Macroeconomics Lecture 6

SGPE Summer School

Mengdi Song

August 5, 2017

Table of contents

1. Introduction

2. Unemployment

3. Preliminaries

4. Theories of unemployment

5. Conclusion

Introduction

Labor Market

Why is there always unemployment in a market economy?

It is important to understand unemployment because:

- Unemployment means that total production and income are lower than they could have been
- Unemployment causes poverty, inequality and social problems

Questions

How are wages determined? Why does unemployment occur? Why are there differences in unemployment rates between countries and over time?

Unemployment

Unemployment Types

Equilibrium unemployment: the natural rate of unemployment

Cyclic unemployment: (to be analysed later)

Preliminaries

Terminology

Labour Force Surveys:

N number employed: those who have a job

U number unemployed: those who do not have a job and are actively looking

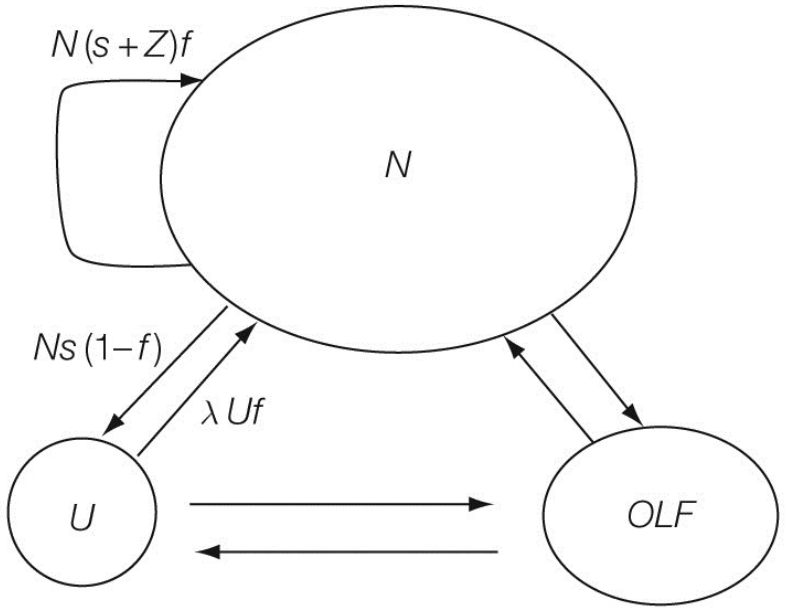
$L = N + U$ labour force = employed + unemployed

OLF outside the labour force: do not have and are not looking for work (retired, students)

$u = U/L$ unemployment as a share of the labour market

Flow in the labor market

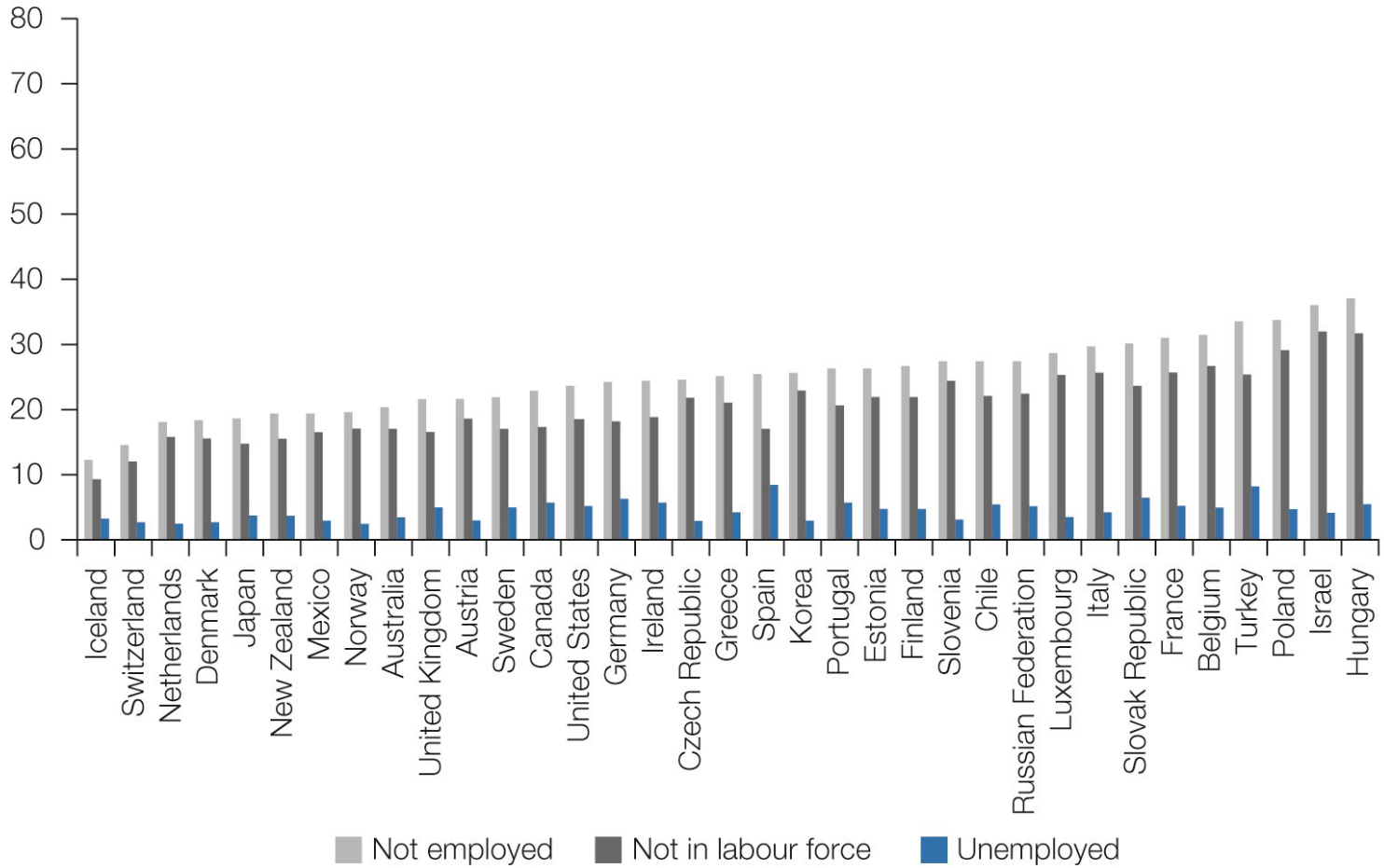
Fig. 6.6 *Labour market flows*



Note: The notation is explained in Section 6.2. N is employment, U is unemployment and OLF is the stock of workers outside the labour force. The probability to find a job is f for an employed job seeker is and λf for an unemployed job seeker. A share Z of the employed workers seek another job and switch if they find one. A fraction s of the employed workers leave their jobs for exogenous reasons and seek another job. Thus the flow from unemployment to employment is λUf, the turnover between jobs is $N(s+Z)f$, and the flow from employment to unemployment is $Ns(1-f)$.

