

Chapter 6: Unemployment*

MACROECONOMICS

Seventh Edition

N. Gregory Mankiw

* Slides based on Ron Cronovich's slides, adjusted for course in Macroeconomics for International Masters Program at the Wang Yanan Institute for Studies in Economics at Xiamen University.

Learning Objectives

This chapter introduces you to understanding :

- Job loss, job finding, and the natural rate of unemployment ←
- Job search and frictional unemployment
- Real-wage rigidity and structural unemployment
- Labor-market experience: The United States
- Labor-market experience: Europe

6.1) Job Loss, Job Finding and NRoU

→ Natural Rate of Unemployment

- **Natural rate of unemployment:**

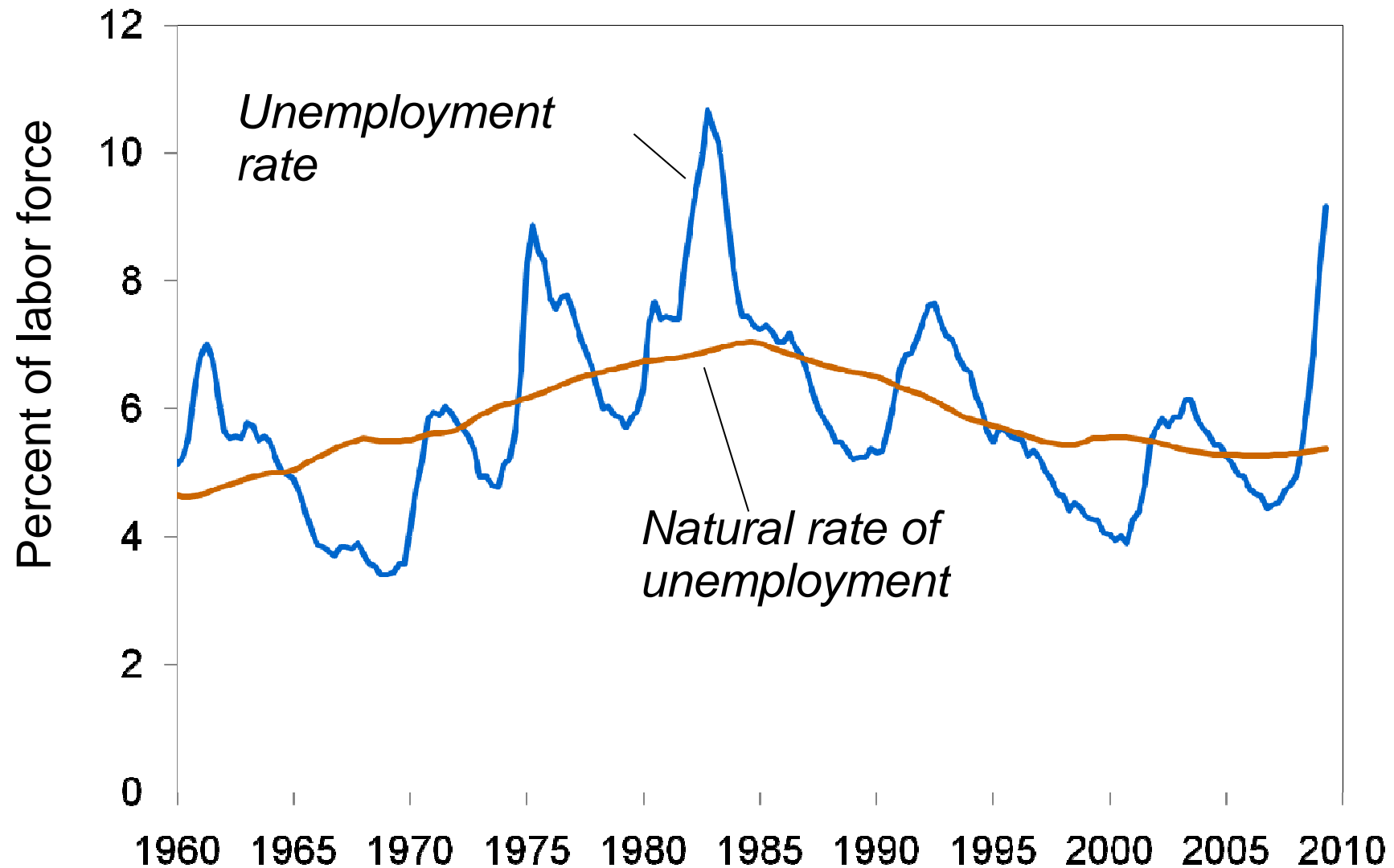
The average rate of unemployment around which the economy fluctuates.

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

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

6.1) Job Loss, Job Finding and NRoU

→ Rates of Unemployment in the U.S.



