Unemployment and the Labor Market

Chapter 8

Econ 313 – Intermediate Macroeconomics

University of Tennessee, Knoxville

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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

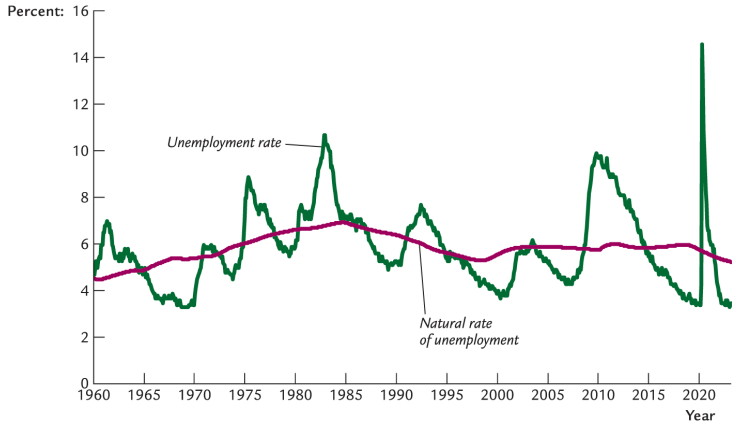
- **Natural rate of unemployment**: The average rate of unemployment around which the economy fluctuates.
- In a recession, the actual unemployment rate rises above the natural rate.
- In a boom, the actual unemployment rate falls below the natural rate.



Great Depression soup kitchen, Montreal, 1931 — when actual unemployment ran far above the natural rate.

Wikimedia, PD

Actual and natural rates of unemployment, United States, 1950–Jan 2023



Wage rigidity and structural unemployment (1 of 2)

- The model presented in Chapter 3 shows that real wages adjust to bring the labor market into equilibrium.
- In reality, real wages are not always flexible.
- Real wages may stay above the market-clearing level because of wage-rigidity.

Wage rigidity and structural unemployment (2 of 2)

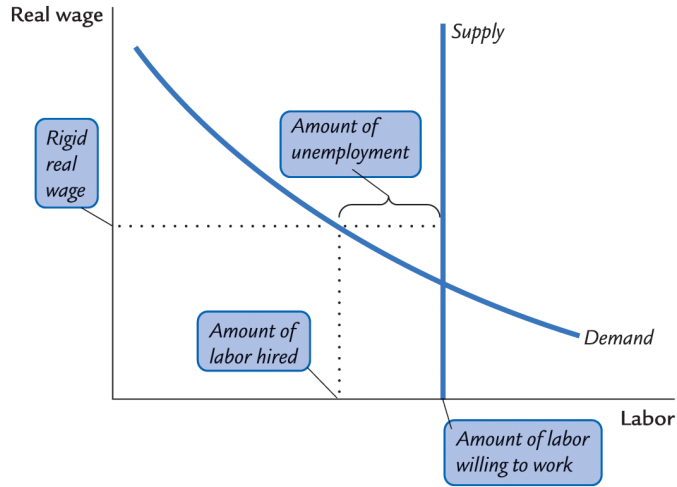
- Wage rigidity is one of the reasons why unemployment may exist.
- Unemployment resulting from wage rigidity is known as **structural unemployment**.

Job rationing

- Mismatch between workers who want to work and the number of jobs available
- Model from Chapter 3 indicates that the real wage should adjust to clear the market but not here.

Unemployment from real wage rigidity, part 1

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



Reasons for wage rigidity

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

1. Minimum-wage laws

- The minimum wage may exceed the equilibrium wage of unskilled workers.
  - Evidence shows that minimum wages above 60 percent to 66 percent of the median local wage increase unemployment.
  - However, evidence also shows if the minimum wage is not set "too high," then the unemployment effects are minimal.
- But, the minimum wage cannot explain the majority of the natural rate of unemployment, as most workers' wages are well above the minimum wage.

2. Labor unions and collective bargaining

- 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 nonunion workers who prefer equilibrium wages, so there would be enough jobs for them.