Labor Market Data

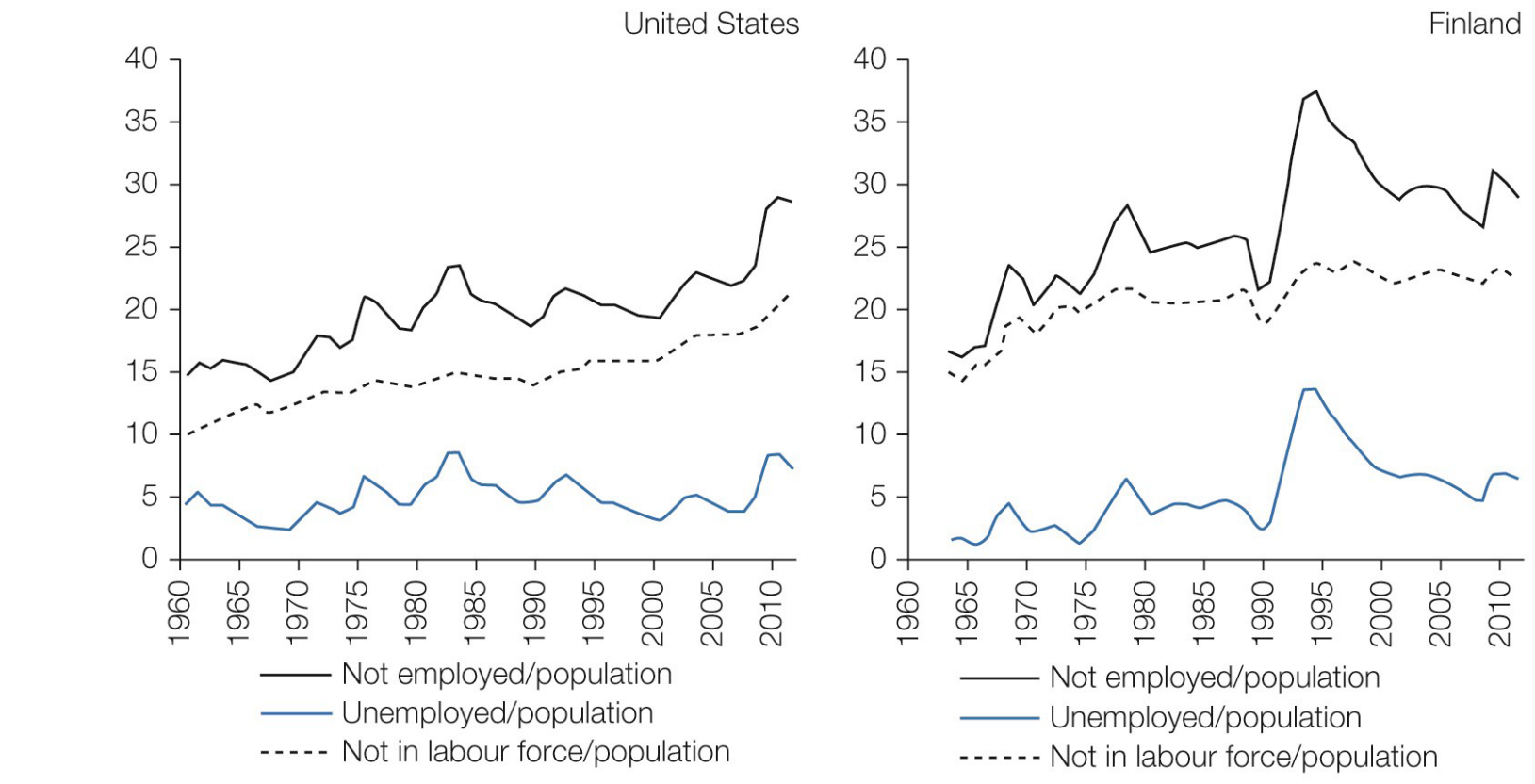
Fig. 6.1 *Not employed, not in the labour force, and unemployed, percent of the population of men aged 15–64, 2008*



Source: *OECD Employment and Labour Market Statistics*, OECD, 4 April 2011, http://www.oecd-ilibrary.org/statistics.

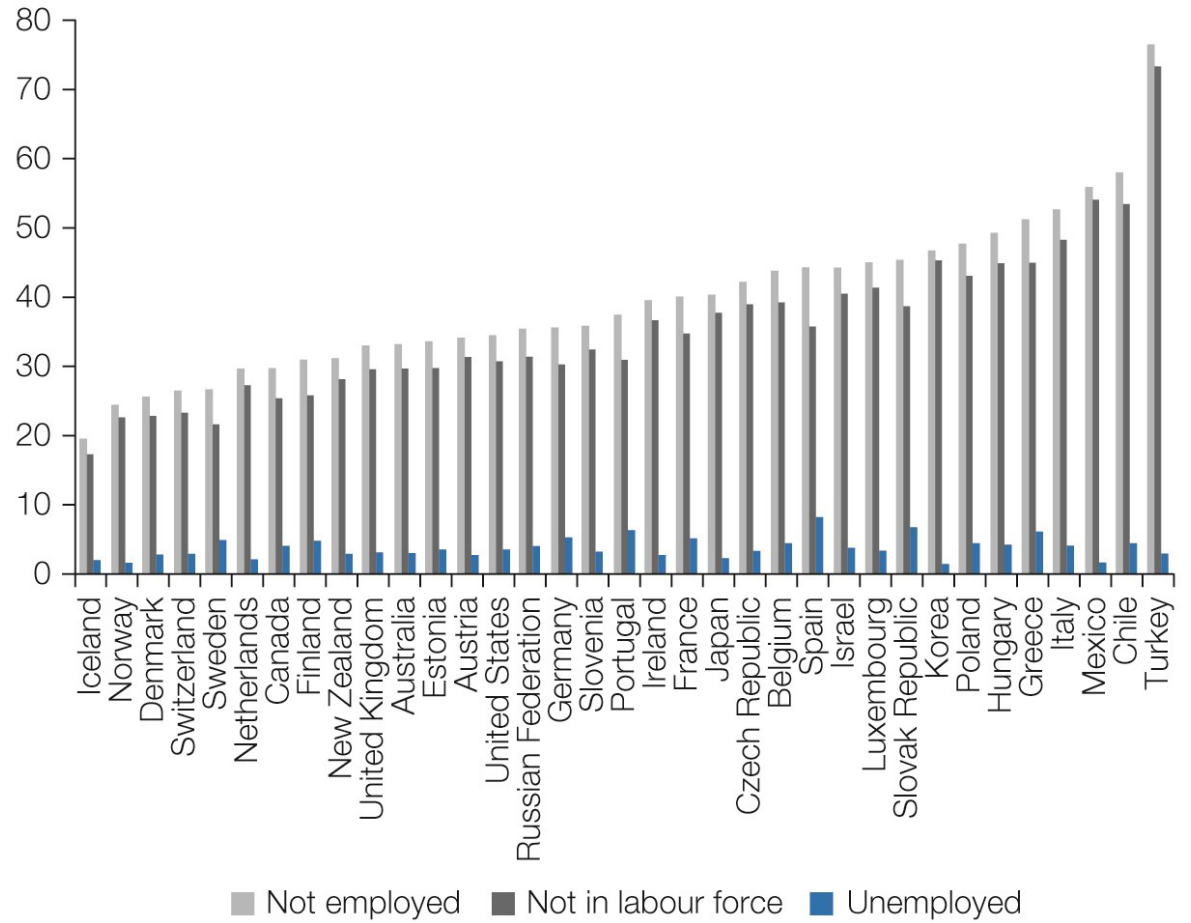
Labor market Data

Fig. 6.2 *Not employed, not in the labour force, and unemployed, percent of the population of men aged 15–64*



