Chapter 7: Unemployment and Labor Market

Chapter objectives

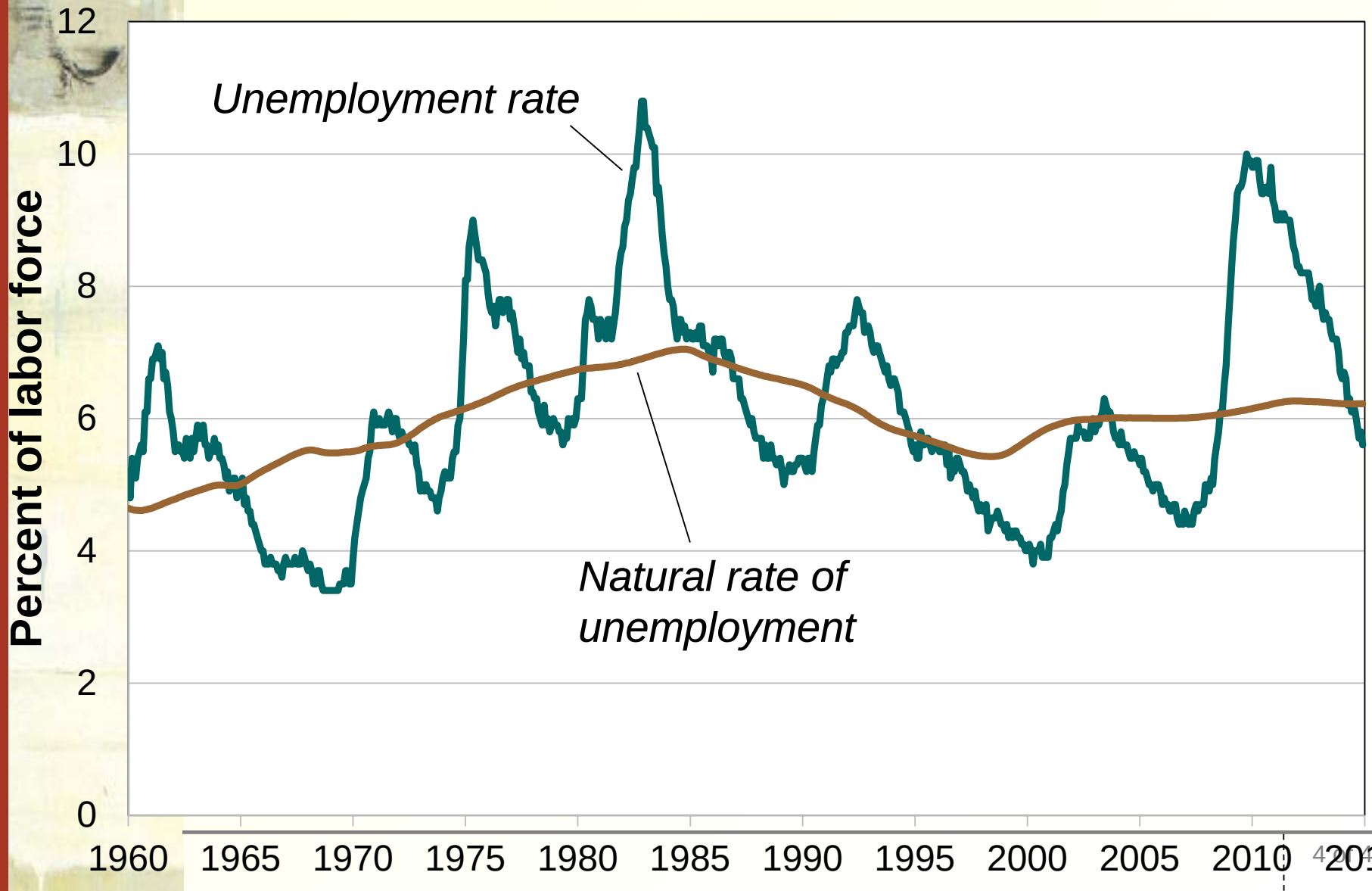
The natural rate of unemployment:

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

Natural Rate of Unemployment (自然失业率)

- **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



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 = fraction of employed workers that become separated from their jobs,

