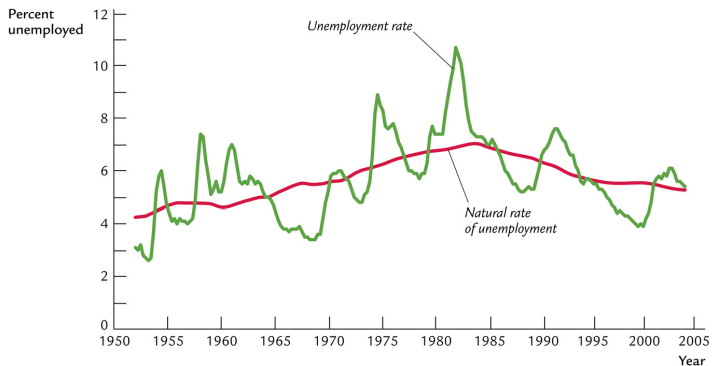# Unemployment in the Long-Run

Instructor: Dmytro Hryshko

Outline

- The natural rate of unemployment
- What causes unemployment?
  –Job search
  –Wage rigidities

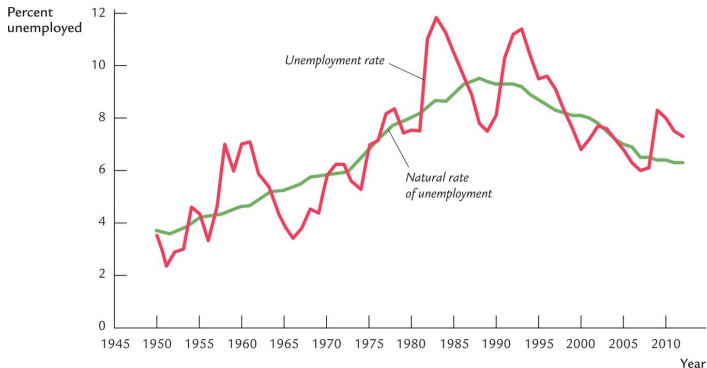# Unemployment rate in the US
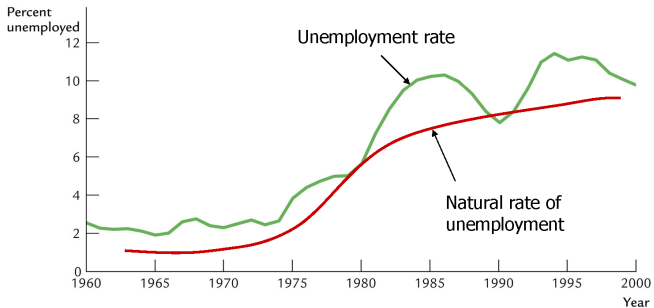
Unemployment rate in Canada

Figure 6-1 The Unemployment Rate and the Natural Rate of Unemployment in Canada
Mankiw and Scarth: Macroeconomics, Canadian Fifth Edition
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Unemployment rate in the EU

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

Why is there Unemployment?

Friedman (AER 1968): "The "natural rate of unemployment," in other words, is the level that would be ground out by the Walrasian system of general equilibrium equations, provided there is imbedded in them the actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on."

Why is there Unemployment?

- Job search (unemployment due to frictions)
- Wage rigidities (unemployment due to structure of the labor market)

A Model of the Natural Rate

Notation:

- E = number of employed workers
- U = number of unemployed
- L = number of workers in labor force ($=E + U$)
- U/L = unemployment rate

Assumptions

- L is exogenously fixed (=constant)
- During any given month
  $-s$ = fraction of employed workers that become separated from their jobs (exogenous)
  $-f$ = fraction of unemployed workers that find jobs (exogenous)

Labour Market Flows

$$s \times E$$

Employed

Unemployed

$$f \times U$$
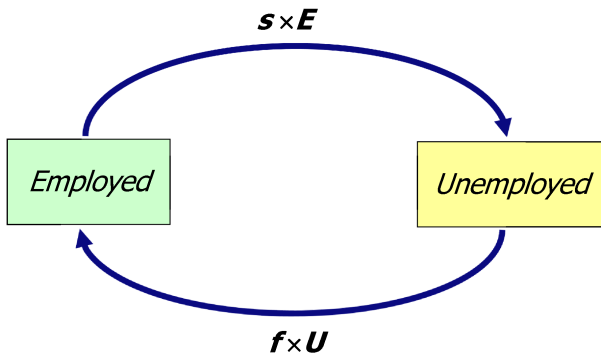
Steady State (Equilibrium)