Labor Market Data

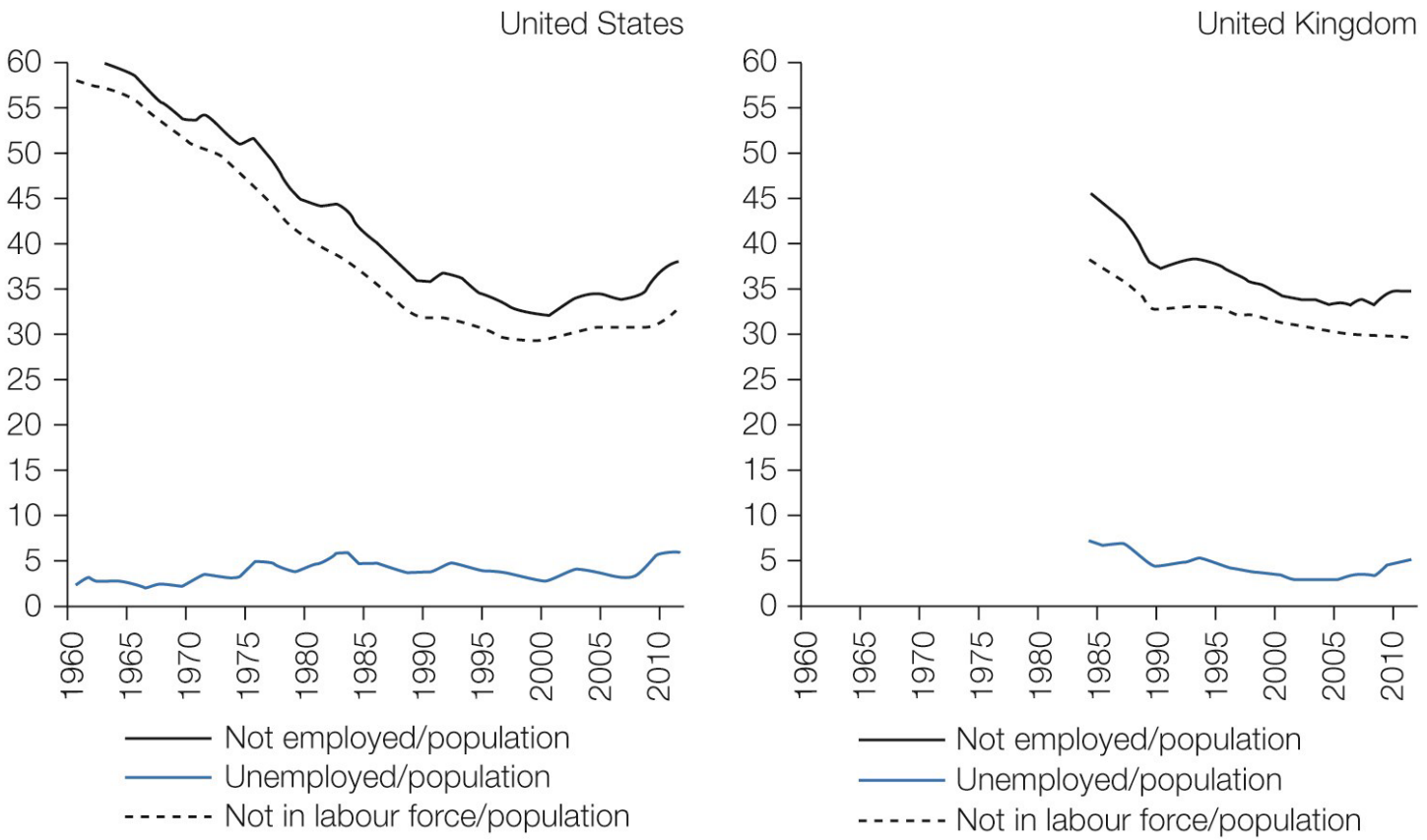
Fig. 6.3 *Not employed, not in the labour force, and unemployed, percent of the population of women aged 15–64, 2008*



Source: *OECD Employment and Labour Market Statistics*, OECD, 4 April 2011, http://www.oecd-ilibrary.org/statistics.

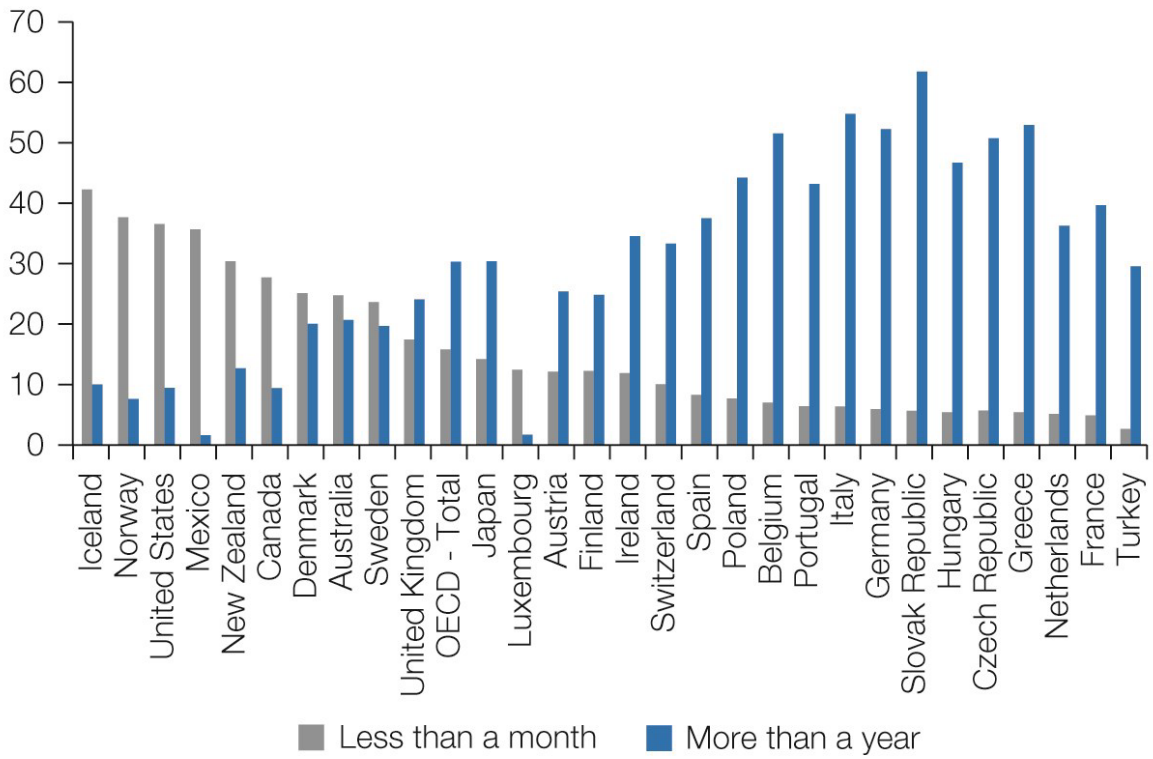
Labor Market Data

Fig. 6.4 *Not employed, not in the labour force, and unemployed, percent of the population of women aged 15–64*



Labor Market Data

Fig. 6.16 *Short-term and long-term unemployment, percent of the unemployed*



Note: The figure shows workers who have been unemployed less than a month and more than one year as shares of total unemployment, average 1999–2008.