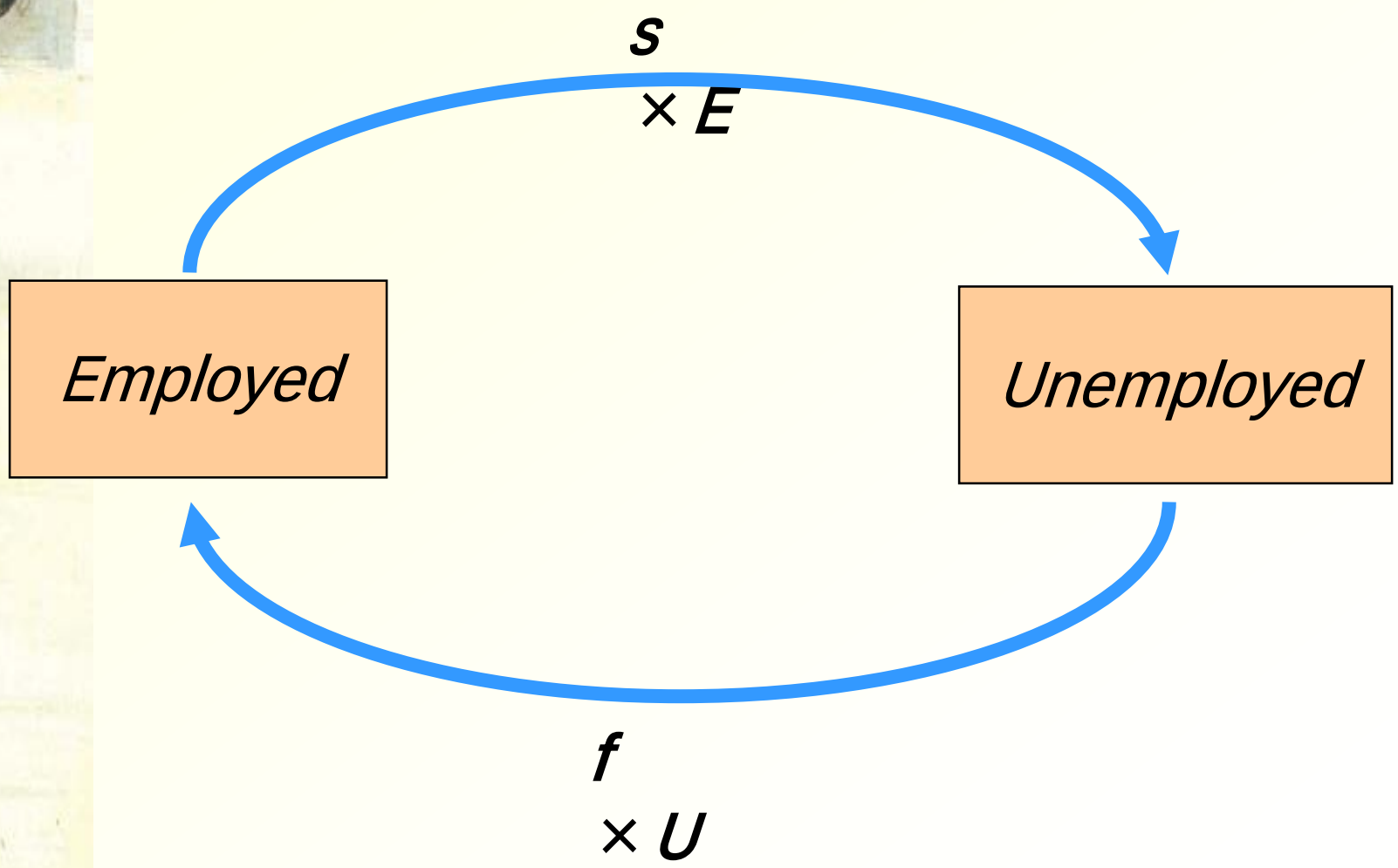
   f = fraction of unemployed workers that find jobs.

s = rate of job **s**eparations （离职率）

f = rate of job **f**inding (就业率）

(both exogenous)

The transitions between employment and unemployment



The steady state condition

- Definition: the labor market is in steady state (稳定状态）, 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

Solving for 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 ($s = 0.01$)
- Each month, 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 that aims to reduce the natural rate of unemployment will succeed 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 （寻找工作）
  2. wage rigidity （工资刚性）

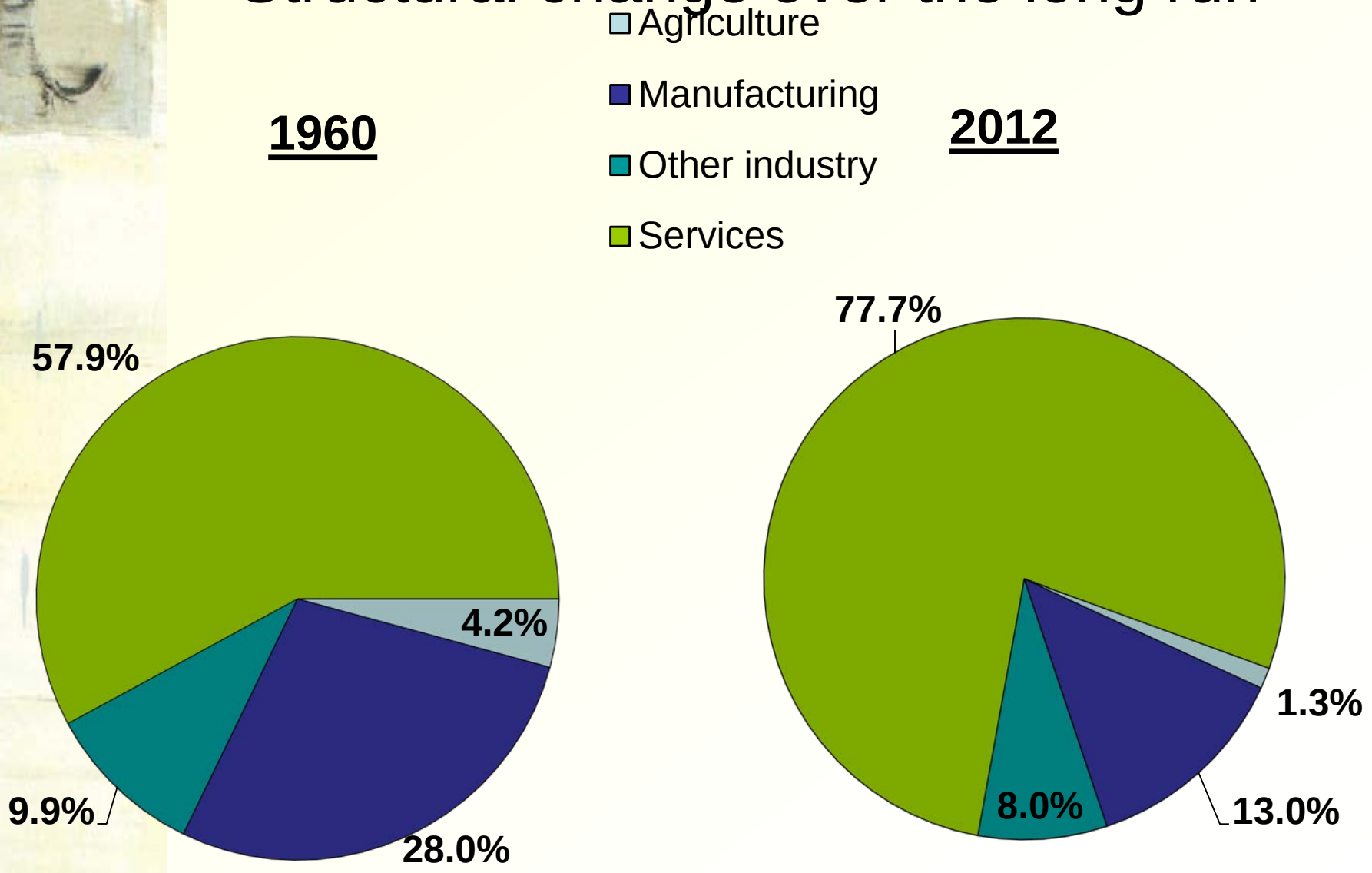
Job Search & Frictional Unemployment （摩擦性失业）