6.1) Job Loss, Job Finding and NRoU

→ A Model of the Natural Rate

Notation:

L = # of workers in labor force

E = # of employed workers

U = # of unemployed

U/L = unemployment rate

6.1) Job Loss, Job Finding and NRoU

→ Model Assumptions

1. L is exogenously fixed.

2. During any given month,

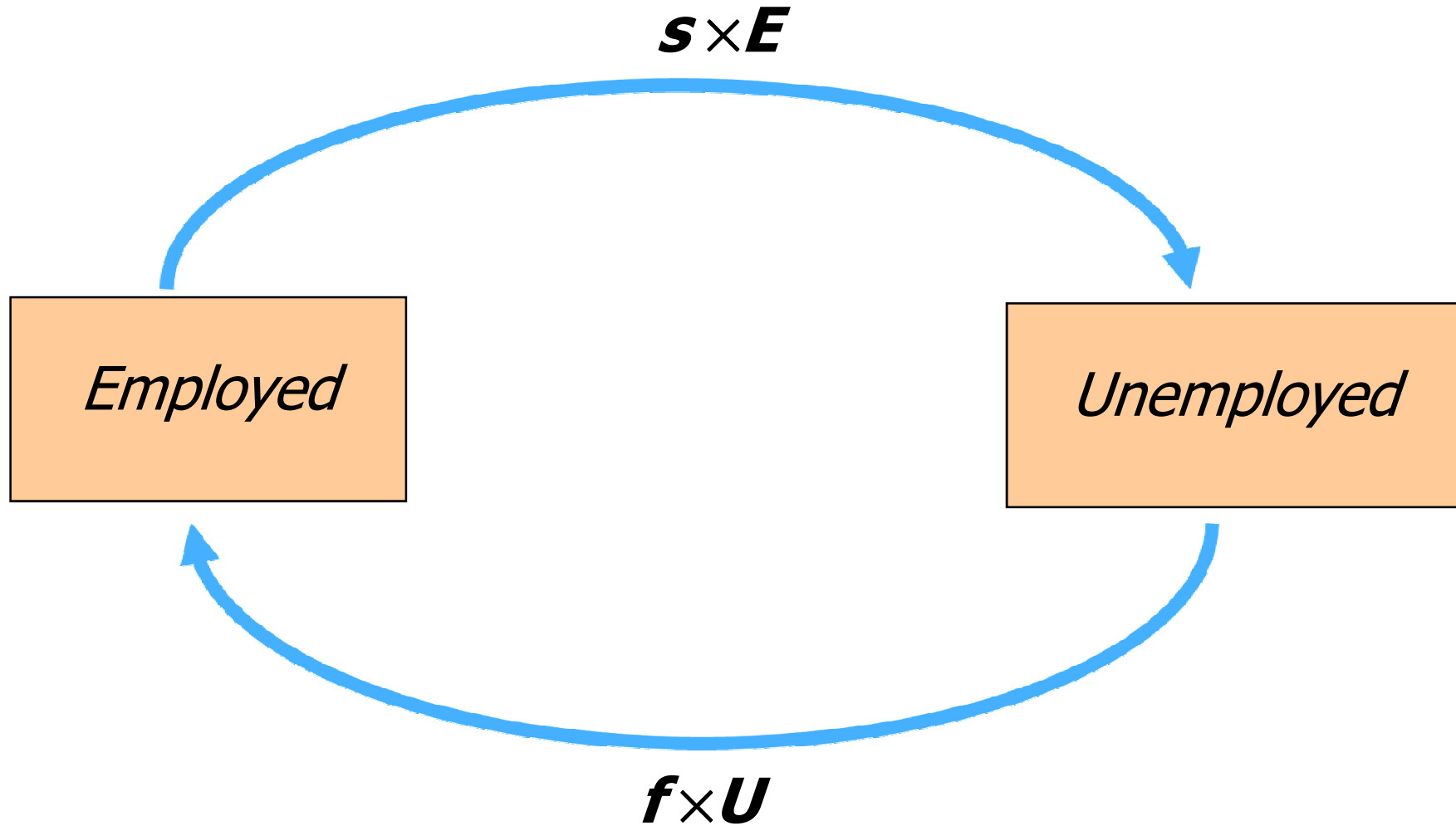
s = fraction of employed workers that become separated from their jobs. s is called the **rate of job separations**.

f = fraction of unemployed workers that find jobs. f is called the **rate of job finding**.

s and f are exogenous.

6.1) Job Loss, Job Finding and NRoU

→ Transitions between Employment and Unempl.



