

INTERMEDIATE MACROECONOMICS: UNEMPLOYMENT

Marina Azzimonti

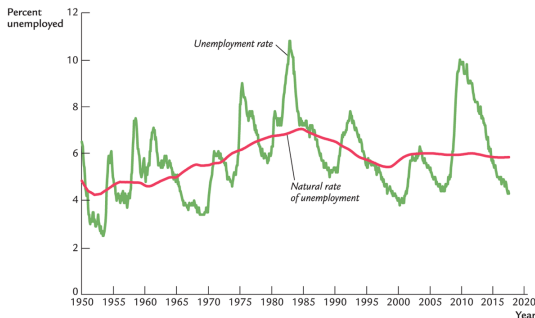
Unemployment

- What is unemployment?
- Why does it exist?
- Why should we care?
- How can we measure it?

What is unemployment?

- There is unemployment when the supply of labor is different from the amount employed by firms.

$$L^s \neq L^d$$



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- Long-run value is called **natural rate of unemployment**.

Why does it exist?

- 1 **Frictional Unemployment:** Workers move between jobs, finding a good match takes time. The process naturally gives rise to spells of unemployment.
- 2 **Structural Unemployment:** Labor market might not be in equilibrium at the point where supply equals demand because of:
 - Minimum wage laws
 - Unions
 - Efficiency Wages

these are sometimes referred to as *Wage Rigidities*.

Why do we care?

- Labor is an input into $F(K, L) \Rightarrow$ unemployment signals waste of a scarce resource + inefficient production levels.
- Human and social costs of unemployment.
- Individuals face undesirable uncertainty about future income.
- In the US: health insurance is tied to employer, when you lose your job you lose your healthcare!

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

Frictional Unemployment

- Another reason is **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.

Modeling Frictional Unemployment

- Notation:

L = # of workers in labor force.

E = # of employed workers.

U = # of unemployed.

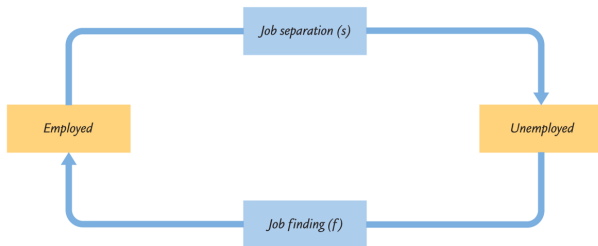
$$L = E + U$$

- Rates:

E/L = # employment rate.

U/L = # unemployment rate.

Employment Flows



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- s = rate of job separation, fraction of employed workers who become separated from their jobs.
- f = rate of job finding, fraction of unemployed workers who find jobs.
- L is exogenously fixed.

Employment Flows

- Inflows to employment: fU people move from $U \Rightarrow E$.
- Outflows from employment: sE move from $E \Rightarrow U$.
- In steady state: inflows = outflows

$$sE = fU$$

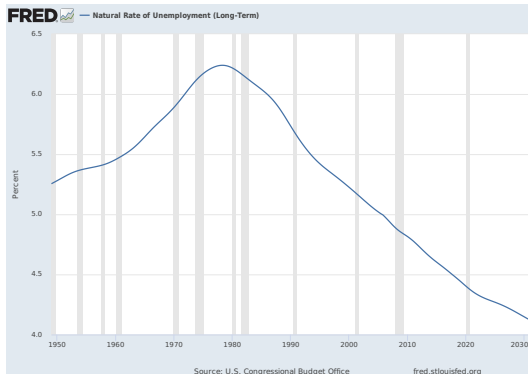
- In the long-run, the unemployment rate is

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

- This is the **natural rate of unemployment**.

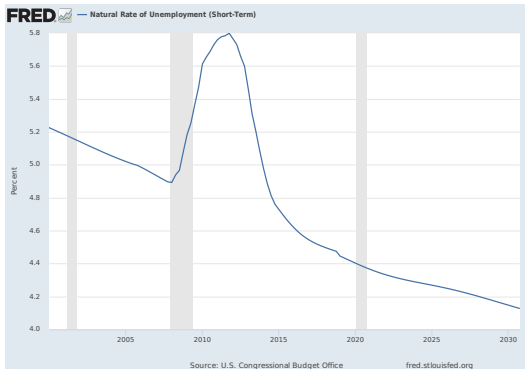
How can we measure it?

- The U.S. Congressional Budget Office provides a measure of the natural rate of unemployment (NAIRU) its [Budget and Economic Outlook](#).
- It can be found in FRED under [NROU](#).



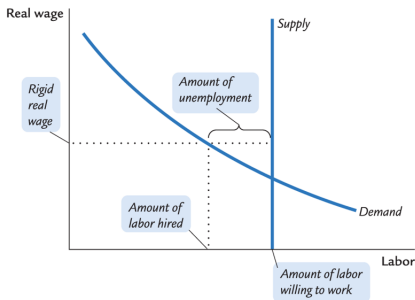
Short-term NROU

- The short-term natural rate incorporates structural factors that are temporarily boosting the natural rate beginning in 2008.
- Used to gauge the amount of current and projected slack in labor markets (key for CBO's projections of inflation).
- It can be found in FRED under [NROUST](#).