- **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 （部门转移）

- def: changes in the composition of demand among industries or regions
- *example:* Technological change increases demand for computer repair persons, decreases demand for typewriter repair persons
- *example:* A new international trade agreement causes greater demand for workers in the export sectors and less demand for workers in import-competing sectors.
- It takes time for workers to change sectors, so sectoral shifts cause 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

- *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 unemployment, because it:
  - reduces the opportunity cost of being unemployed
  - reduces the urgency of finding work
  - hence, reduces *f*
- Studies: The longer a worker is eligible for UI, the longer the duration of the average spell of unemployment.

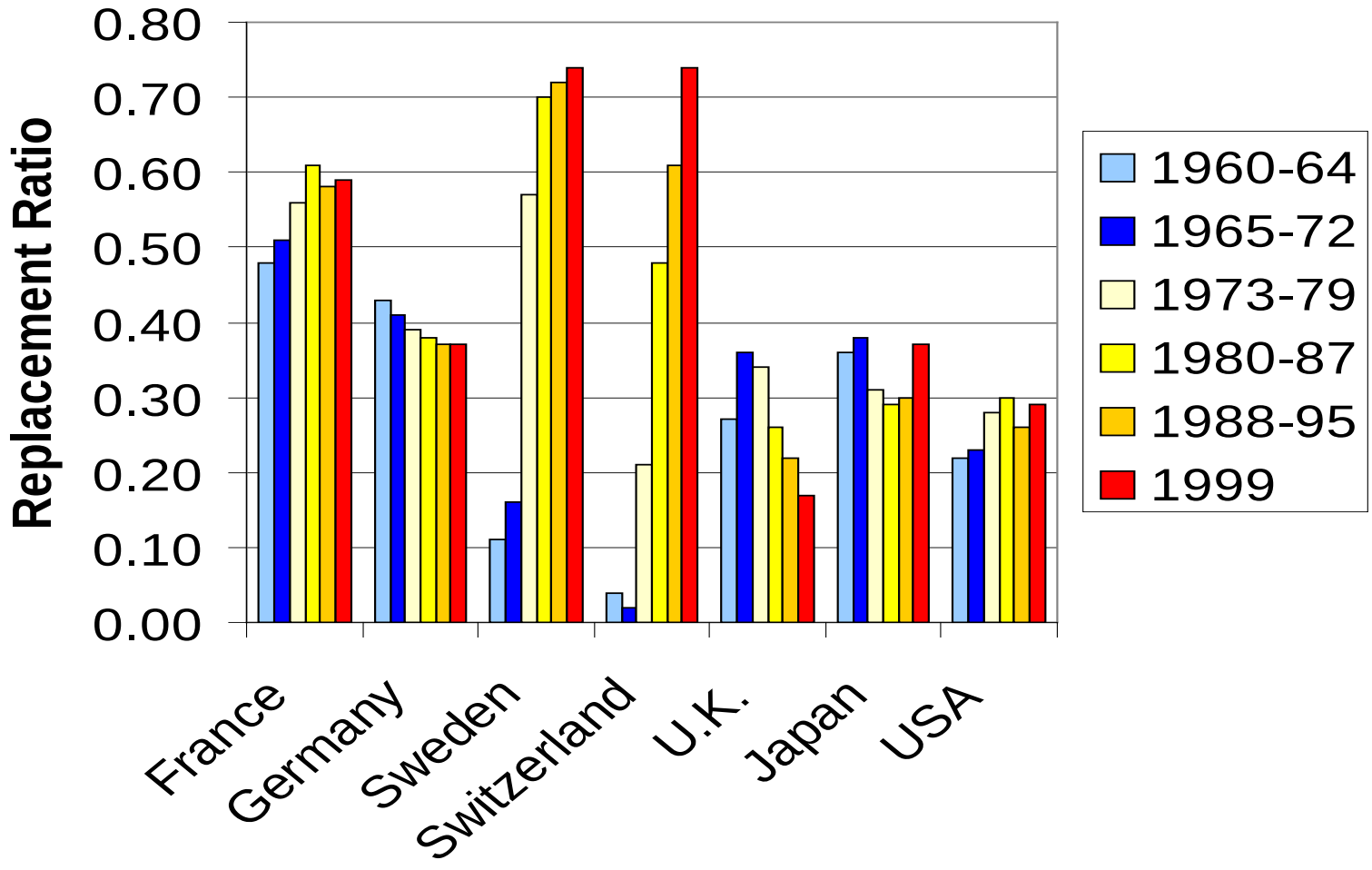
Benefits of UI

- 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.

