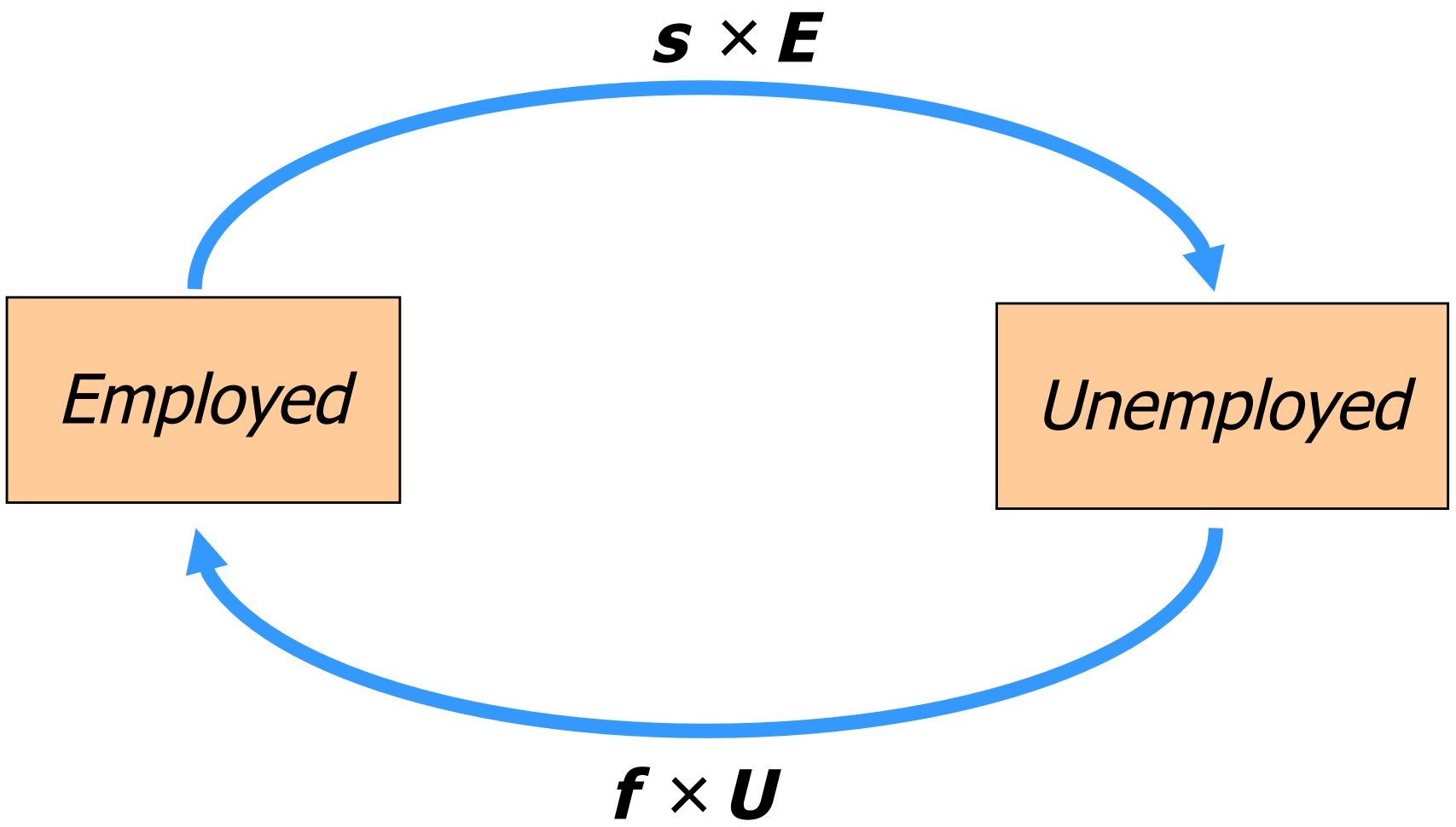
1. ***L*** is exogenously fixed.
2. During any given month,