- The labor market is in steady state, or long-run equilibrium, if the unemployment rate is constant

$$U_{t+1} = (1-f)U_t + sE_t = (1-f)U_t + s(L-U_t)$$

$$\Rightarrow \frac{U_{t+1}}{L} = (1-f)\frac{U_t}{L} + s\left(1 - \frac{U_t}{L}\right)$$

- The steady-state condition $\left(\frac{U_{t+1}}{L} = \frac{U_t}{L} = \frac{U}{L}\right)$ implies:

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

Equilibrium Unemployment Rate

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

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:

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

Drawbacks

- This model gives a way to calculate the natural rate of unemployment in the long run BUT it <u>does not explain</u> why and how there was unemployment in the first place
- Assumes job finding is not instantaneous BUT it does not explain why

Changing the Natural Rate

- A policy will reduce the natural rate of unemployment only if it lowers s or increases f
- 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 $f < 1$
  –job search (frictions)
  –wage rigidity

Job Search: 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

Job Search: Sectoral Shifts

Changes in the <u>composition of demand</u> among industries or regions

- Example: Technological change increases demand for computer-complementary workers, decreases demand for less skilled workers
- 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

More examples of sectorial shifts

- Late 1800's: decline of agriculture, increase in manufacturing
- Late 1900's: relative decline of manufacturing, increase in service sector
- 1970's: energy crisis caused a shift in demand away from gas guzzlers toward smaller cars.

Job Search: Public Policy

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

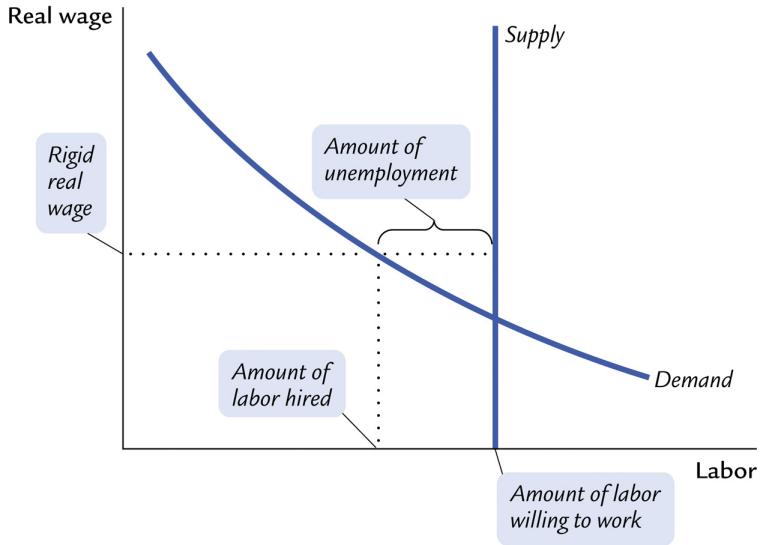# Job Search: Unemployment Insurance

- UI pays part of a worker's former wages for a limited time after losing his/her job (unemployment benefit)

- UI increases natural rate, 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 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

Wage Rigidity: Structural Unemployment

- If real wages fail to adjust to equilibrium where labour demand equals supply
  ↓ rate of job finding and ↑ natural rate of unemployment
- Unemployment from wage rigidity and job rationing called structural unemployment

Real wage

Supply

Rigid real wage

Amount of unemployment

Demand

Amount of labor hired

Amount of labor willing to work

Labor

Real Wage Rigidity

- If the real wage is stuck above the equilibrium level, then 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

The Minimum Wage

- The minimum wage is well below the equilibrium wage for most workers, so it cannot explain the majority of natural rate unemployment

- However, the minimum wage may exceed the equilibrium wage of unskilled workers, especially teenagers

- If so, then we would expect that increases in the minimum wage would increase unemployment among these groups

Unemployment rates

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

	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%

Alternatives to Minimum Wages

- Low wage subsidies
- Tax breaks for low-income families
  –earned income tax credit
  –provides incentive to hold job
- Improve education (secondary schooling)

Labour Unions

- Unions exercise monopoly power to secure higher wages and job security for their members

- When the union wage exceeds the equilibrium 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)

Percent of Workers Covered by Collective Bargaining

South Korea	12%
United States	13
Japan	16
Turkey	24
Canada	32
Poland	35
United Kingdom	35
Switzerland	48
Israel	56
Australia	60
Russian Federation	62
Germany	63
Italy	80
Spain	80
Netherlands	82
Greece	85
Sweden	92
France	95
Belgium	96

Source: Danielle Venn, "Legislation, Collective Bargaining and Enforcement: Updating the OECD Employment Protection Indicators." OECD Social, Employment and Migration Working Papers, 2009.