Source: *OECD Employment and Labour Market Statistics*, OECD, 27 April 2011, http://www.oecd-ilibrary.org/statistics.

Theories of unemployment

Theory of labor market

Why is there always unemployment in a market economy?

- Efficiency wages
- Search frictions
- Labor unions
- Minimum wage

Environment

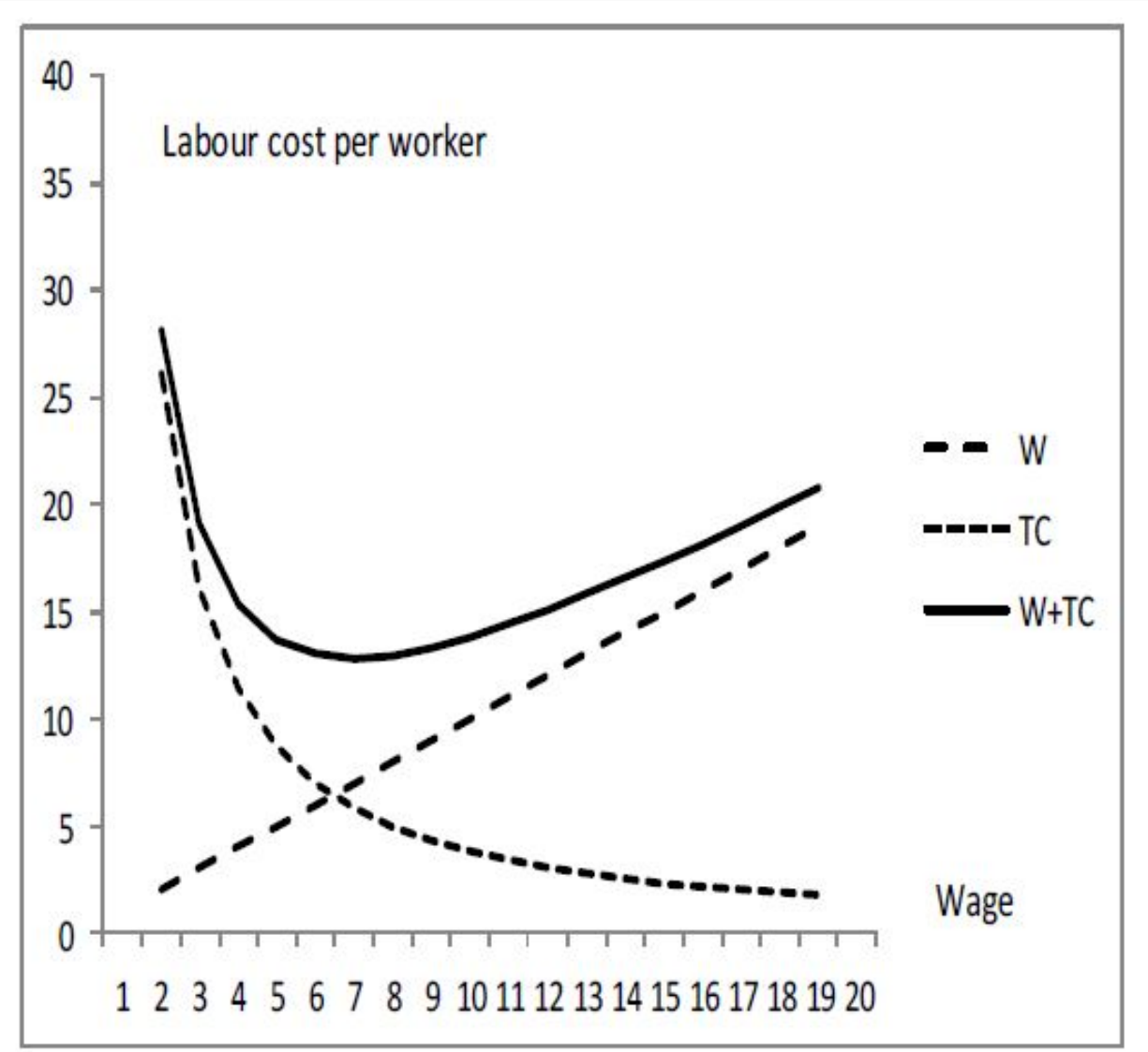
The firm decides about wages and employment

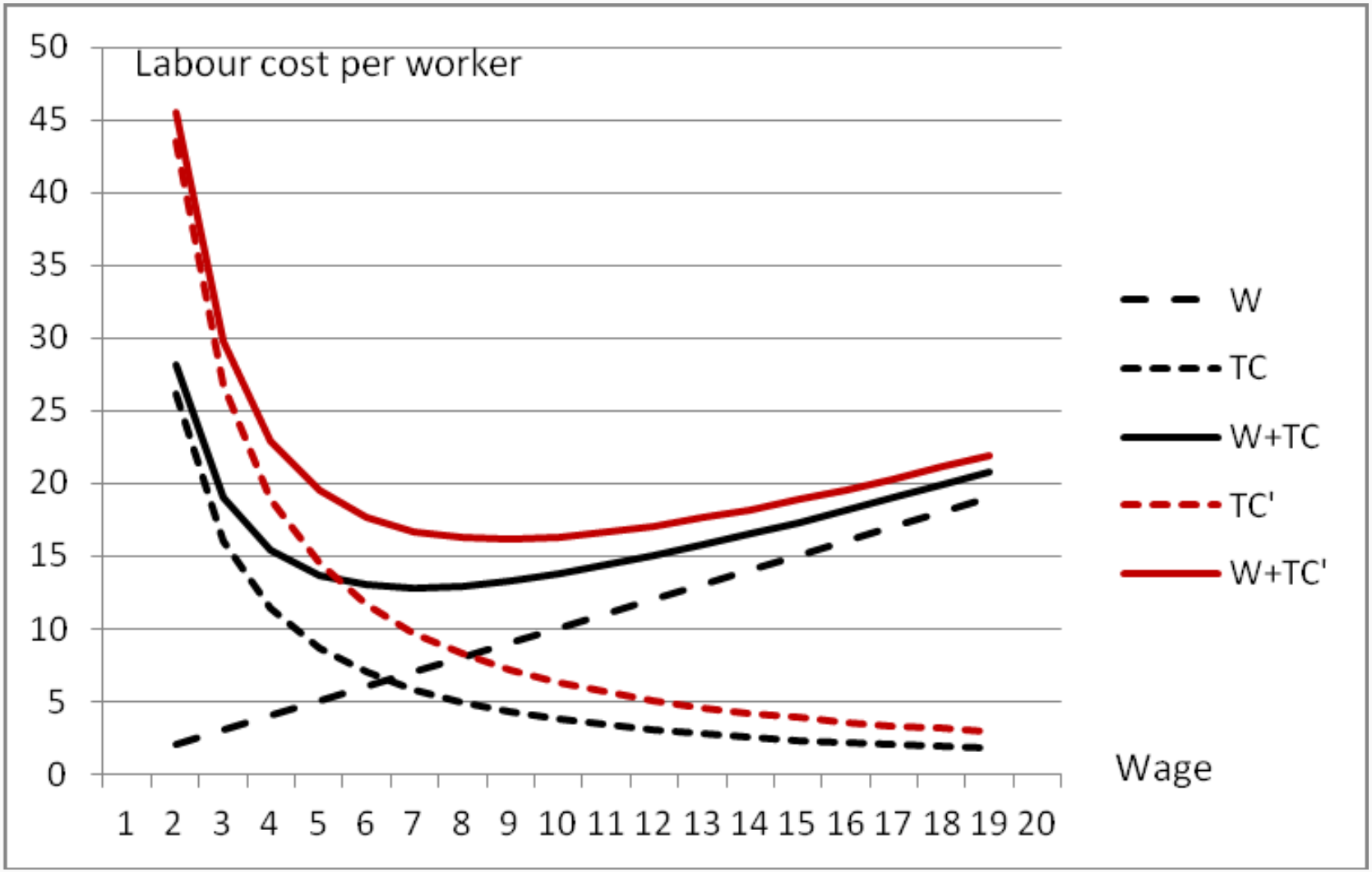
Some employees look for other work and the number depends on the firm's wage relative to other companies