   ***s*** = **rate of job separations**,
   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

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

$$= s \times (L - U)$$

$$= s \times L - s \times U$$

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

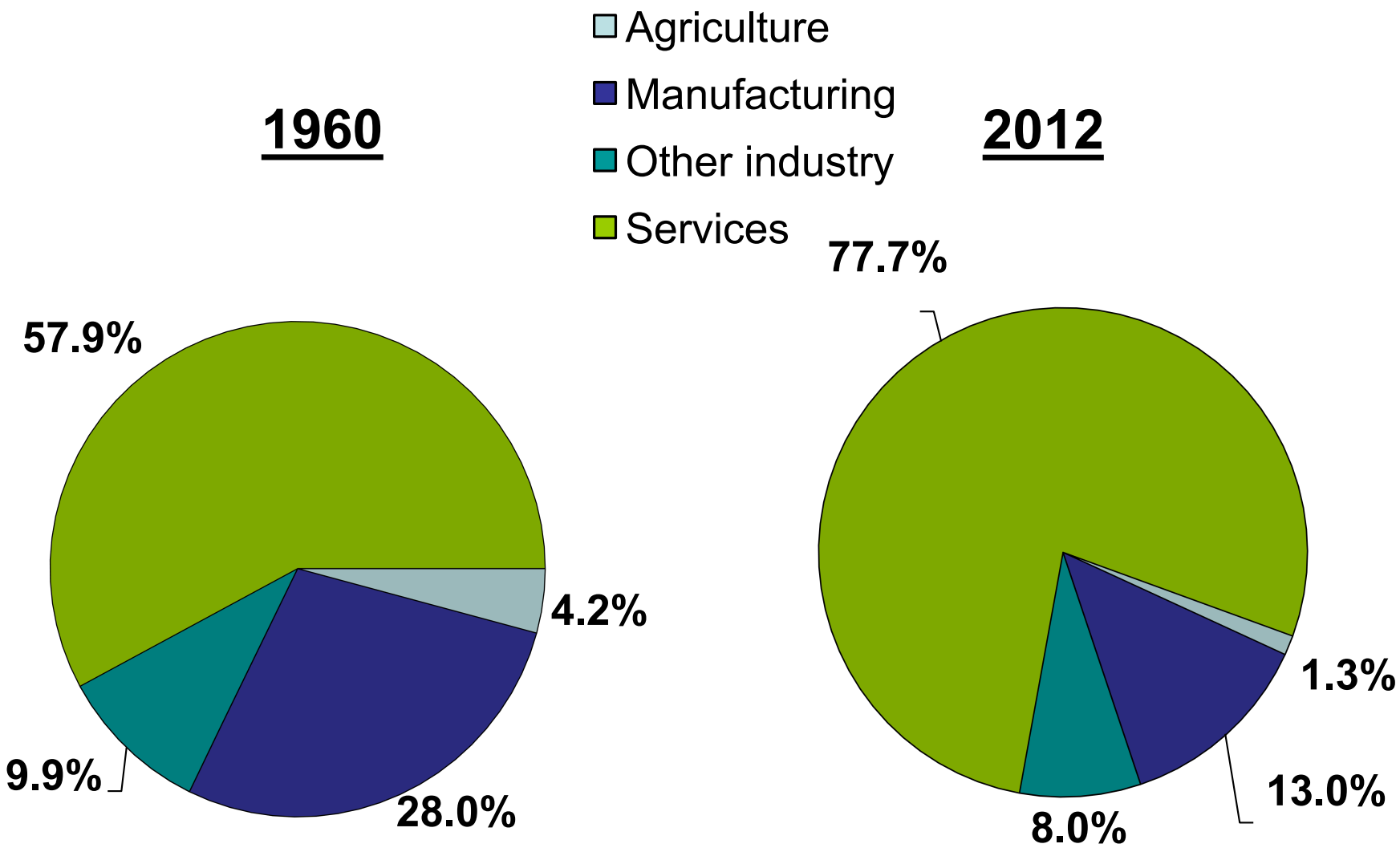
# Job search & frictional unemployment

- **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

# CASE STUDY:
# Structural change over the long run



# More 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 | 2010: 17.9 |

*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 the worker loses his/her job.
- UI increases frictional 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 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: $\frac{U}{L} = \frac{s}{s+f}$

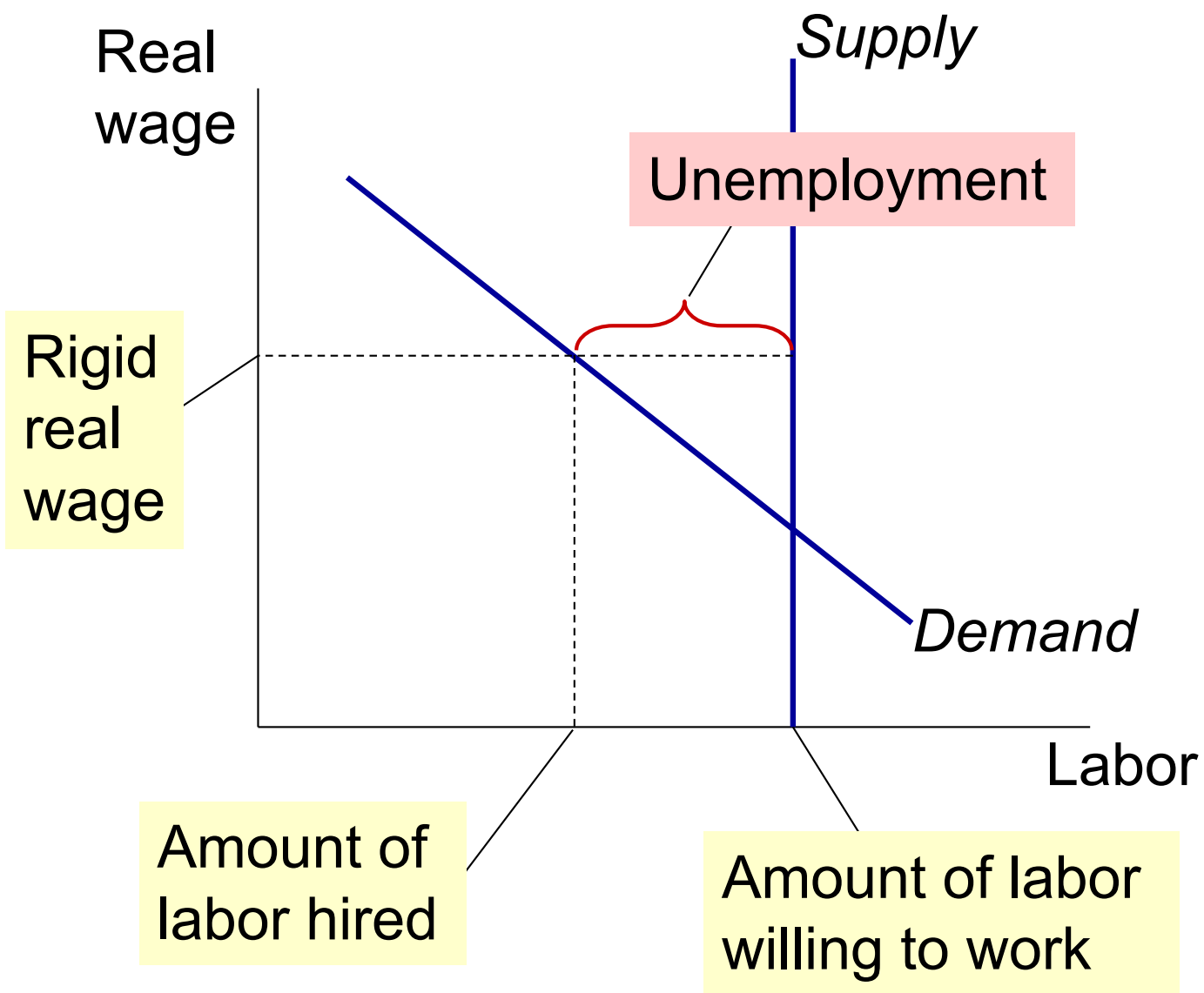
- Two reasons why $f < 1$:

DONE ✓ **1.** job search

Next ➔ **2.** wage rigidity

# Unemployment from real wage rigidity

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



# Unemployment from real wage rigidity

If real wage is stuck above its eq'm level, 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