UI: Replacement Rates



Why is there unemployment?

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

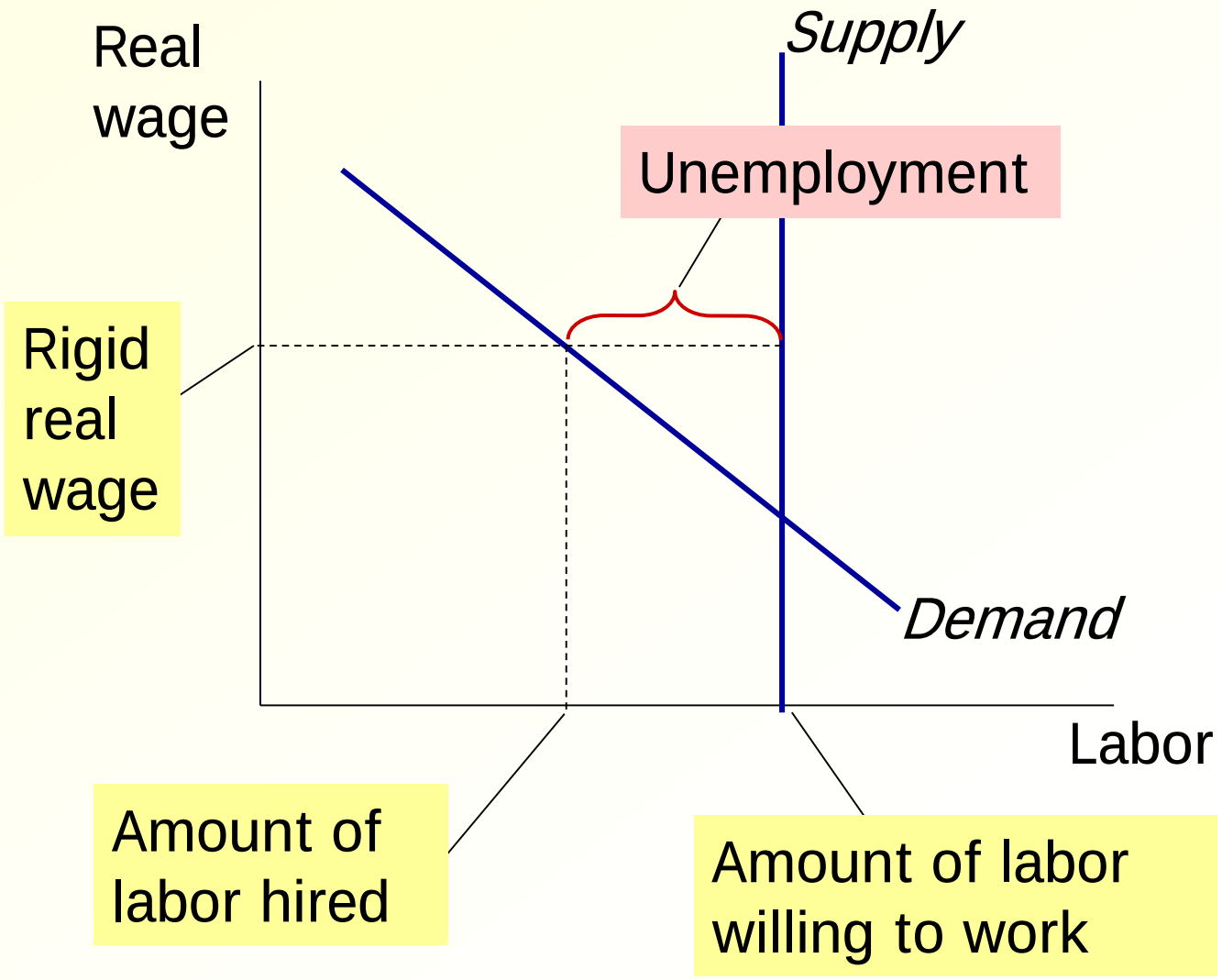
- There are two reasons why $f < 1$:

DONE ✓ 1. job search

Next ➔ 2. wage rigidity

Unemployment from real wage rigidity

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



Unemployment from real wage rigidity

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

Then, firms must ration the scarce jobs among workers.

Structural unemployment（结构性失业）: the unemployment resulting from real wage rigidity and job rationing（工作配额）.

Reasons for wage rigidity

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

The minimum wage

- In many countries, the minimum wage is well below the eq'm wage for most workers, so it cannot explain the majority of natural rate unemployment.
- However, the minimum wage may exceed the eq'm wage of unskilled workers, especially teenagers.
- If so, then we would expect that increases in the minimum wage would increase unemployment among these groups.