Staff turnover is costly for the company

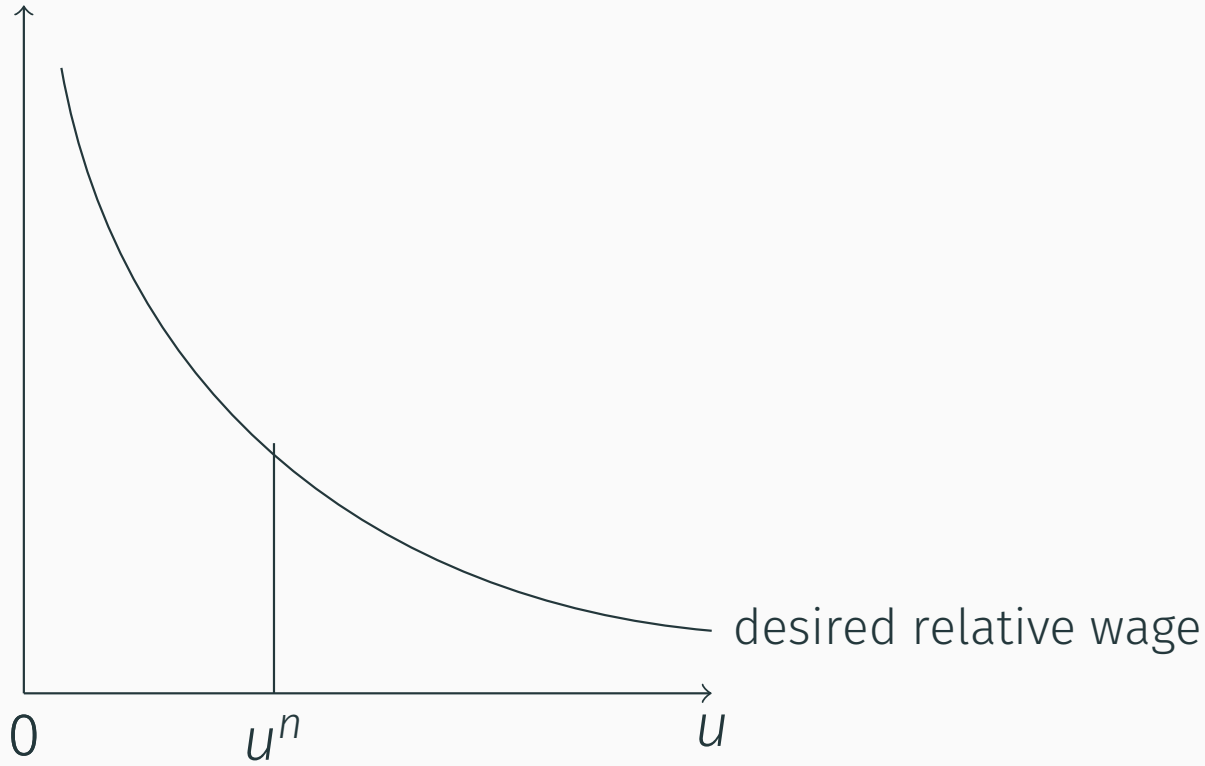
Higher wage means higher labour cost but lower staff turnover

The company weighs the cost against the benefit of setting a higher wage


Labour cost per worker
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
W
TC
W+TC
Wage


Labour cost per worker
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
W
TC
W+TC
TC'
W+TC'
Wage

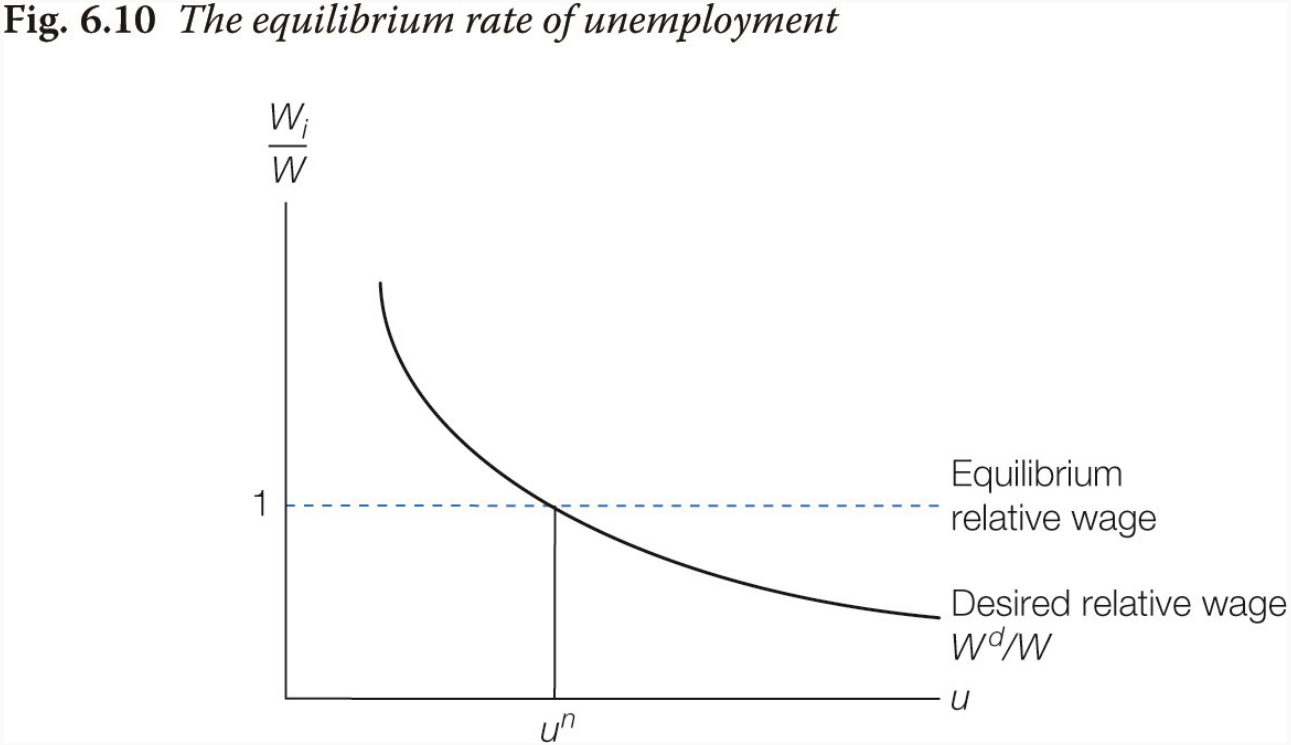
- Low unemployment:
  - all firms want to raise wages relative to other firms
- High unemployment:
  - all firms want to reduce wages relative to other firms