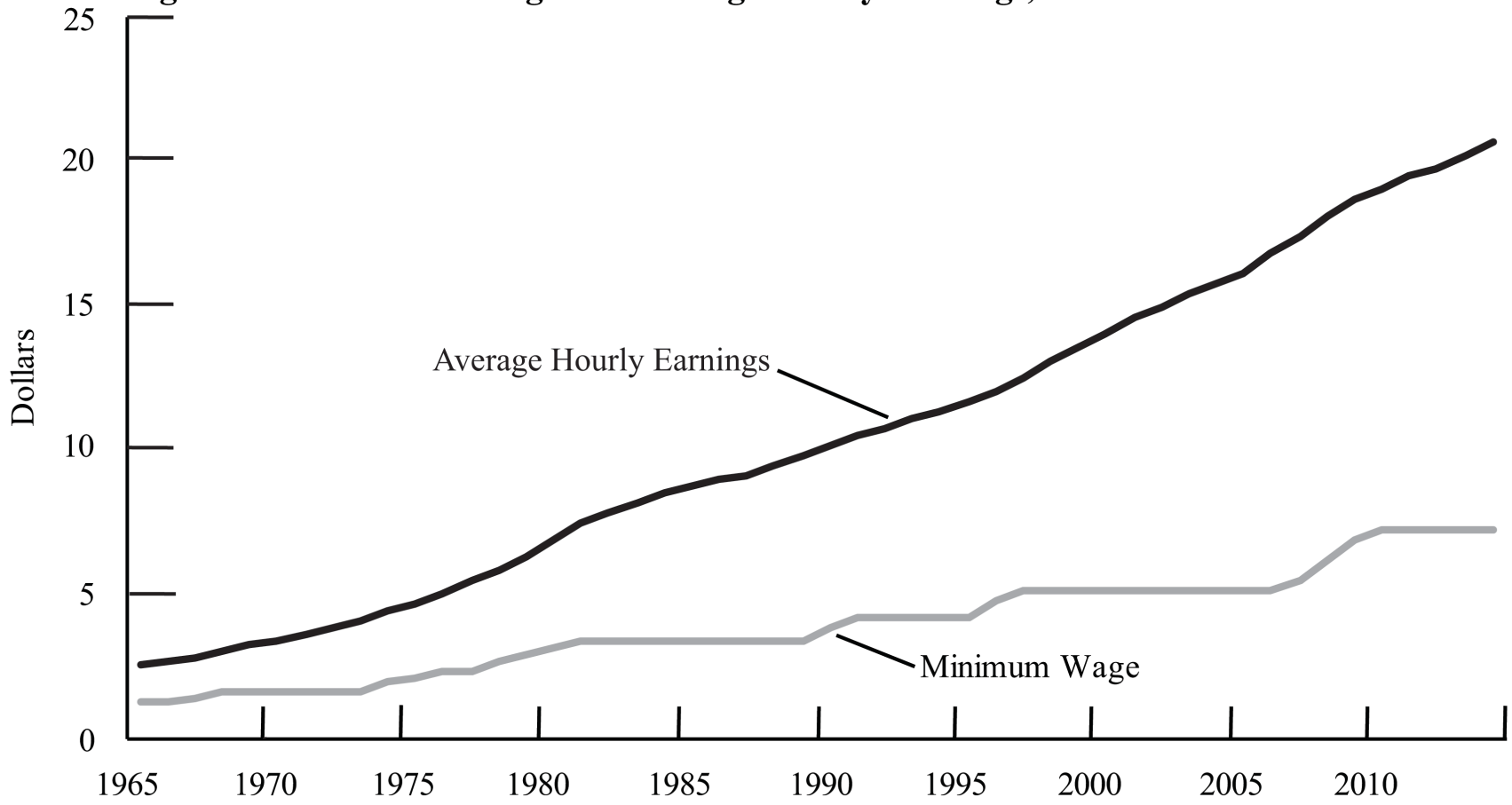
1. Minimum-wage laws
2. Labor unions
3. Efficiency wages

# 1. Minimum-wage laws

- The min. wage may exceed the eq'm wage of unskilled workers, especially teenagers.
- Studies: a 10% increase in min. wage reduces teen employment 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.

# 1. Minimum-wage laws

**Figure 1 Minimum Wage and Average Hourly Earnings, 1965–2014**




*Note:* All figures are in dollars. Average hourly earnings is for production and nonsupervisory workers on private nonfarm payrolls.

*Source:* Department of Labor, Bureau of Labor Statistics.

# 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, 2013

| *industry* | *# employed (1000s)* | *U % of total* | *wage ratio* |
|---|---|---|---|
| Private sector (total) | 104,737 | 6.9 | 122.6 |
| Government (total) | 20,450 | 37.0 | 121.1 |
| Construction | 6,244 | 14.0 | 151.7 |
| Mining | 780 | 7.2 | 96.4 |
| Manufacturing | 13,599 | 10.5 | 107.2 |
| Retail trade | 14,582 | 4.9 | 102.4 |
| Transportation | 4,355 | 20.4 | 123.5 |
| Finance, insurance | 6,111 | 1.1 | 90.2 |
| Professional services | 12,171 | 2.1 | 99.1 |
| Education | 4,020 | 13.0 | 112.6 |
| Health care | 15,835 | 7.5 | 114.9 |