Structural Unemployment

- If the real wage is stuck above its equilibrium level, there aren't enough jobs to go around.
- Then, firms must ration the scarce jobs among workers.



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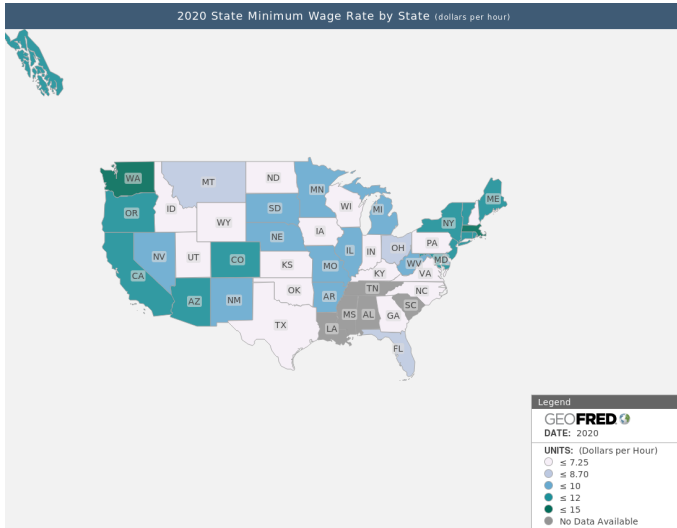
Reasons for wage rigidity

- Minimum wage laws
- Unions
- Efficiency Wages

Minimum-wage laws

- The minimum wage may exceed the equilibrium wage of unskilled workers, especially teenagers.
- Studies: a 10% increase in minimum wage reduces teen 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.

Minimum wage per State



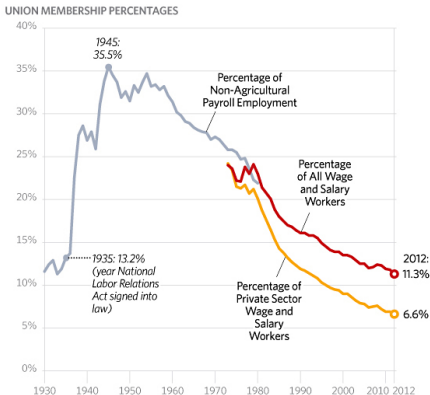
- It can be found in FRED under [Minimum Wages by State](#).

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
- [BLS](#) provides reports on union memberships regularly.

Labor unions

- Union memberships have been declining sharply over time.

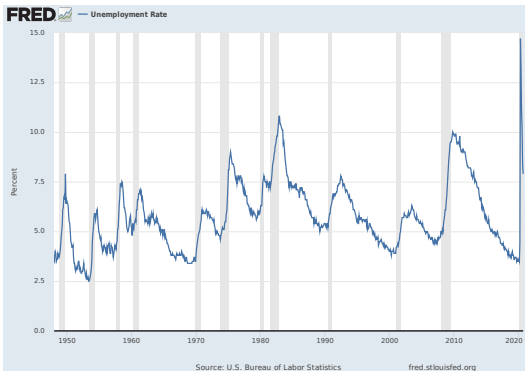


Efficiency wages

- 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

Unemployment over time

- Unemployment is counter-cyclical: typically rises in recessions.



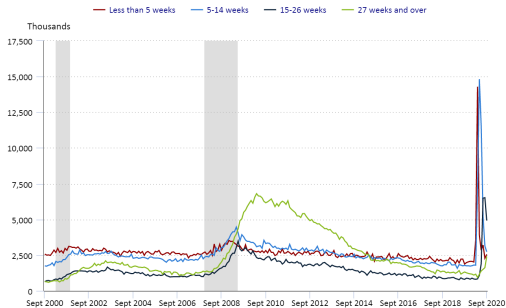
- Source: FRED under [UNRATE](#).
- BIG spike during pandemic. Rise in Great Recession 2008–2010 was unprecedented b/c of increased duration.

Duration of unemployment

- Average duration: 22 weeks, Median duration: 18 weeks.
- People can get unemployment insurance for up to 26 weeks.
[CARES Act](#) provides 13 more weeks (COVID-19).

Duration of unemployment, seasonally adjusted

Click and drag within the chart to zoom in on time periods



Hover over chart to view data.

Note: Shaded area represents recession, as determined by the National Bureau of Economic Research.

Source: U.S. Bureau of Labor Statistics.



- Source: [US Bureau of Labor Statistics](#).