Table 6-1 Percent of Workers Covered by Collective Bargaining
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Efficiency Wages

- 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

Patterns of Unemployment

- 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

Patterns of Unemployment

- This <u>long-term</u> 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

Patterns of Unemployment: US

- The natural rate rises from 60s to early 80s, then falls from mid-80s to 2000
- Data shows that
  –The trend in the real minimum wage is similar to the behavior of the natural rate of unemployment
  –Since the early 80s, union membership has fallen but, from 50s to about 1980, the natural rate rose while union membership fell
  –Since 80s, less sectoral shifts due to volatile oil prices (prior to that)

Patterns of Unemployment in Canada

- The trends are similar
- The levels of unemployment rates differ due to definitions (in Canada, less stringent definition: "looking for job advertisements" is sufficient to be considered unemployed), extent of unionization, and macro policies

Eurosclerosis (sclerosis=excessive resistance to change)

- The term is used to express that labour market rigidities have had important **negative effects** on EU economic performance

Why is EU's unemployment so much higher than US's?

Unemployment in the EU: Rigidities

EU has more labour market rigidities:

- EU more diverse than US (culture, language), means less labour mobility
- EU countries have strong union traditions
- European welfare states (generous unemployment benefits, etc.)
- Strong employment protection legislations

Unemployment in the EU: Hysteresis

- Refers to the view that an economy's natural rate of unemployment depends on its history:
  –If workers unemployed for long $\Rightarrow$ lose skills
  –Less skills $\Rightarrow$ worker becomes more "unemployable" $\Rightarrow$ becomes discouraged
  –Unemployment becomes permanent

Unemployment in the EU: Technological Change

- Shift in demand from unskilled to skilled workers, due to technological change

This demand shift occurred in the U.S., too. But the U.S. has less wage rigidity, so instead of causing higher unemployment, the shift caused an increase in the gap between skilled and unskilled wages.

Unemployment in the EU: Strong Welfare States

- Generous social insurance programmes
- Large unemployment benefits
- Collective bargaining (unionization)

Unemployment in the EU: the Black Economy

- In south Europe, black economies have significant size
- Many unskilled workers hired on the black market—thus appearing as "unemployed"
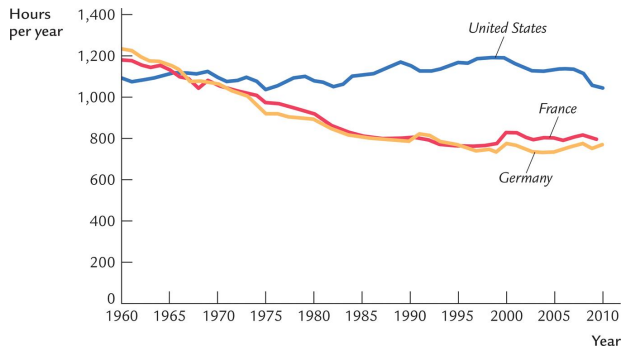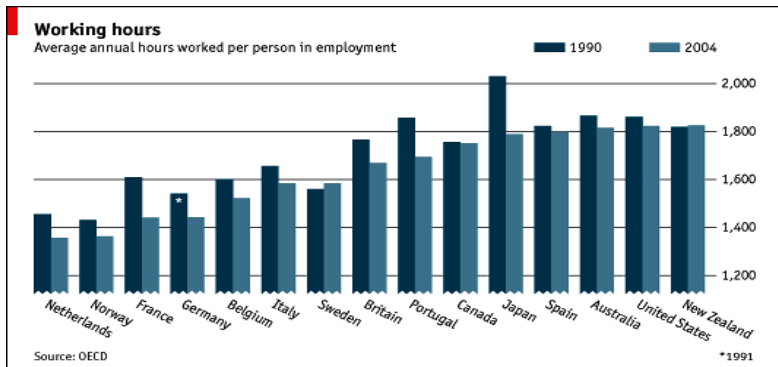
Europeans work less than Americans

Figure 6-5 Annual Hours Worked per Employed Person
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Working hours
Average annual hours worked per person in employment — 1990, 2004

Source: OECD
*1991

- Europeans work less per year than Americans
- Theories:
    - higher taxes in Europe;
    - illegal work (=not recorded) higher in Europe;
    - unions push for shorter workweeks+holidays in Europe;
    - Europeans have more taste for leisure.