*wage ratio = 100 × (union wage) / (nonunion wage)*

# 3. Efficiency wages

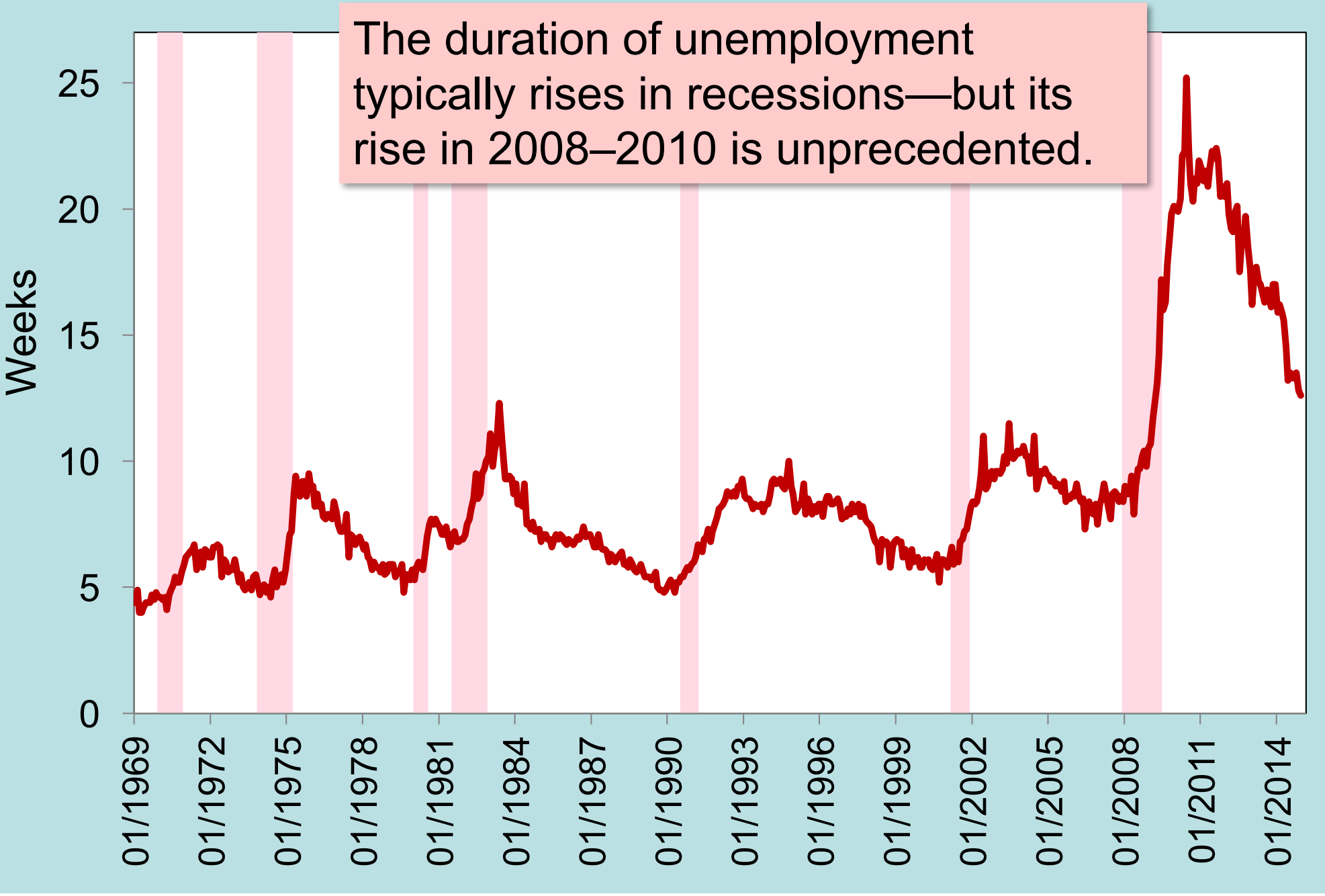
- Theories in which higher wages increase worker productivity by:
  - attracting higher quality job applicants
  - increasing worker effort, reducing "shirking"
  - reducing turnover, which is costly to firms
  - improving health of workers
    *(in developing countries)*
- Firms willingly pay above-equilibrium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

## NOW YOU TRY

# Question for Discussion

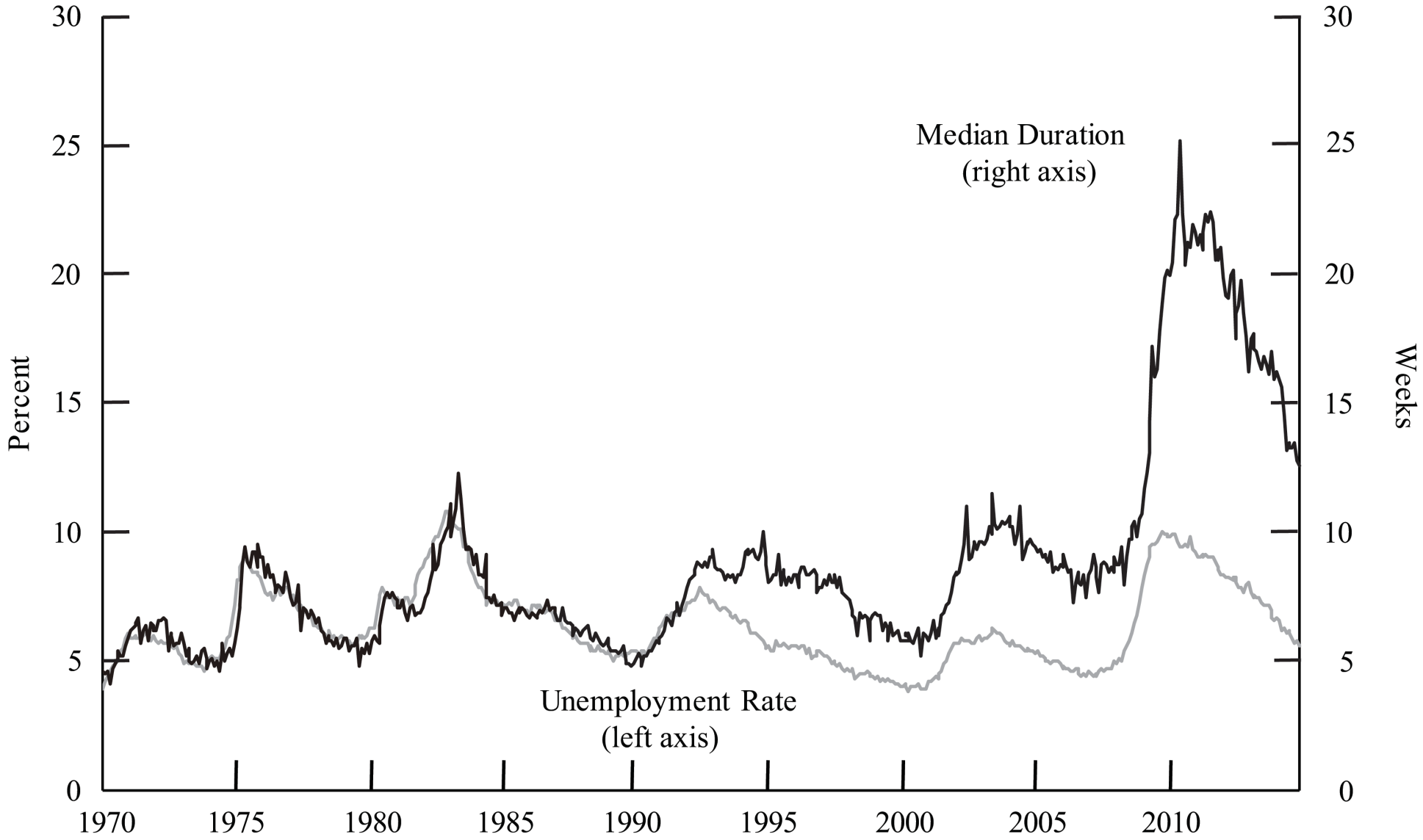
- Use the material we've just covered to come up with a policy or policies to try to reduce the natural rate of unemployment.
- Note whether your policy targets frictional or structural unemployment.