3. Efficiency wages

- Theories in which higher wages increase worker productivity by:
  - attracting higher-quality job applicants
  - increasing worker effort and reducing "shirking"
  - improving worker morale
  - 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

Job search and 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 and preferences
  - jobs have different skill requirements
  - geographic mobility of workers is not instantaneous
  - flow of information about vacancies and job candidates is imperfect

Sectoral shifts

- **Sectoral shifts**: 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.

More examples of sectoral shifts, part 1

- Industrial revolution (1800s): agriculture declines, manufacturing soars
- "China" Shock (2000–2010s): decline in manufacturing (located in the Midwest), services (located along the coasts) soar
- Healthcare spending as percentage of GDP:

1960	1980	2000	2020
5.2%	9.1%	13.8%	17.7%

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

More examples of sectoral shifts, part 2

Government programs affecting unemployment include:

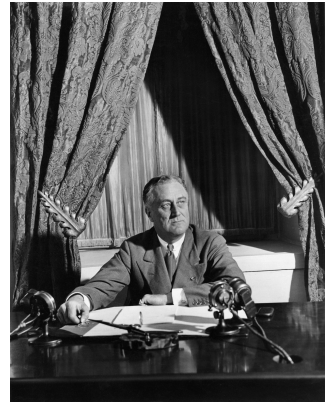
- *Government employment agencies*
  disseminate info about job openings to better match workers and jobs.
- *Public job training programs*
  help workers displaced from declining industries get skills needed for jobs in growing industries.



1936–41 WPA (Works Progress Administration) poster.
The largest public job program in U.S. history — an early answer to structural unemployment.

Unemployment insurance (UI)

- UI pays part of a worker's former wages for a limited time after the worker loses their job.
- UI increases frictional unemployment because it reduces
  - the opportunity cost of being unemployed
  - the urgency of finding work



FDR fireside chat, 1933. The Social Security Act (1935) created the U.S. unemployment-insurance system.

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Unemployment insurance (UI) eligibility in the United States

Eligibility:

- Unemployed through no fault of your own (fires and quits are case-by-case basis)
- Able, ready, and willing to work immediately (and show you are looking for work while receiving benefits)
- Have earned enough wages in the base period to qualify (definitions vary by state)

Unemployment insurance (UI) claims in the United States

Claims:

- Individual states run programs but receive money from the federal government.
- Currently, most state systems use outdated computer systems; it is difficult to make quick changes.
- Racial disparities in having claims approved and length of time for approval.
- States vary in their documentation requirements.

Unemployment insurance (UI) benefits in the United States

Benefits:

- Replacement Rate: Benefits are a percentage of your previous wages (varies by state; about 50 percent).
- States set a cap on total weekly benefits.
- Standard benefits last 26 weeks.
- In normal times, benefits are considered taxable income.

Expanded Benefit (EB) Program: During bad economic times, the length of benefits can be extended by 13 or 20 weeks (depending on the state of economic conditions).

Unemployment insurance (UI) during Covid in the United States

- Additional 13-week extension starting March 2020, with an extra 600 dollars a week (CARES Act)
- Additional 11-week extension starting December 2020, with an extra 300 or 400 dollars a week depending on the state and other eligibility requirements
- Additional 25-week extension starting March 2021, with an extra 300 dollars a week (American Rescue Plan)
- Extra $ per week due to outdated computer systems and adjusting the replacement rate
- Initial research finding that the extra 600 dollars a week did not cause unemployment

Benefits of UI

By allowing workers more time to search:

- UI may lead to better matches between jobs and workers, leading to greater productivity and higher incomes.

"Do Unemployment Insurance Benefits Improve Match Quality? Evidence from Recent U.S. Recessions" reveals:

- "Longer UI benefit durations decrease the mismatch between workers' educational attainments and the educational requirements of jobs."
- "We find bigger effects of UI on match quality for those more likely to be liquidity constrained—women, non-whites and less-educated workers."
- "UI extensions improve the functioning of the labor market."

NOW YOU TRY: Questions for discussion

- Based on the previous slides, are unemployment insurances expansions helpful or hurtful to the economy?
- Why?
- How would you judge the U.S. response to Covid, *in terms of unemployment benefits*?
- What ways could the UI system be improved?