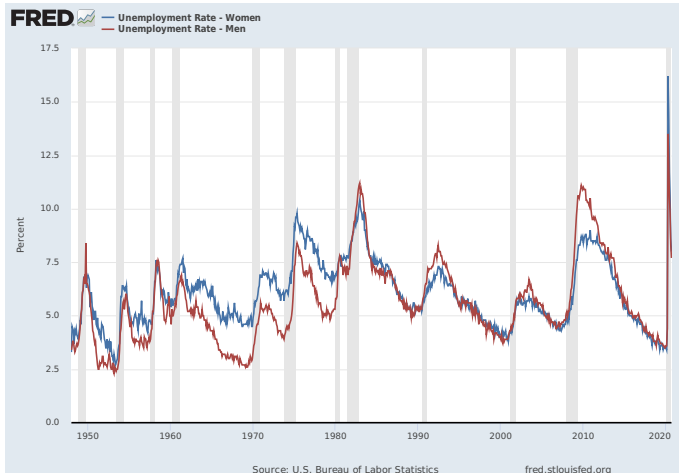
Discouraged workers

- Discouraged workers: workers who have given up on looking for a job and are considered out of the labor force.
- 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.

Other measures of unemployment

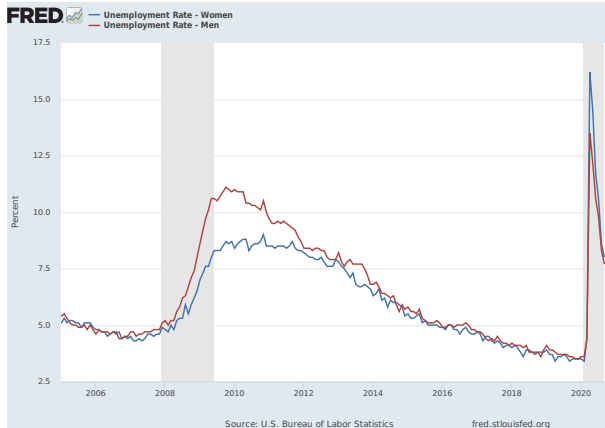
Variable	Description	Rate
U-1	Persons unemployed 15 weeks or longer, as a percent of the civilian labor force (includes only very long-term unemployed)	1.7
U-2	Job losers and persons who have completed temporary jobs, as a percent of the civilian labor force (excludes job leavers)	2.1
U-3	Total unemployed, as a percent of the civilian labor force (official unemployment rate)	4.3
U-4	Total unemployed, plus discouraged workers, as a percent of the civilian labor force plus discouraged workers	4.7
U-5	Total unemployed plus all marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers	5.3
U-6	Total unemployed, plus all marginally attached workers, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers	8.6

Unemployment by Gender



Unemployment by Gender: Recent Years

- More women unemployed during the pandemic.



Unemployment by Education

- Bachelor degree holders have lowest unemployment rates.

Unemployment rate by education level



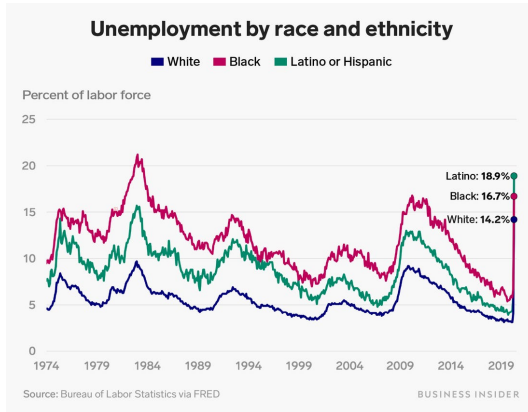
Note: For civilian Americans age 25 and older, seasonally adjusted

Source: Labor Department

THE WASHINGTON POST

Unemployment by Race

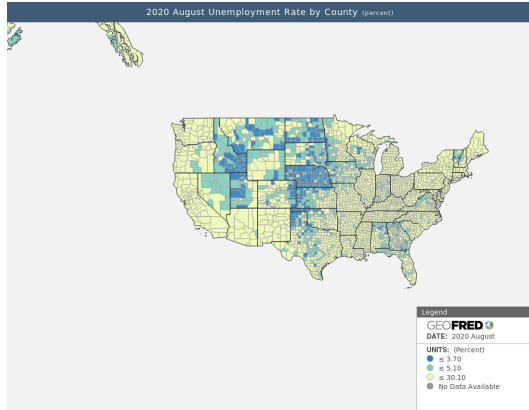
- Whites have the lowest unemployment rates in the US.



- Highly correlation with education attainment.

Unemployment by County

- Data as of August 2020.



- Source: [GEO-FRED](https://www.gfred.org/).

- Economists monitor the evolution of labor markets because they signal how healthy the economy is.
- Department of Labor (DOL) lists several sources for [Unemployment Statistics](#).
- Weekly unemployment claims provided by DOL. Latest report [here](#).
- Short-frequency data on labor turnover can be found in the [JOLTS Report](#). The latest report can be found [here](#).