# The Median Duration of Unemployment



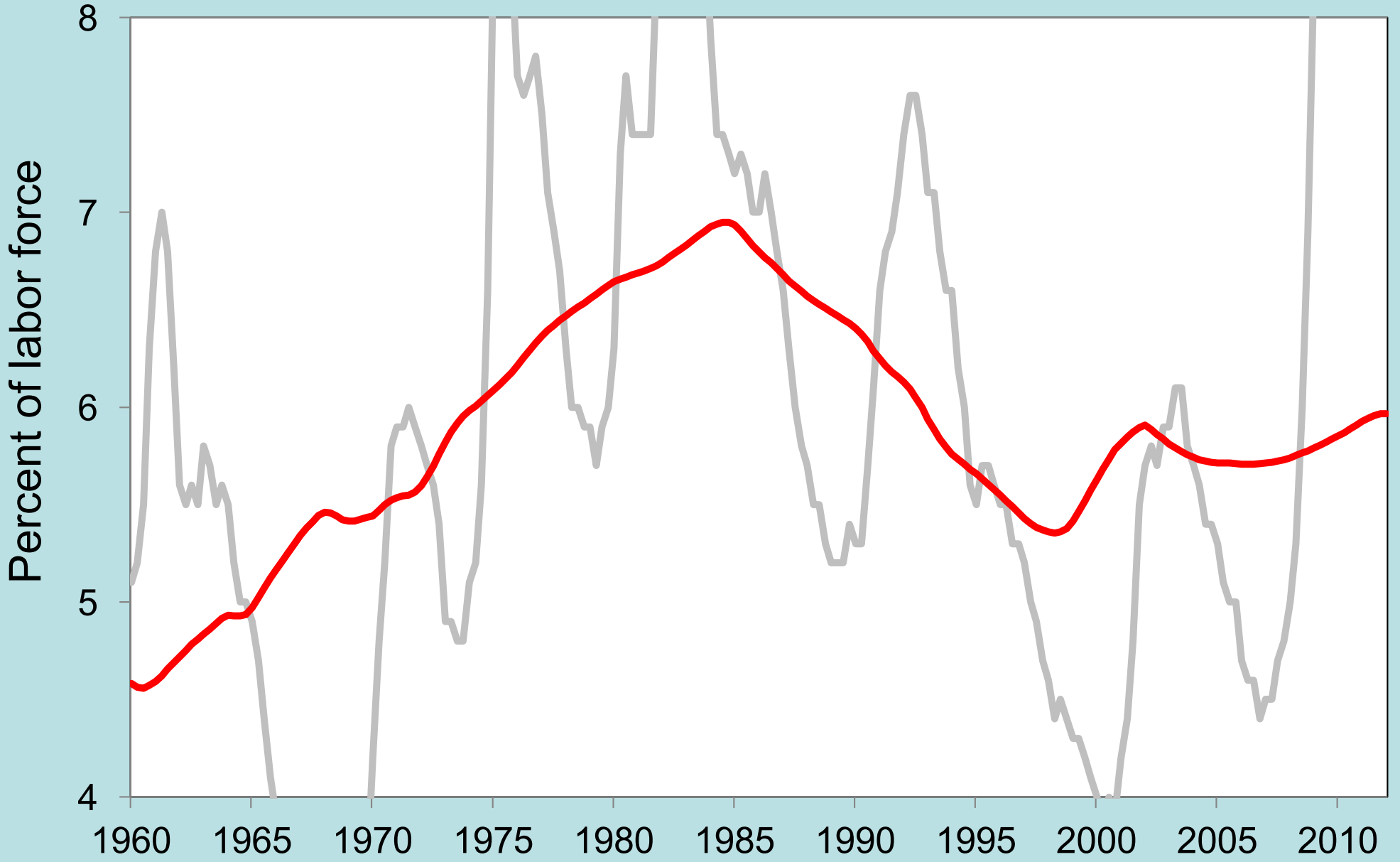
# The Median Duration of Unemployment

**Figure 1 Unemployment and Duration (Monthly, 1970–2014)**




*Source:* Department of Labor, Bureau of Labor Statistics.

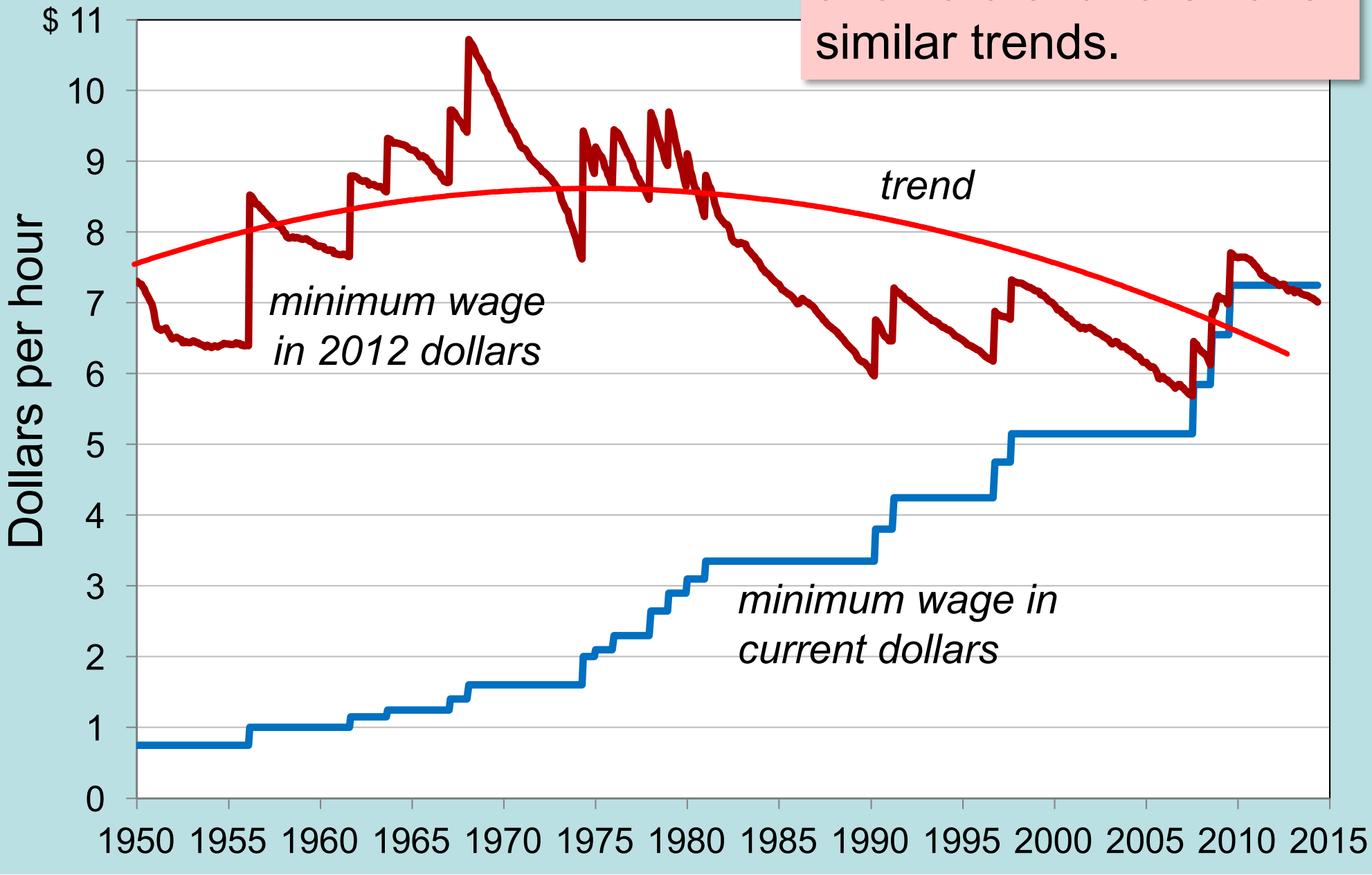
# TREND: The natural rate rises over 1960–84, then falls over 1985–2005