A model of the natural rate

Notation:

$L = \#$ of workers in labor force
$E = \#$ of employed workers
$U = \#$ of unemployed
$U/L =$ unemployment rate
$L = E + U$

Elements of the model (1 of 6)

- Firms demand labor:

$J = \#$ of jobs firms want to fill
$V = \#$ job vacancies
$F = \#$ filled jobs
$J = F + V$

Elements of the model (2 of 6)

- We assume that each employed worker has one job.

$$E = F$$

$$J = F + V = E + V$$

Elements of the model (3 of 6)

- We assume that a fraction s of employed workers lose or leave (they separate) their jobs every month.
- Therefore, total number of job separations every month is:

$$\text{Separations} = sE = sF.$$

Elements of the model (4 of 6)

- Job hiring is explained by a *matching function*:

$$\text{New hires} = \mu M(U, V).$$

- Function $M()$ is the process of matching workers and jobs.
- μ measures how efficient job matching is.
- Various policies may affect μ.

Elements of the model (5 of 6)

- Unemployment will change over time when the rate of separations and new hires are different.

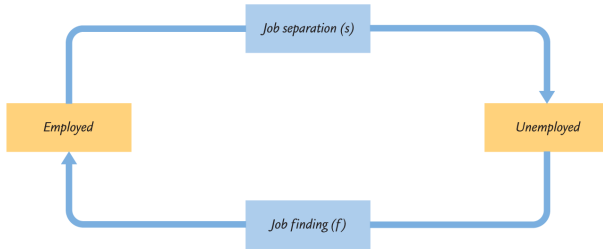
$$\Delta U = sE - \mu M(U, V)$$

Elements of the model (6 of 6)

$$\Delta U = sE - \mu M(U, V)$$

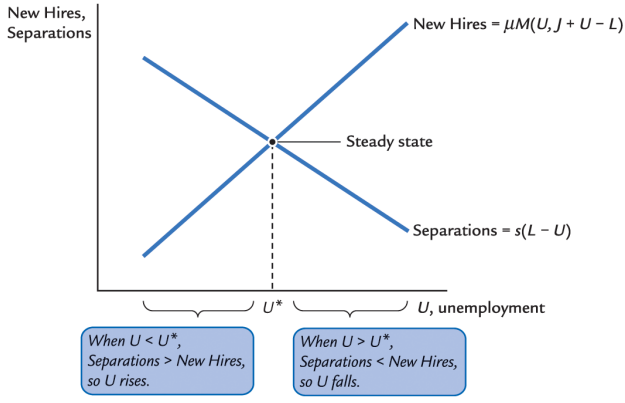
$$\Delta U = s(L - U) - \mu M(U, J + U - L)$$

The transitions between employment and unemployment



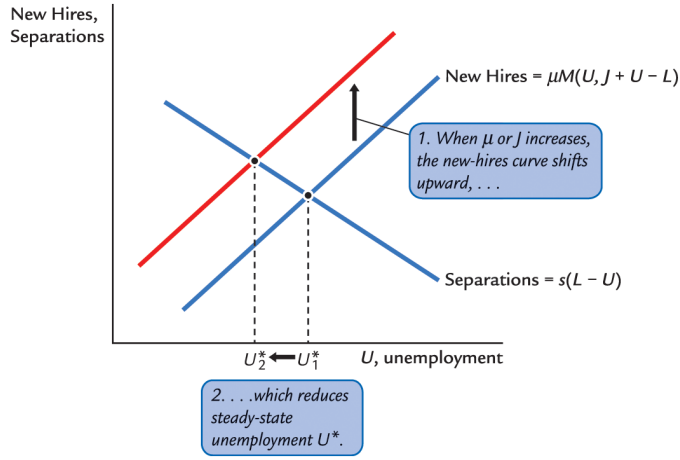
Mankiw, *Macroeconomics*, 10e, © 2019 Worth Publishers