6.1) Job Loss, Job Finding and NRoU

→ 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:

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

The diagram illustrates the steady-state condition equation $s \times E = f \times U$. Two yellow boxes with black borders provide context for the terms in the equation. The left box, containing the text "# of employed people who lose or leave their jobs", has an arrow pointing to the term $s \times E$. The right box, containing the text "# of unemployed people who find jobs", has an arrow pointing to the term $f \times U$.

6.1) Job Loss, Job Finding and NRoU

→ Finding the Equilibrium Unemployment 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,
$$\frac{U}{L} = \frac{s}{s + f}$$

6.1) Job Loss, Job Finding and NRoU

→ Model Example

Each month, 1% of employed workers lose their jobs ($s=0.01$) and 19% of unemployed workers find jobs ($f=0.19$).

Find the natural rate of unemployment:

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

6.1) Job Loss, Job Finding and NRoU

→ Policy Implication of the Model

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

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

6.1) Job Loss, Job Finding and NRoU

→ 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

6.1) Job Loss, Job Finding and NRoU

→ 该你们了

To prepare the test for their class in macroeconomics, some students from the international master program learn in teams. Due to conflicting ideas of learning methods however, people in times leave groups to learn on their own. Among people learning in teams, 12 percent decide to leave team learning every week. Among those learning on their own, 4 per cent will enter a team for learning every week. What is the steady state fraction of people learning on their own?

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6.2) Job Search and Frictional Unemp

- **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

6.2) Job Search and Frictional Unemp.

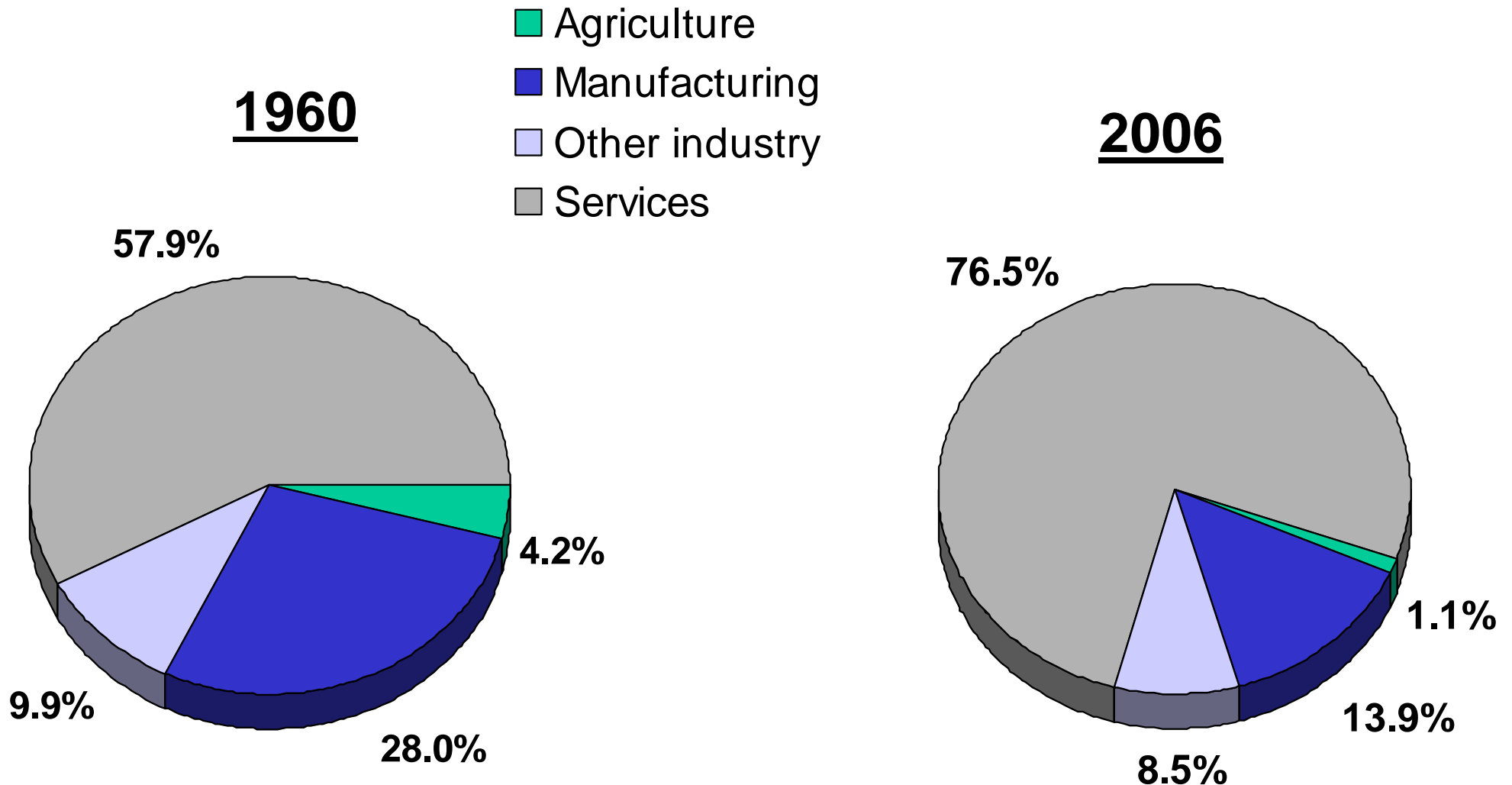
→ Sectoral Shifts

Definition: 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
- Result: frictional unemployment