## EXPLAINING THE TREND:

# The minimum wage

The real minimum wage and natural u-rate have similar trends.



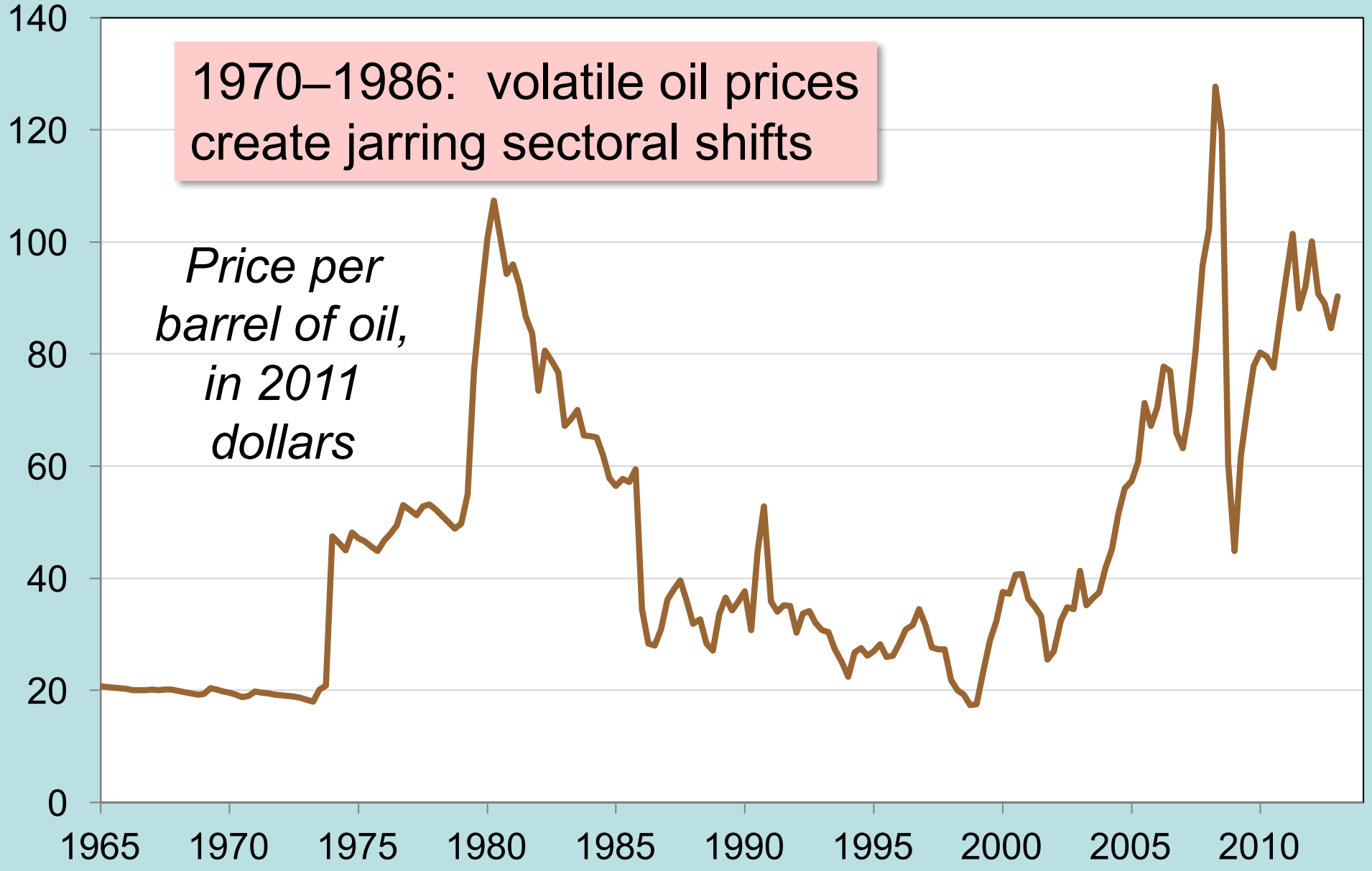
# EXPLAINING THE TREND:
# Union membership

| **Union membership** selected years | |
|---|---|
| year | percent of labor force |
| 1930 | 12.0 |
| 1945 | 35.0 |
| 1954 | 35.0 |
| 1970 | 27.0 |
| 1983 | 20.1 |
| 2013 | 11.3 |

Since early 1980s, the natural rate and union membership have both fallen.

But, from 1950s to about 1980, the natural rate rose while union membership fell.