The minimum wage in the real world:

- In Sept 1996, the minimum wage in the U.S. was raised from $4.25 to $4.75. Here's what happened:

Unemployment rates, before & after		
	3rd Q 1996	1st Q 1997
Teenagers	16.6%	17.0%
Single mothers	8.5%	9.1%
All workers	5.3%	5.3%

- Other studies: A 10% increase in the minimum wage increases teenage unemployment by 1-3%.

Labor unions

- Unions exercise monopoly power to secure higher wages for their members.
- When the union wage exceeds the eq'm wage, unemployment results.
- Employed union workers are **insiders** whose interest is to keep wages high.
- Unemployed non-union workers are **outsiders** and would prefer wages to be lower (so that labor demand would be high enough for them to get jobs).

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)

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

Efficiency Wage （效率工资） Theory

- Theories in which high wages increase worker productivity:
  - attract higher quality job applicants
  - increase worker effort and reduce “shirking”
  - reduce turnover, which is costly
  - improve health of workers
    (in developing countries)
- The increased productivity justifies the cost of paying above-equilibrium wages.
- The result: unemployment

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 duration of unemployment in the U.K.

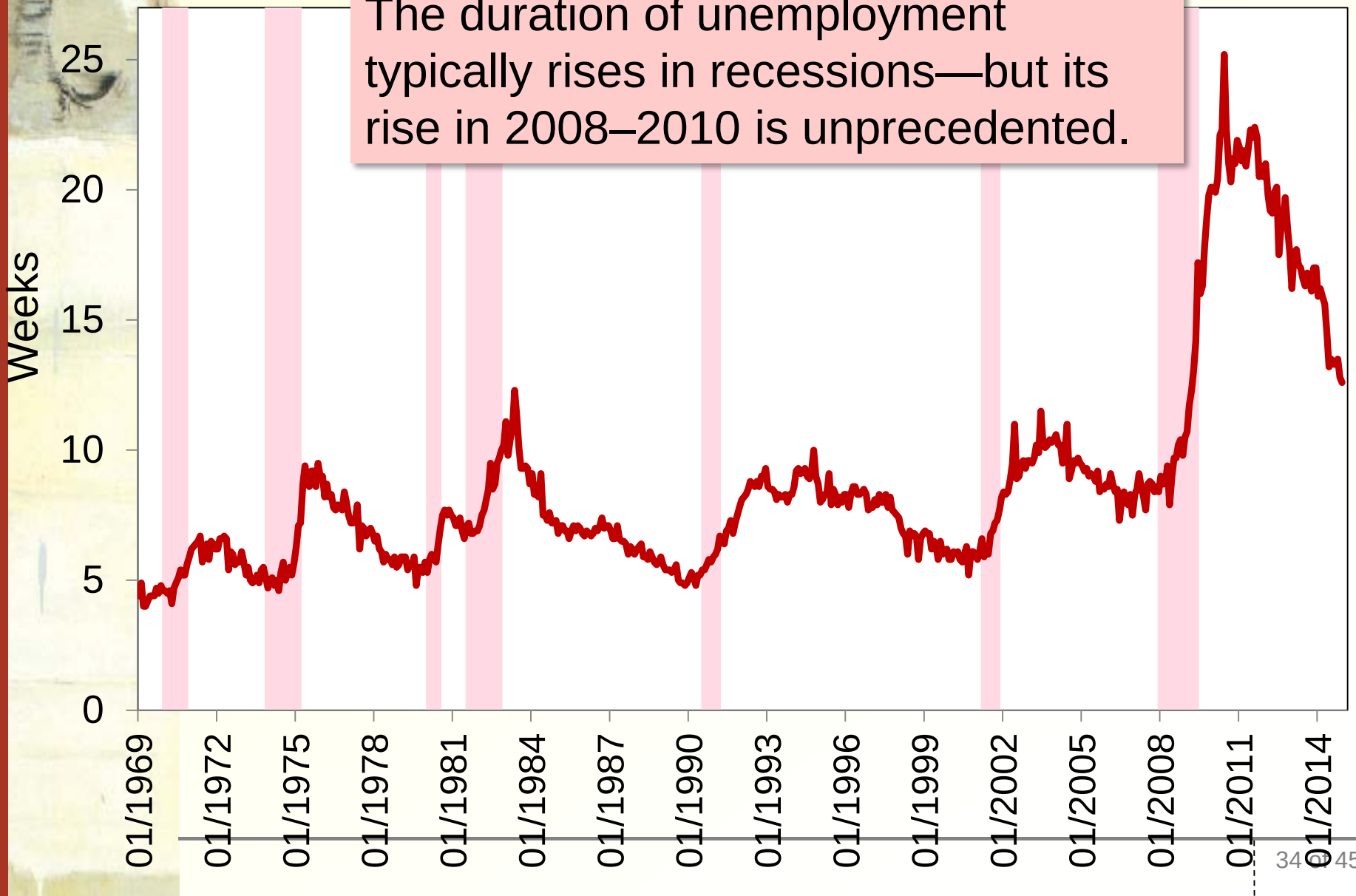
# of months unemployed	# of unemployment benefit claimants as % of total # of claimants	amount of time these workers spent unemployed as % of total time ALL claimants spent unemployed
< 6 months	68%	29%
6-12	18%	23%
12-24	10%	25%
> 2 years	4%	24%