6.2) Job Search and Frictional Unemp.

→ Case Study: Structural Change



6.2) Job Search and Frictional Unemp.

→ 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% 2008: 16.2%

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

6.2) Job Search and Frictional Unemp.

→ Public Policy and Job Search

Government programs affecting unemployment

- Government employment agencies: disseminate information 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.

6.2) Job Search and Frictional Unemp.

→ Unemployment Insurance

- 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.

6.2) Job Search and Frictional Unemp.

→ Benefits of Unemployment Insurance

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.

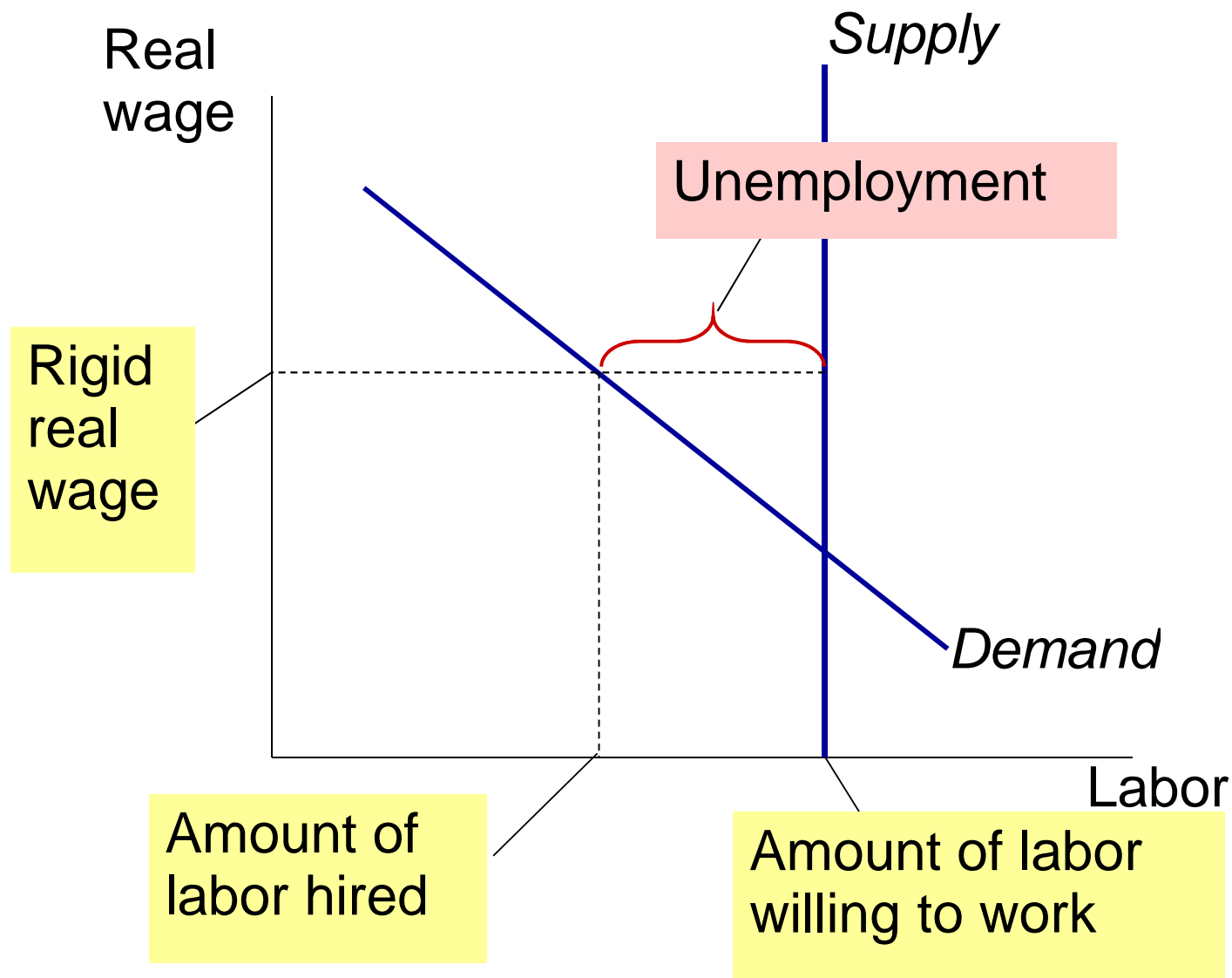
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6.3) Unempl. From Real-Wage Rigidity