# EXPLAINING THE TREND:
# Sectoral shifts



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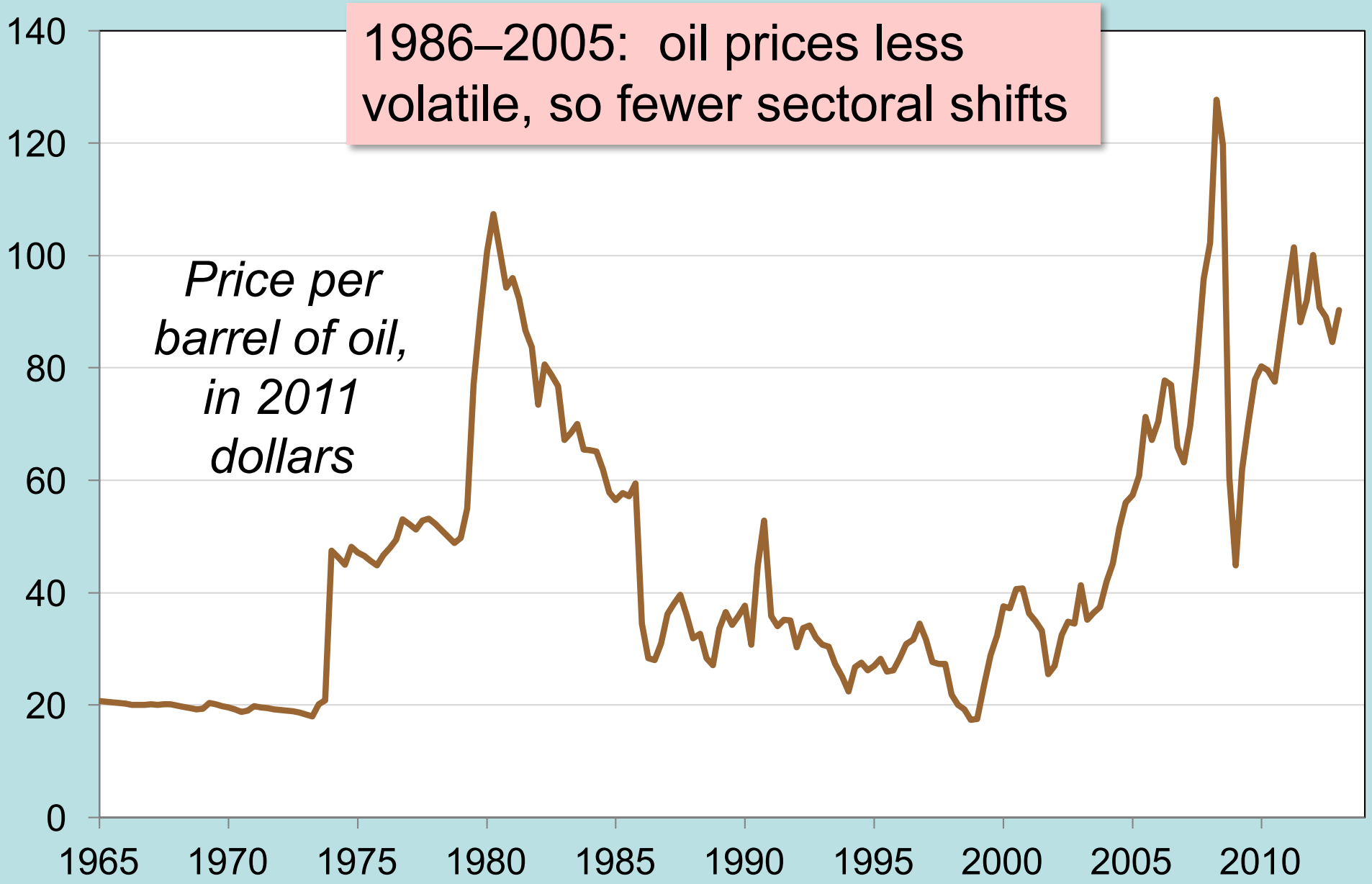