The duration of unemployment

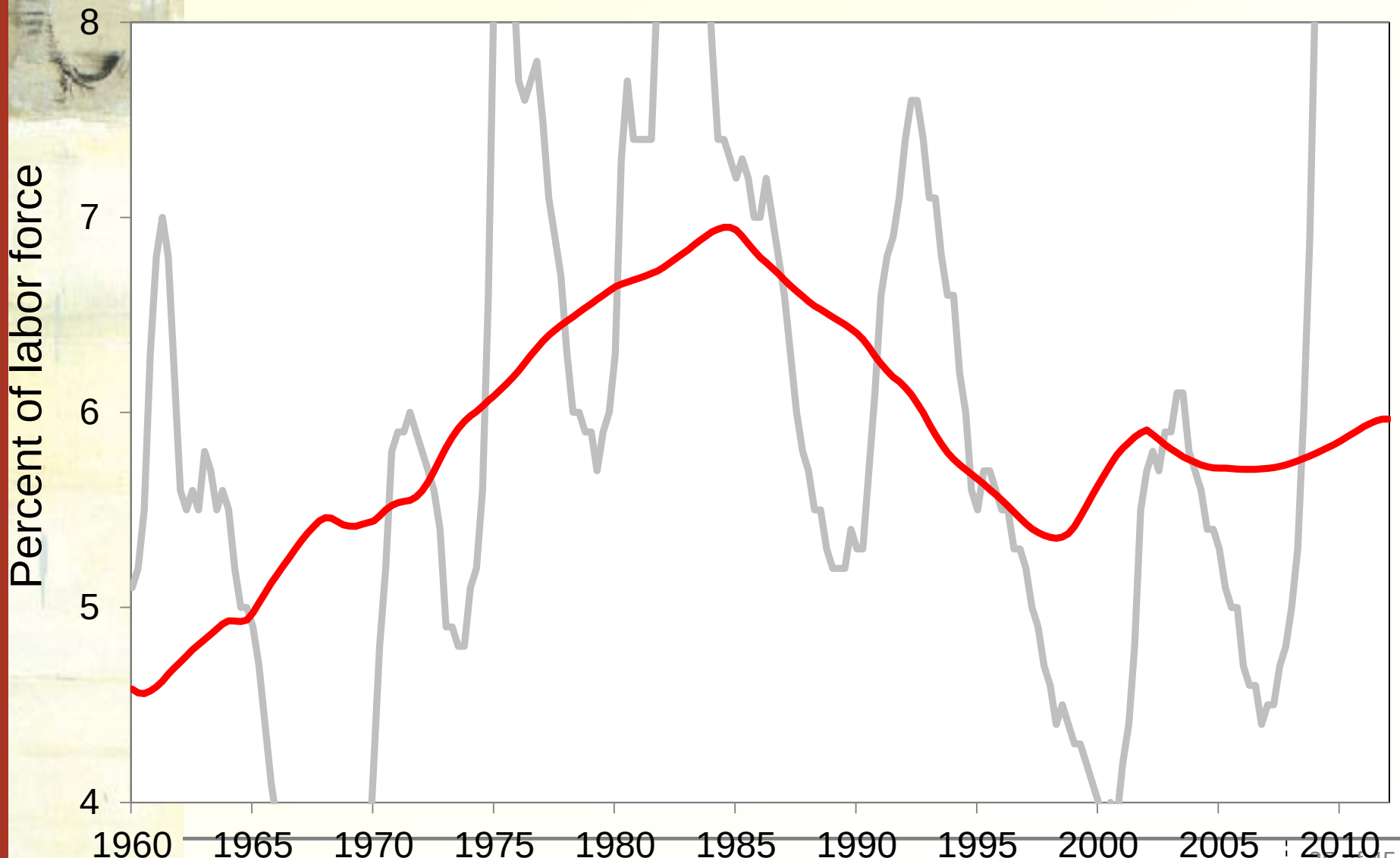
- The data:
  - More spells of unemployment are short-term than medium-term or long-term.
  - Yet, most of the total time spent unemployed is attributable to the long-term unemployed.
- This long-term unemployment is probably structural and/or due to sectoral shifts among vastly different industries.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

The Median Duration of Unemployment

The duration of unemployment typically rises in recessions—but its rise in 2008–2010 is unprecedented.