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



6.3) Unempl. From Real-Wage Rigidity

- If real wage is stuck above its equilibrium level, then there aren't enough jobs to go around.
- Then, firms must ration the scarce jobs among workers.
- The unemployment resulting from real wage rigidity and job rationing is called **structural unemployment** .

6.3) Unempl. From Real-Wage Rigidity

→ Reasons for Wage Rigidity

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

6.3) Unempl. From Real-Wage Rigidity

→ 1. The Minimum Wage

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

6.3) Unempl. From Real-Wage Rigidity

→ 2. Labor Unions

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

6.3) Unempl. From Real-Wage Rigidity

→ 2. Union Membership and Wage Ratios (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

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

6.3) Unempl. From Real-Wage Rigidity

→ 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.

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6.4) Labor Market Experience: U.S.

→ The Duration of Unemployment

- Data on unemployment in the U.S. show that:
 - More spells of unemployment are short-term than medium-term or long-term.
 - most of the total time spent unemployed is attributable to the long-term unemployed.
- This long-term unemployment is probably structural and/or due to sectoral shifts among vastly different industries.
- Knowing this is important because it can help us craft policies that are more likely to work.

6.4) Labor Market Experience: U.S.

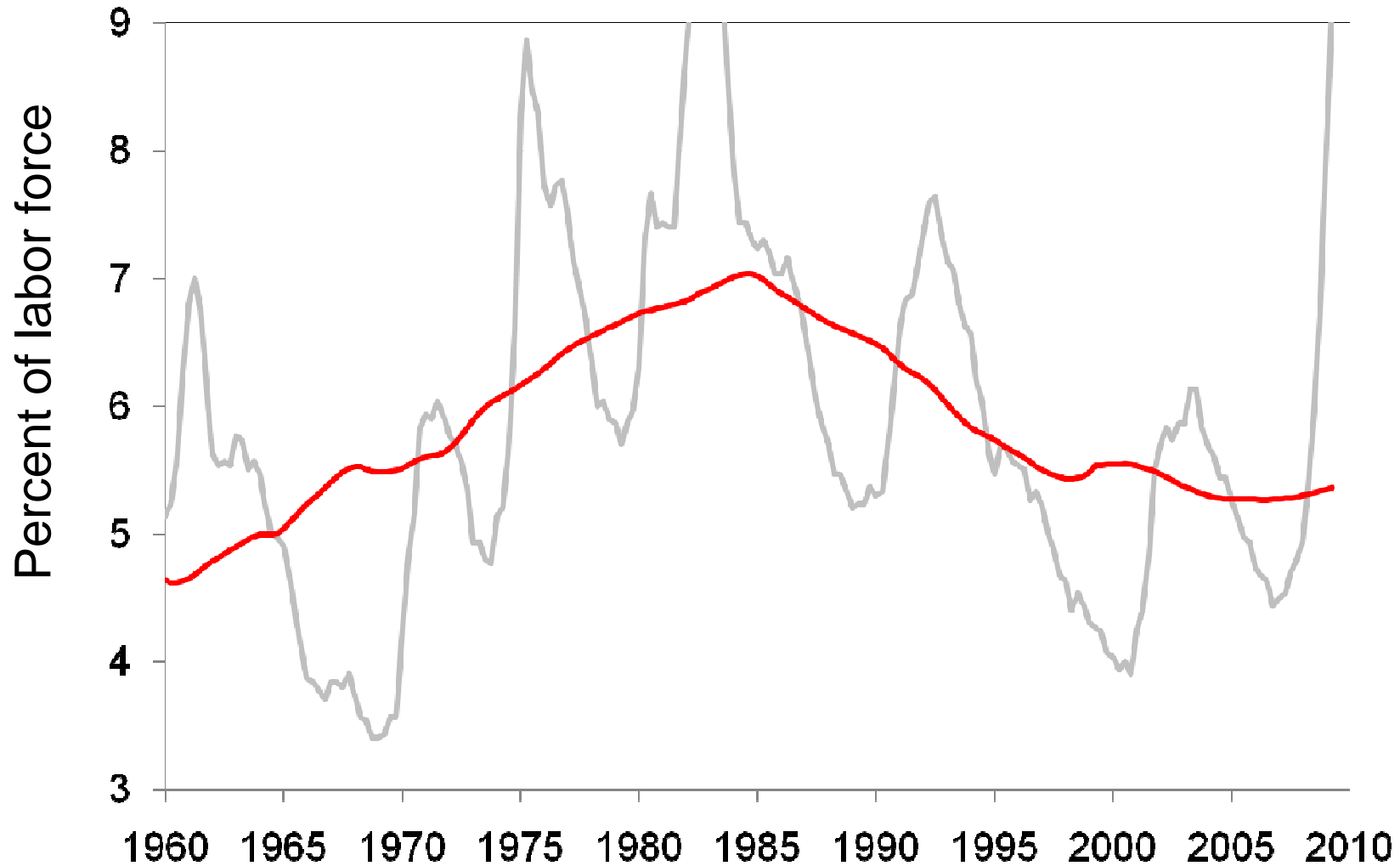
→ The Duration of Unemployment

# of weeks unemployed	# of unemployed persons in group (% of all unemployed persons)	Time spent unemployed by this group (% of time spent unemployed by all groups)
1-4	42%	8.1%
5-14	30%	21.5%
15 or more	27%	70.4%

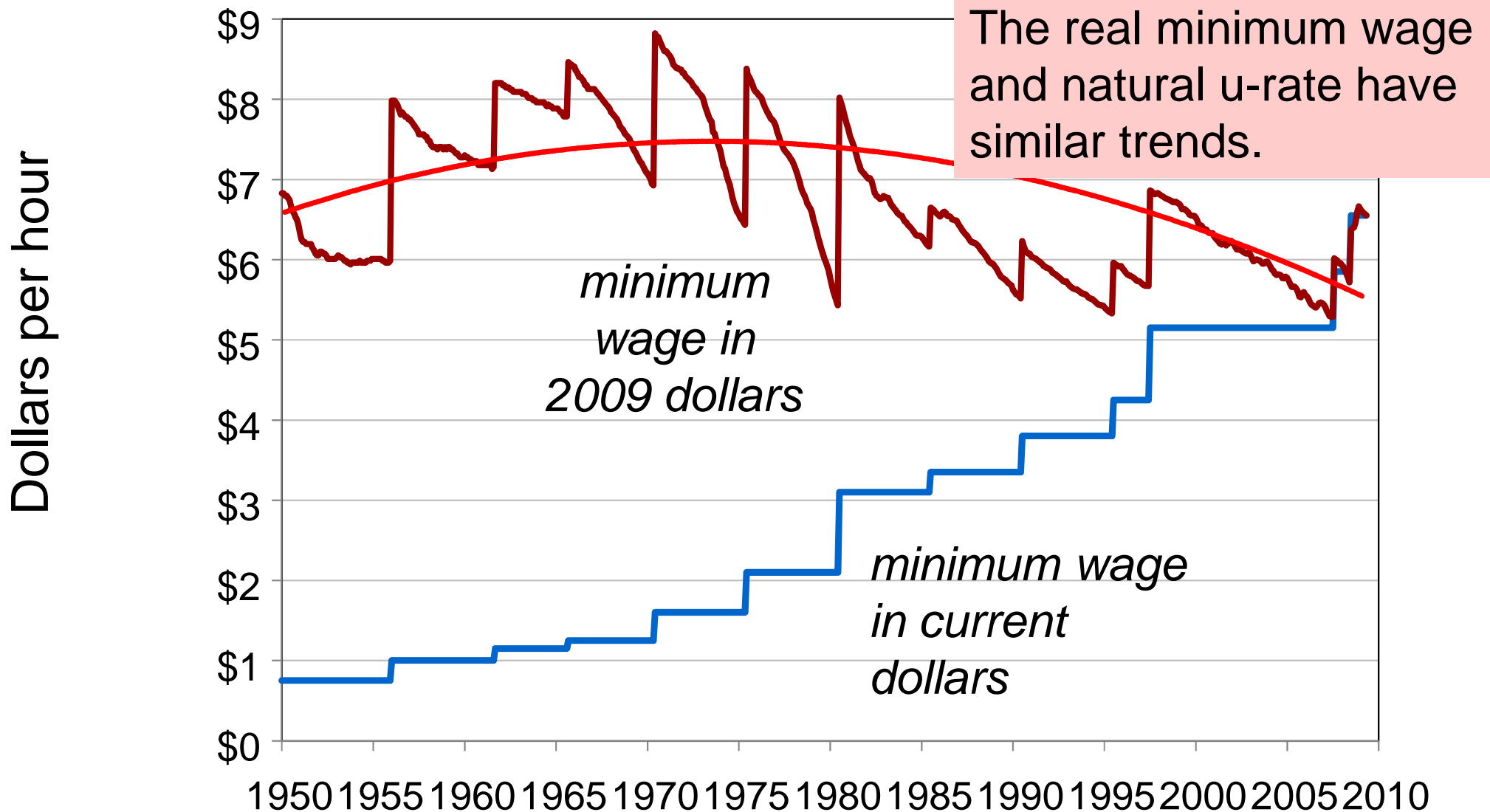
* Average between January 1990 – June 2009

6.4) Labor Market Experience: U.S.