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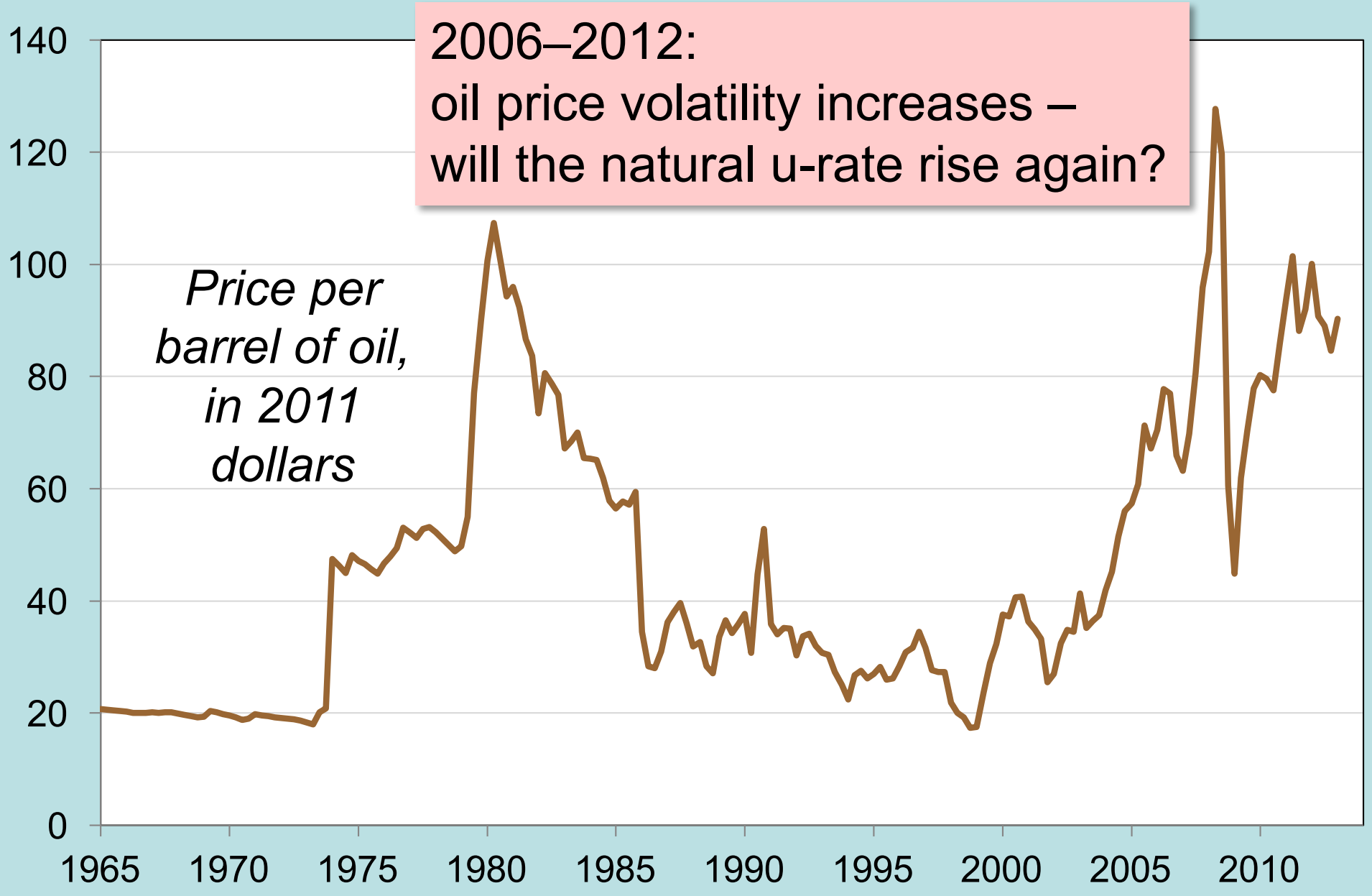
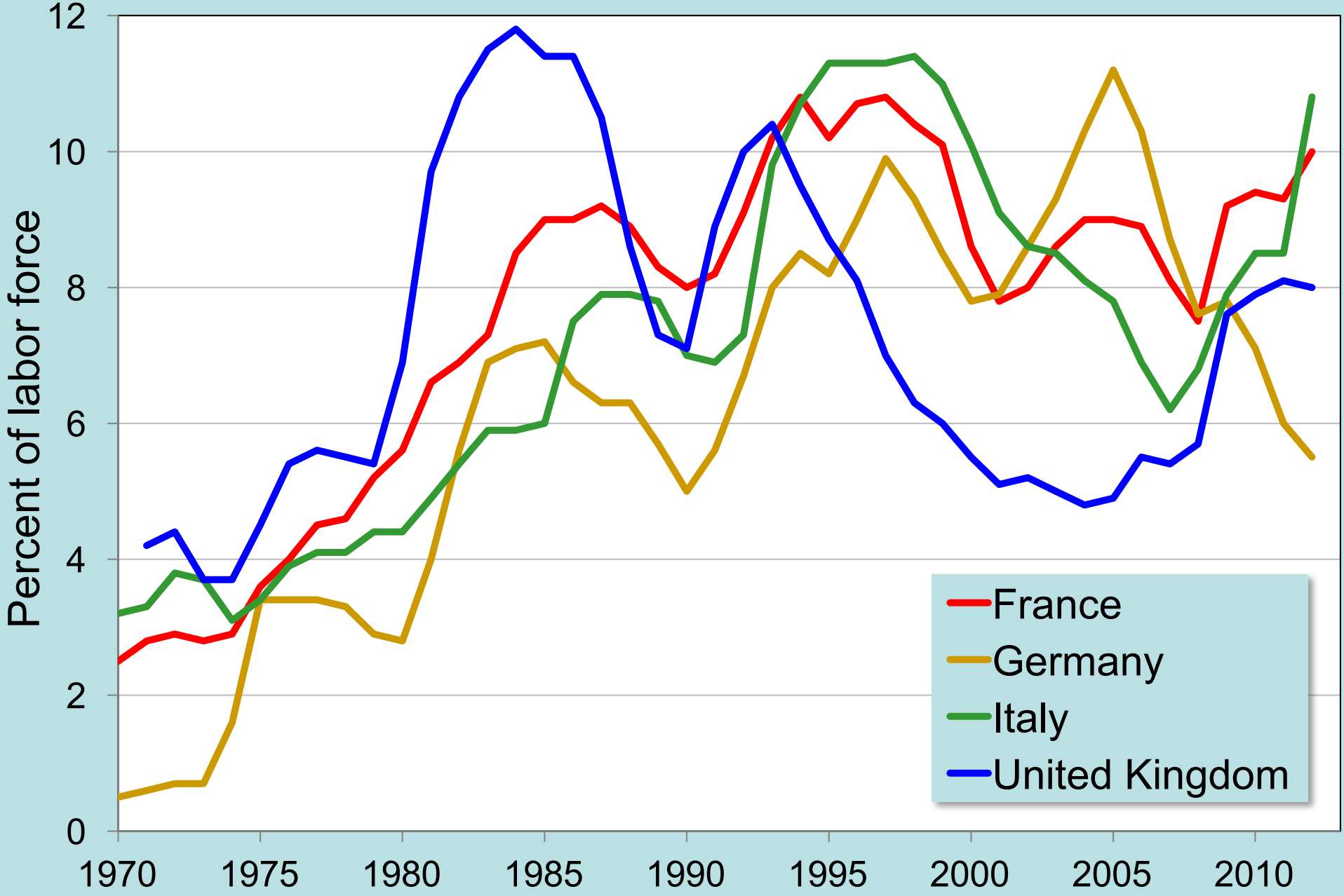


## EXPLAINING THE TREND:
# Demographics

- 1970s:
  The Baby Boomers were young.
  Young workers change jobs more frequently (high value of ***s***).
- Late 1980s through today:
  Baby Boomers aged. Middle-aged workers change jobs less often (low ***s***).

# Unemployment in Europe, 1960–2013



# Why unemployment rose in Europe but not the U.S.

*Shock*

Technological progress has shifted labor demand from unskilled to skilled workers in recent decades.

*Effect in United States*

An increase in the "skill premium" – the wage gap between skilled and unskilled workers.

*Effect in Europe*

Higher unemployment, due to generous govt benefits for unemployed workers and strong union presence.

# Percent of workers covered by collective bargaining, selected countries

| | |
|---|---|
| United States | 13% |
| United Kingdom | 31 |
| Switzerland | 49 |
| Spain | 73 |
| Sweden | 91 |
| Germany | 61 |
| France | 92 |
| Greece | 65 |

# 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
4. Duration of unemployment
   - most spells are short term
   - but most weeks of unemployment are attributable to a small number of long-term unemployed persons

# CHAPTER SUMMARY

5. Behavior of the natural rate in the U.S.
   - rose from 1960 to early 1980s, then fell
   - possible explanations:
     trends in real minimum wage,
     union membership, prevalence of sectoral shifts,
     and aging of the Baby Boomers

# CHAPTER SUMMARY

6. European unemployment
   - has risen sharply since 1970
   - probably due to generous unemployment benefits, strong union presence, and a technology-driven shift in demand away from unskilled workers