Low unemployment:

all firms want to raise wages relative to other firms and vice-versa

Fig. 6.10 *The equilibrium rate of unemployment*

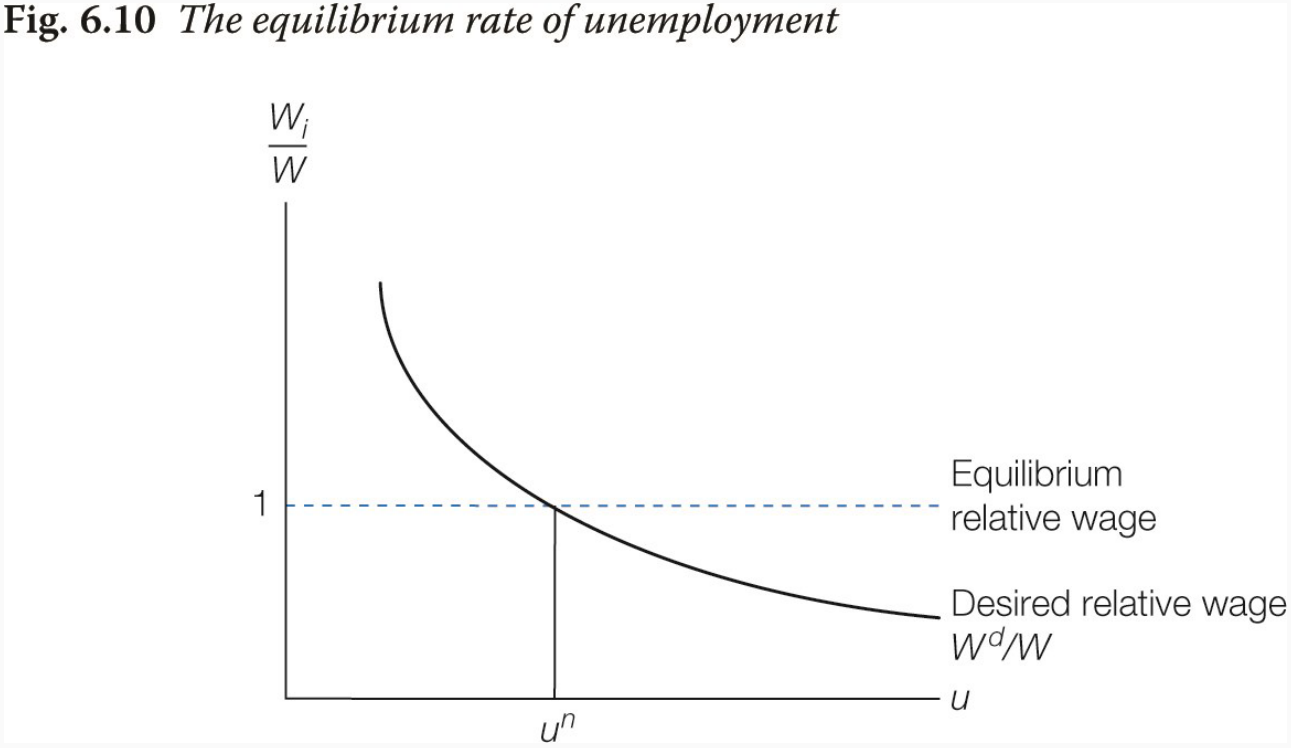


Equilibrium (symmetry): All companies face the same problem

All companies set the same wage (Wi/W=1)

The unemployment rate must be so high that no company wants to change its wage relative to other companies

Fig. 6.10 *The equilibrium rate of unemployment*



How does the adjustment to equilibrium take place?

If $u < u^n$ it is optimal for companies to raise wages and reduce the number of employees, which means that N will fall

If $u > u^n$ it is optimal for companies to lower wages and increase the number of employees, and so N rises

If $u = u^n$ no company wants to change the wage relative to the others

We can summarize this theory in a wage setting equation:

$$W^d = (1 + a - bu)W$$

where

- W^d is the wage the company wants to set
- W is the average wage
- u is the unemployment rate
- $a, b > 0$ are constants

The wage setting equation: $W^d = (1 + a - bu)W$

In equilibrium, all companies set the same wage $W^d = W$

Equilibrium unemployment $u^n = \frac{a}{b}$

We can rewrite the wage setting equation:

$$W^d = (1 + a - bu)W = W - b(u - \frac{a}{b})W = W - b(u - u^n)W$$

If the unemployment rate is higher than equilibrium level, all companies want to lower wages and vice-versa

Wage adjustment over time:

$$W_d^t = W_t - b(u_t - u^n)W_{t-1}$$

Subtraction of W_{t-1} both sides and division by W_{t-1} yields

$$\frac{W_t^d}{W_{t-1}} = \frac{\Delta W_t}{W_{t-1}} - b(u_t - u^n)$$

Desired wage increase depends on two factors:

– average wage increase

– cyclical unemployment (= deviation from equilibrium unemployment)

Link between employment and unemployment

$$N = L - U = (1 - \frac{U}{L})L = (1 - u)L$$

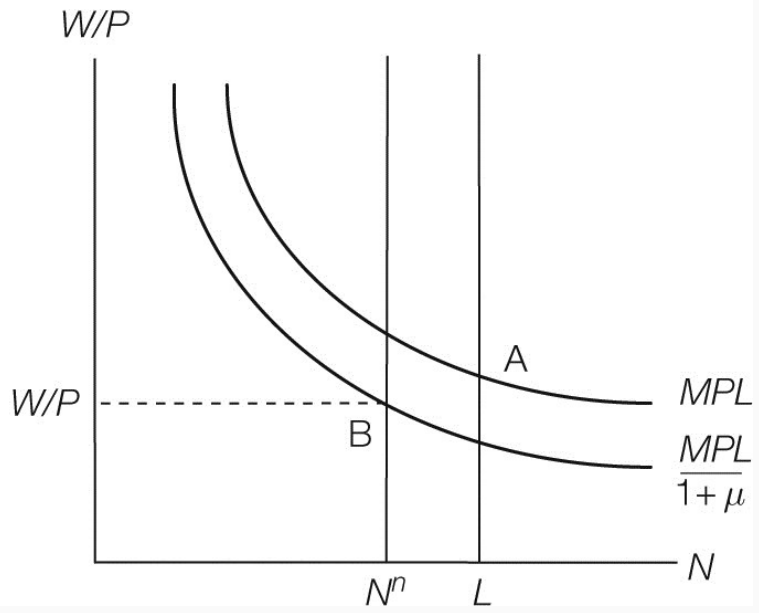
Equilibrium (natural level of) employment

$$N^n = (1 - u^n)L$$

Real wage

$$P = (1 + \mu)\frac{W}{MPL} \implies \frac{W}{P} = \frac{MPL}{1 + \mu}$$

Fig. 6.11 *Supply and demand in the labour market*



It takes time for an unemployed person to find a job and for a company to find someone to employ

If the matching process takes time, unemployment occurs

Factors that influence the search for employment:

How intensively unemployed workers look for work

How picky the unemployed are when they choose what jobs they will look for and accept

How well the unemployed can compete for the jobs

If the unemployed don’t apply for or cannot compete for the available jobs, wages are not held back. The wage setting curve is higher up and equilibrium unemployment is higher.