→ Trend of the Natural Rate of Unemployment



EXPLAINING THE TREND: The minimum wage



6.4) Labor Market Experience: U.S.

→ Explaining the Trend: Union Membership

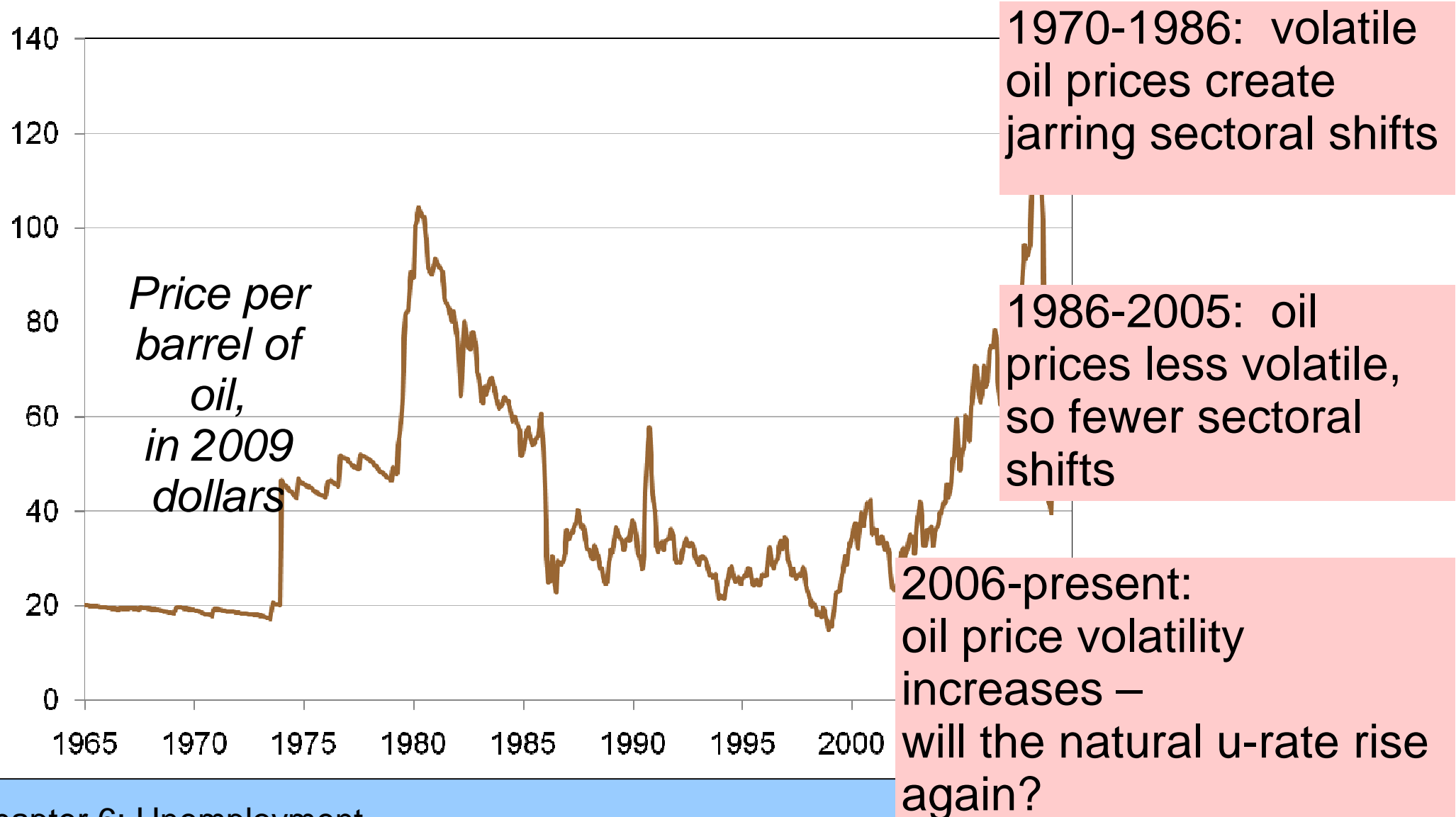
Union membership selected years	
year	percent of labor force
1930	12%
1945	35%
1954	35%
1970	27%
1983	20.1%
2008	12.3%

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

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

6.4) Labor Market Experience: U.S.