Natural rate of unemployment

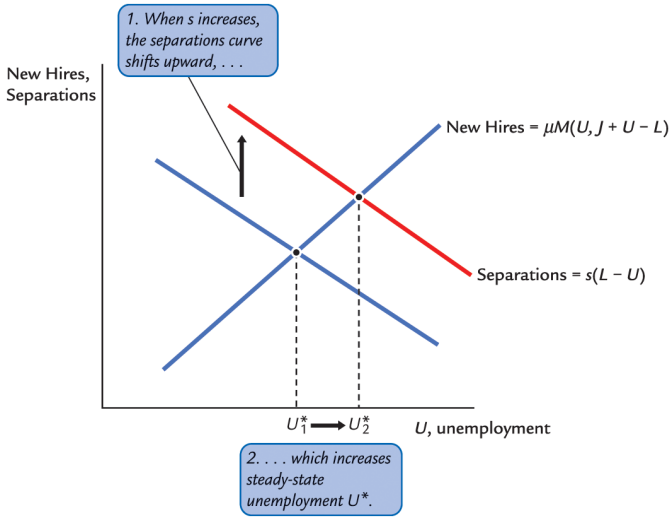


▸ Numerical example

An increase in μ or J



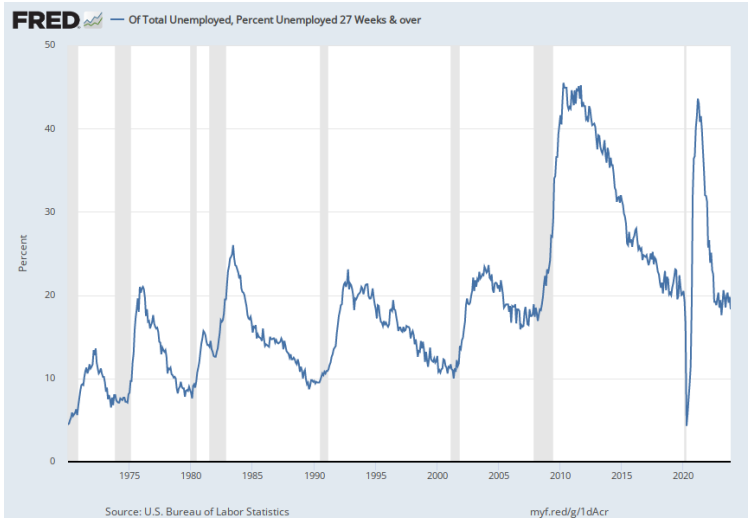
An increase in s



The duration of unemployment, 1967–Oct 2023



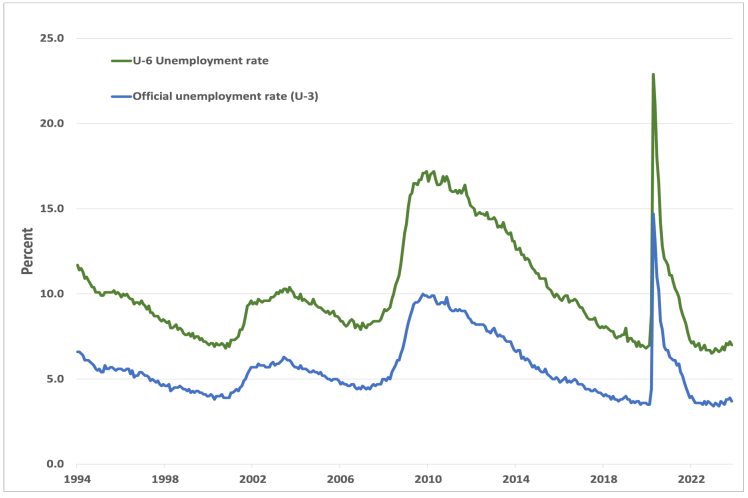
The long-term (27 weeks or more) unemployed



Discouraged workers

- **Discouraged workers**: workers who have given up on looking for a job and are considered out of the labor force (U-4 unemployment rate)
- **Marginally attached workers**: persons *not* in the labor force who want and are available for work and who have looked for a job but have not *recently* looked for work
  - Discouraged workers are included in marginally attached workers. (U-5 unemployment rate)
  - When combined with people who work part time for economic reasons, it shows the U-6 unemployment rate.