Many factors affect the functioning of the labour market: Rules for receiving unemployment compensation (level, duration, demands for compensation)

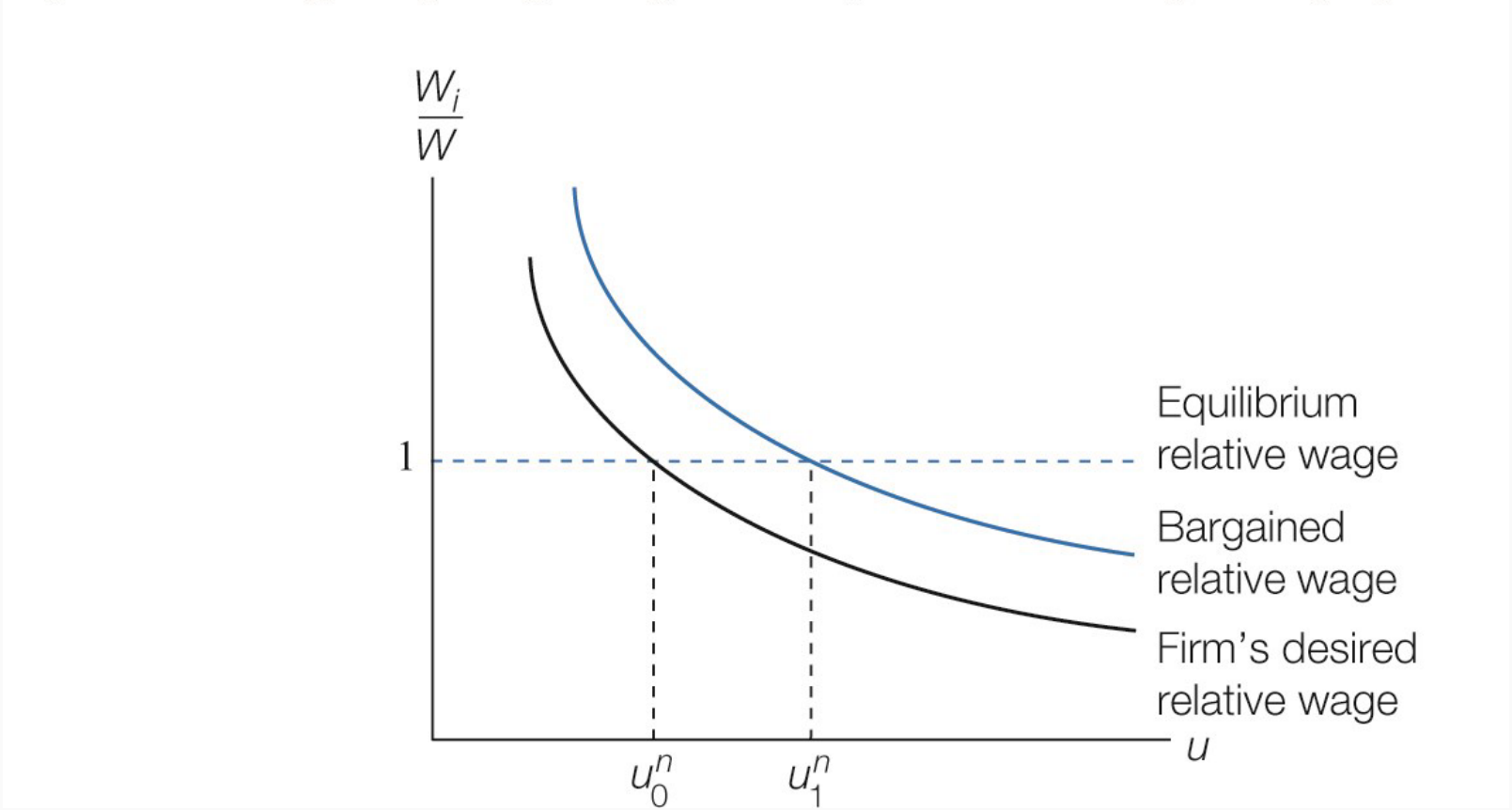
The ability of the educational system to equip the labour force with the skills that are in demand (degree of mismatch on the labour market)

Design of labour market policy (employment office, employment training courses)

Workers form unions and threaten to go on strike if they don’t get the wage they want

The result can be higher wages and higher unemployment

Fig. 6.12 *The effect of bargaining on the equilibrium rate of unemployment*



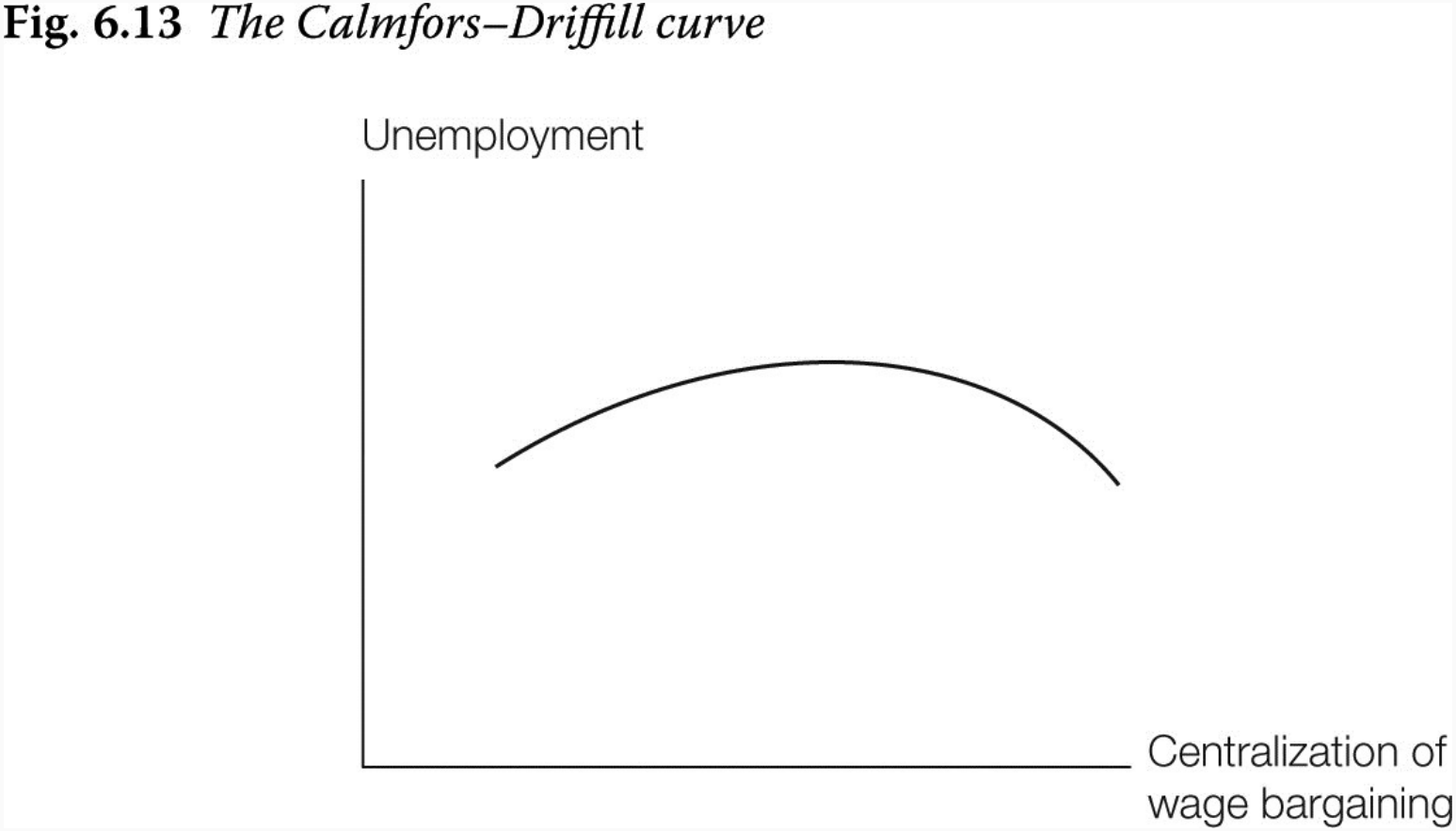
Coordination of wage negotiations is important:

Negotiations on the company level: wages are held back by stiff competition between companies

Negotiations on the sector level: strong unions that don’t take macroeconomic effects into account

Negotiations on the central level: the union realises the consequences for the macro economy

Fig. 6.13 *The Calmfors–Driffill curve*

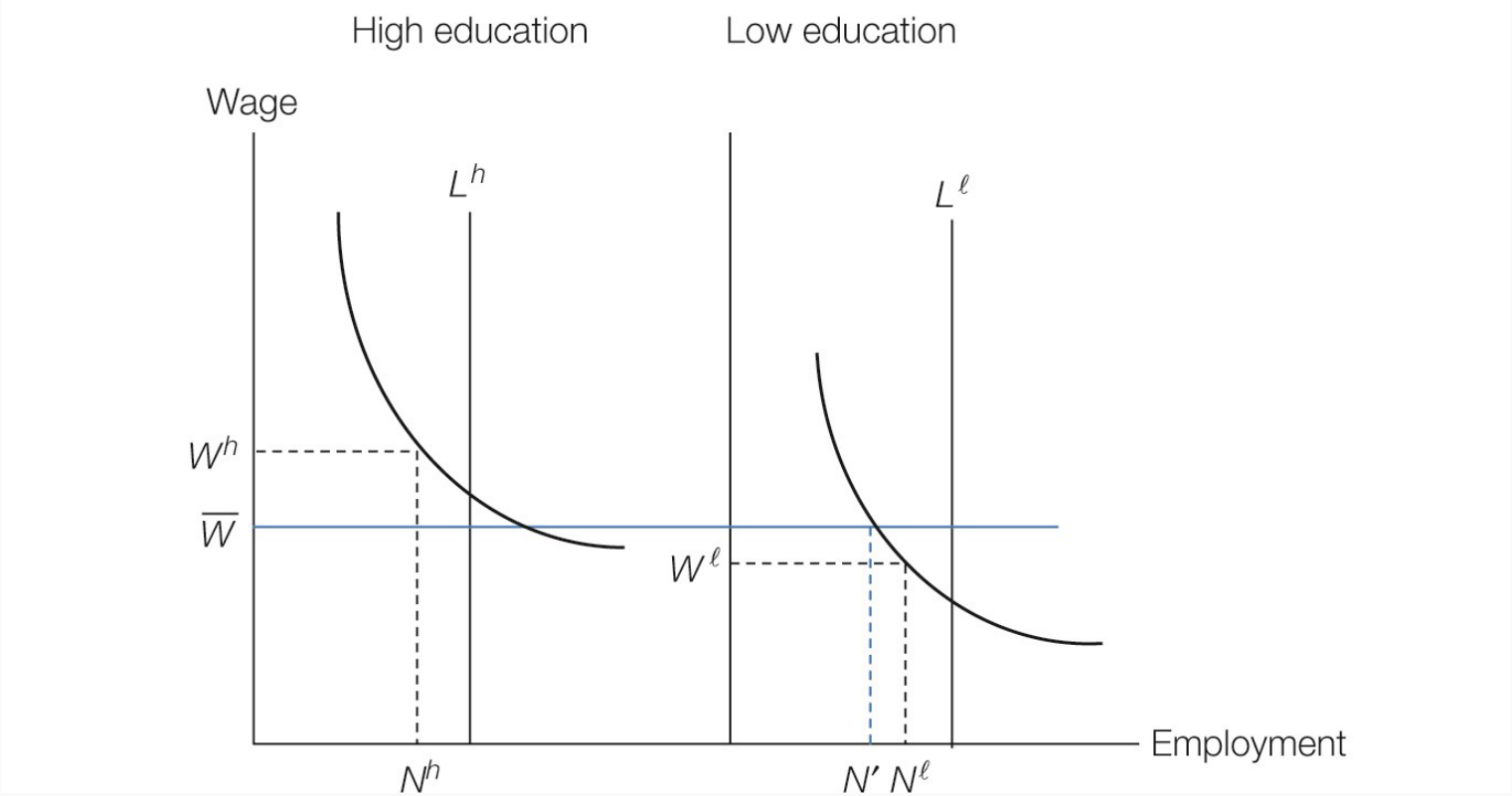


In many countries there is a statutory minimum wage and most collective agreements include a lowest possible wage

High minimum wage can cause high unemployment, especially among low-skilled groups

The problem becomes more difficult as technical developments seem to favor the highly educated (skill-biased technical change)

Fig. 6.14 *Minimum wages and the effect on unemployment amongst highly educated and less educated workers*



Conclusion

Why does unemployment differ from country to country? – Theory

The design of the unemployment benefit system: benefit levels, duration benefits and requirements on those who get benefits (search and take relevant jobs)

The design of the wage negotiation system: strength of labor unions and degree of coordination

Educational system

Labor market policy

Employment protection and taxes

Why does unemployment differ from country to country? – Empirical evidence

Many of these factors are hard to measure and compare across countries

Macro studies of differences in unemployment between different countries (‘cross-section’)

Macro studies of changes over time in unemployment in different countries (‘panel studies’)

Micro studies using individual data of the effects of regulatory changes (‘panel studies’, ‘difference in difference’)

Why does unemployment differ from country to country? – Empirical results

Countries with general unemployment compensation tend to have higher unemployment

Rise in unemployment when compensation became more generous (early 1970s), decline when conditions hardened (80-90s)

Micro studies show an elasticity of about 0.5: increase in benefit by 10 per cent increases unemployment period (duration) about 5 per cent Benefit from 60 to 66 per cent of previous wage → unemployment from 6 to 6.3 per cent of labour force

Why has unemployment gone up over time in many countries?

Persistence: High unemployment in itself seems to lead to continued high unemployment

Theories:

– Loss of human capital during unemployment period

– When insiders bargain about wages they don’t take into consideration the fact that there is high unemployment