→ Explaining the Trend: Sectoral Shifts



6.4) Labor Market Experience: U.S.

→ 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).

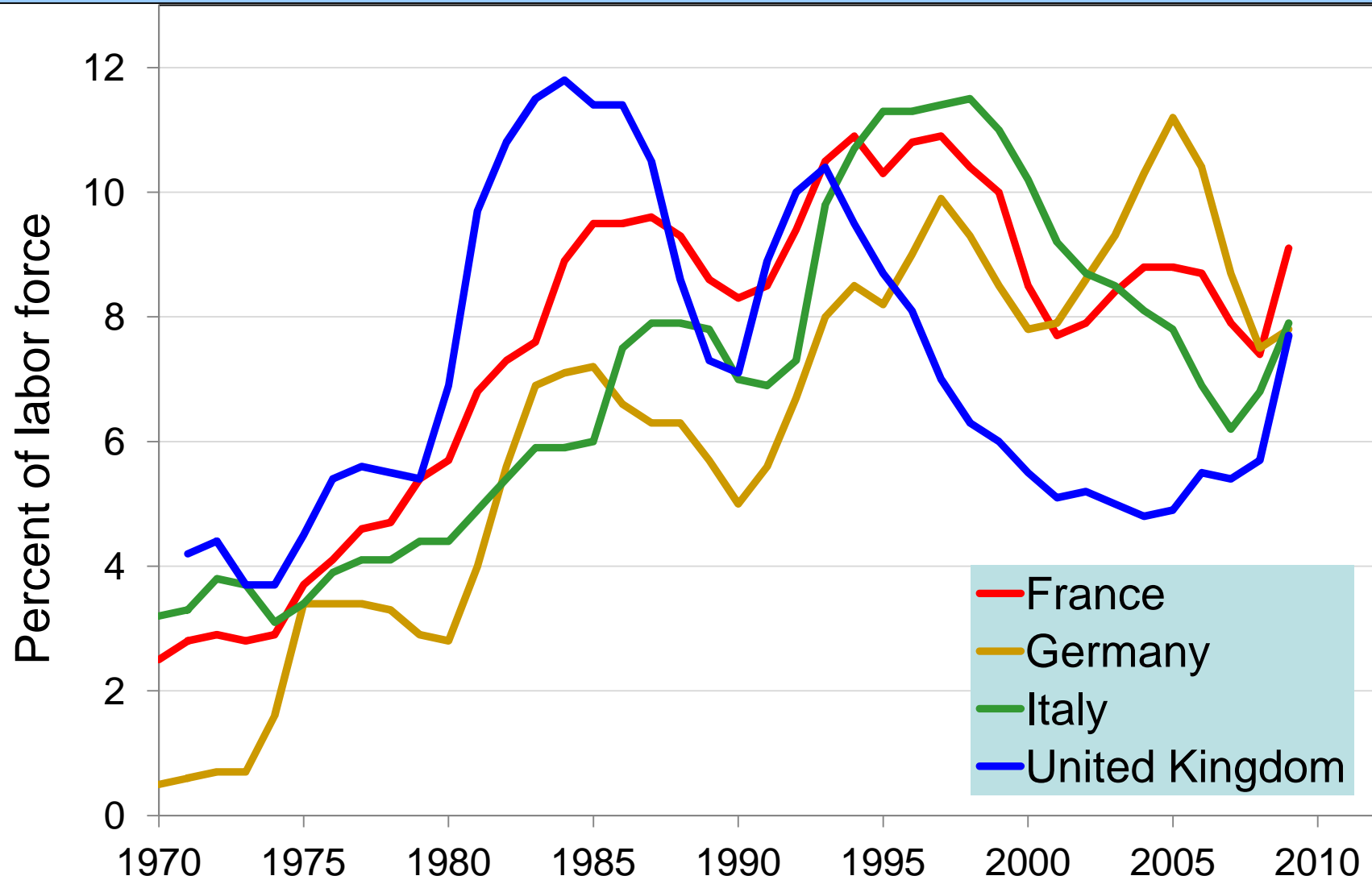
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6.5) Labor Market Experience: Europe

➔ Unemployment in Europe: 1960 – 2009



6.5) Labor Market Experience: Europe

→ The Rise in European Unemployment

- Shocks through technological progress 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 government benefits for unemployed workers and strong union presence.

6.5) Labor Market Experience: Europe

→ Percent of Workers Covered by Collective Bargaining

United States	18%
United Kingdom	47
Switzerland	53
Spain	68
Sweden	83
Germany	90
France	92
Austria	98

Chapter Summary

1. The natural rate of unemployment
 - 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