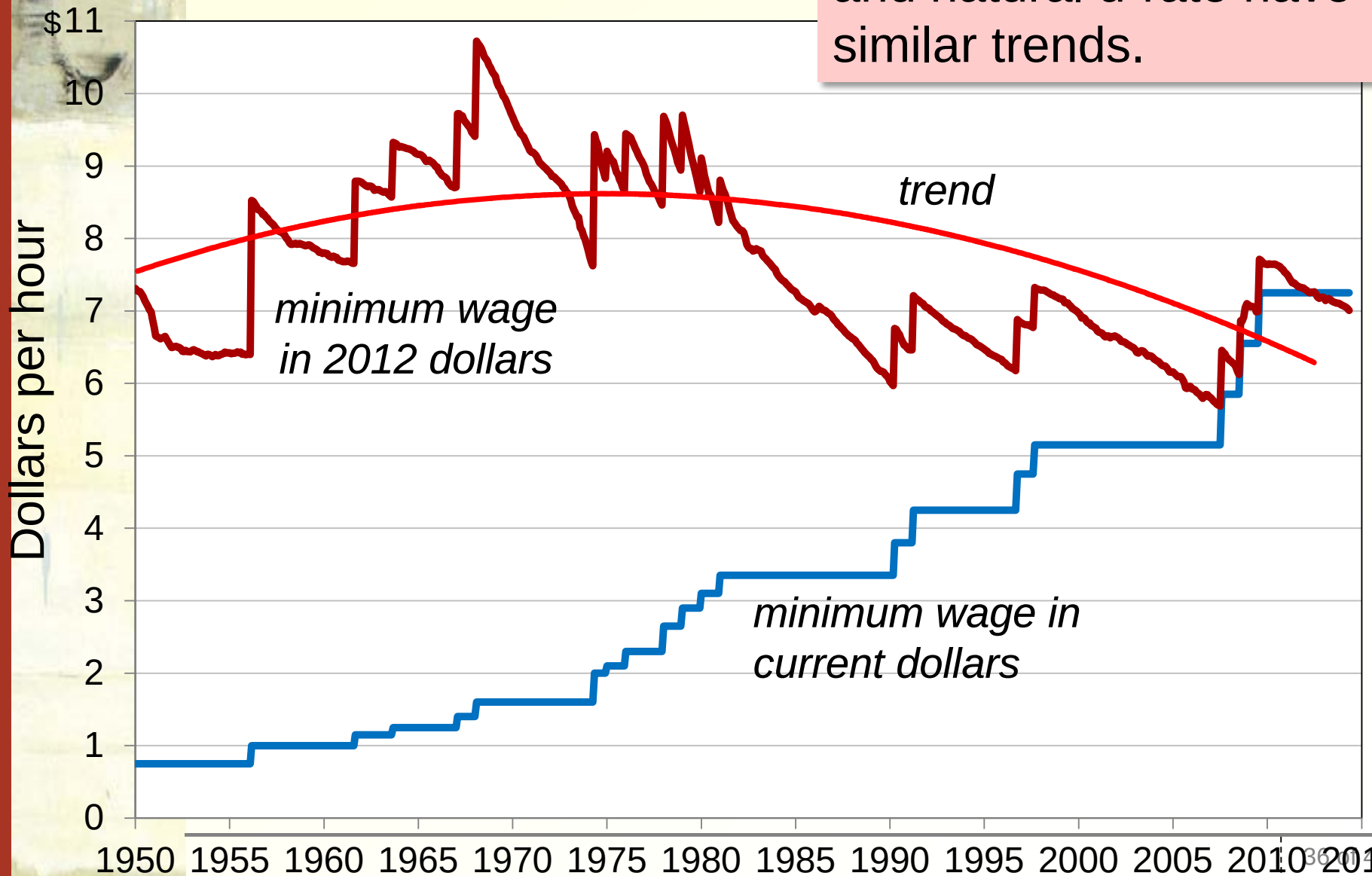


TREND: The natural rate rises over 1960–84, then falls over 1985–2005



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

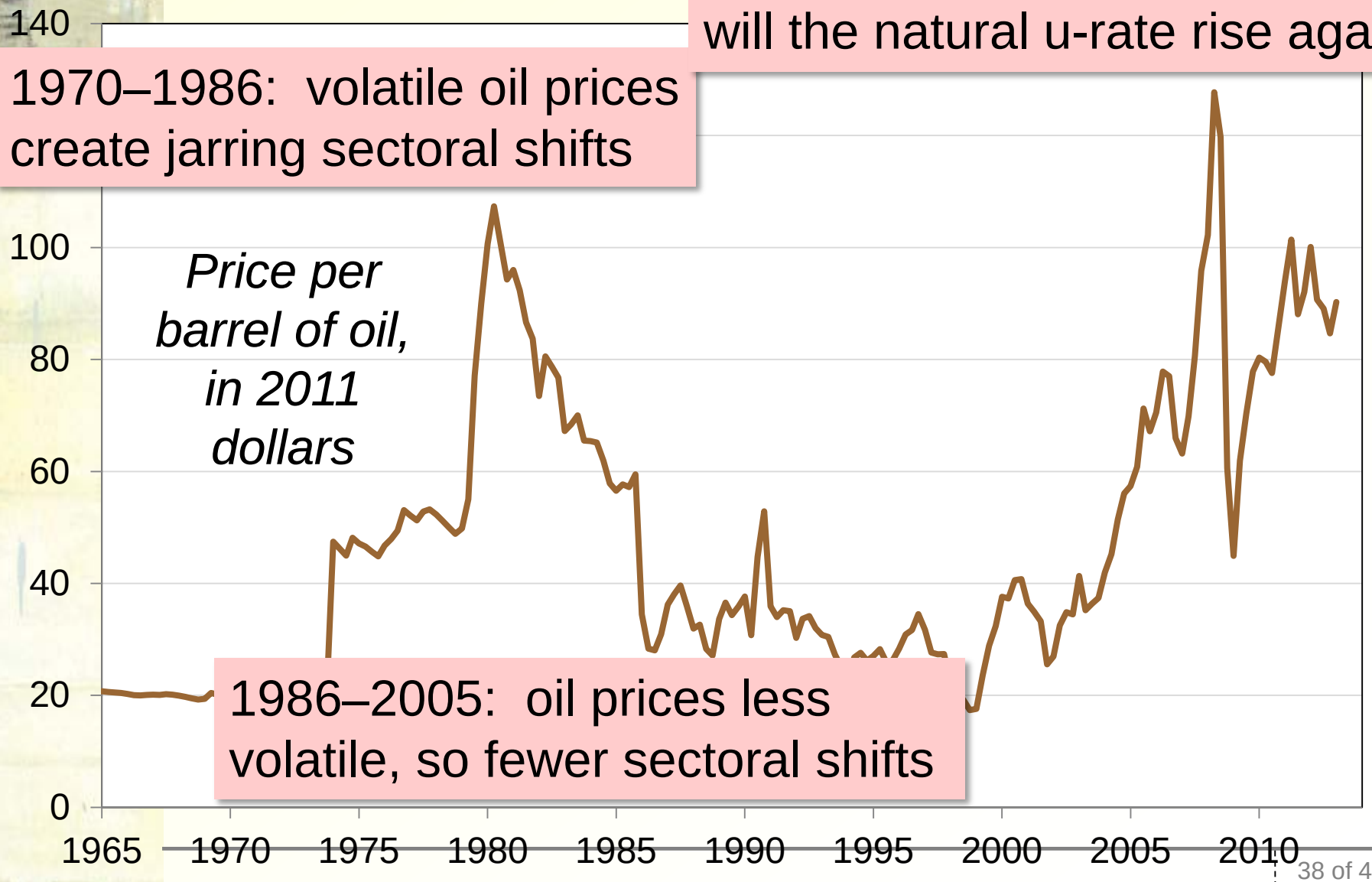
Since early 1980s, the natural rate and union membership have both fallen.