U-3 vs U-6 unemployment rates, 1994–2023



Source: U.S. Bureau of Labor Statistics

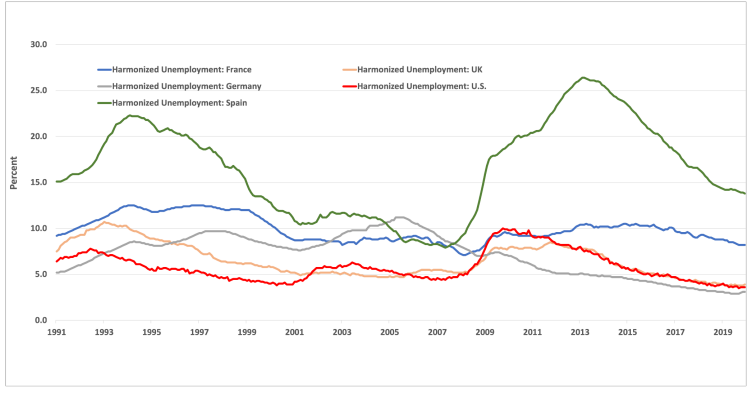
Unemployment rate by demographic group, 2021

Age	White Men	White Women	Black Men	Black Wo
16–19	11.3%	9.6%	16.5%	16.7%
20–24	8.5	6.8	14.2	14.0
25–54	4.3	4.2	8.9	7.4



Claudia Goldin (Harvard) — 2023 Nobel laureate for women in the labor market. First woman

Unemployment in Europe and United States, 2000–2019



Source: Organization for Economic Co-operation and Development

Why has unemployment in Europe been higher than in the United States?

Shock

Technological progress shifting labor demand from unskilled to skilled workers in recent decades

Effect in the 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

Chapter Summary, Part 1

- The natural rate of unemployment
  - Definition: the long-run average, or "steady-state," rate of unemployment
  - It depends on the rates of job separation and job finding.
- Frictional unemployment
  - It is due to the time it takes to match workers with jobs.
  - Longer unemployment benefits can increase match quality.
- Structural unemployment
  - It results from wage rigidity: The real wage remains above the equilibrium level.

Chapter Summary, Part 2

- Unemployment insurance in the United States
  - Issues caused by outdated and state-run computer systems
  - Massive expansion in benefits during Covid
- Duration of unemployment
  - Most spells are for short term.
  - Most weeks of unemployment are attributable to a small number of long-term unemployed persons.
  - Both the 2008 and Covid recessions greatly increased long-term unemployed.

Chapter Summary, Part 3

- Unemployment in the United States
  - Multiple measures of unemployment: U-3, U-6, etc.
  - Differences across demographic groups

Appendix: The natural rate — a numerical example

Recall the transitions between E (employed) and U (unemployed):

- $s =$ fraction of E who lose their job each month (separation rate)
- $f =$ fraction of U who find a job each month (job-finding rate)

In steady state, flows balance: $sE = fU$. Combined with $E + U = L$:

$$\boxed{u^n = \frac{U}{L} = \frac{s}{s+f}}$$

Baseline calibration (roughly U.S., normal times):

$$s = 0.02, \quad f = 0.38.$$

$$u^n = \frac{0.02}{0.02 + 0.38} = \frac{0.02}{0.40} = \boxed{5\%}.$$

back

Appendix — what shifts the natural rate?

Shock 1 (recession lowers job finding). Suppose f falls from 0.38 to 0.20, s unchanged:

$$u^n = \frac{0.02}{0.02 + 0.20} = \frac{0.02}{0.22} \approx \boxed{9.1\%}.$$

Shock 2 (sectoral shift raises separations). Now s rises to 0.03 (mid-recession) while f stays at 0.20:

$$u^n = \frac{0.03}{0.03 + 0.20} = \frac{0.03}{0.23} \approx \boxed{13.0\%}.$$

Scenario	$s,\ f$	u^n
Baseline (normal)	$0.02,\ 0.38$	5.0%
Weak job market	$0.02,\ 0.20$	9.1%
Recession + churn	$0.03,\ 0.20$	13.0%

u^n falls when it is easier to find work (higher f) or harder to lose it (lower s).
Policy tools: UI reform, job training, minimum wage, unions — each moves s or f.