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

EXPLAINING THE TREND:
Sectoral shifts

2006–2012:
oil price volatility increases –
will the natural u-rate rise again?

1970–1986: volatile oil prices create jarring sectoral shifts

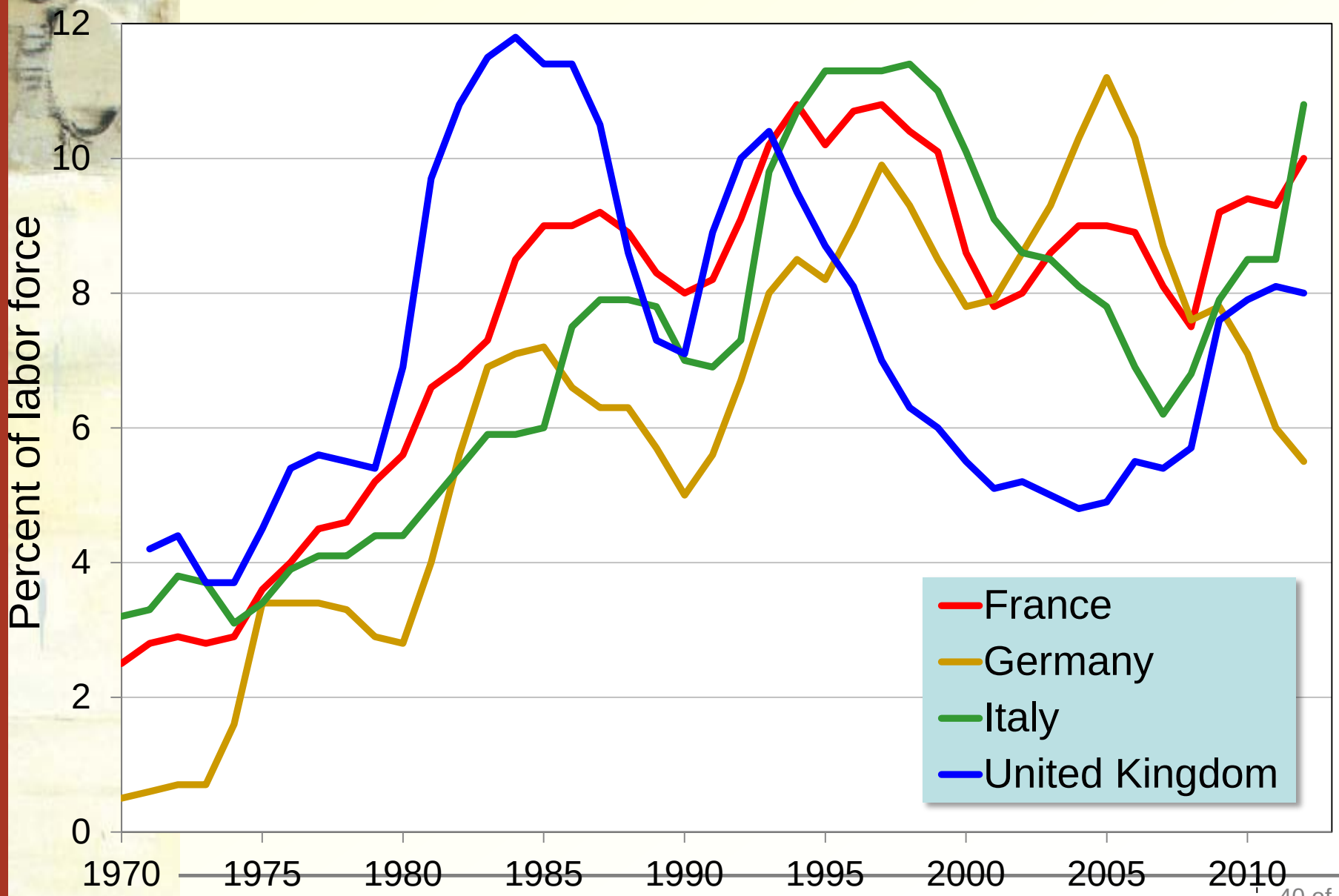


1986–2005: oil prices less volatile, so fewer sectoral shifts

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 in 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.

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
   - causes: 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
6. Continental European unemployment
   - rose sharply after oil shocks of the 1970s and stayed high in many countries
   - possibly due to generous unemployment benefits, strong union presence, and a technology-driven shift in demand away from unskilled workers