

Unit 9

THE LABOUR MARKET: WAGES, PROFITS, AND
UNEMPLOYMENT

OUTLINE

- A. Introduction
- B. Measuring unemployment
- C. Price-setting and wage-setting
- D. Labour market equilibrium
- E. Division of output and labour unions
- F. Labour market policies

A. Introduction

The Context for This Unit

Price-setting firms produce differentiated products. (Unit 7)

The principal-agent model can explain the conflict of interest between the employer and the employee over worker's effort, and why contracts are not enough to resolve this. (Unit 6)

- How are the economy-wide wages and employment determined?
- How can we improve on these outcomes?

This Unit

- Models price-setting and wage-setting behaviour of firms, which determines economy-wide unemployment rate and real wage
- Explains why unemployment exists even in equilibrium
- Shows how the government can affect wages and unemployment by its policies
- Analyses the role of labour unions

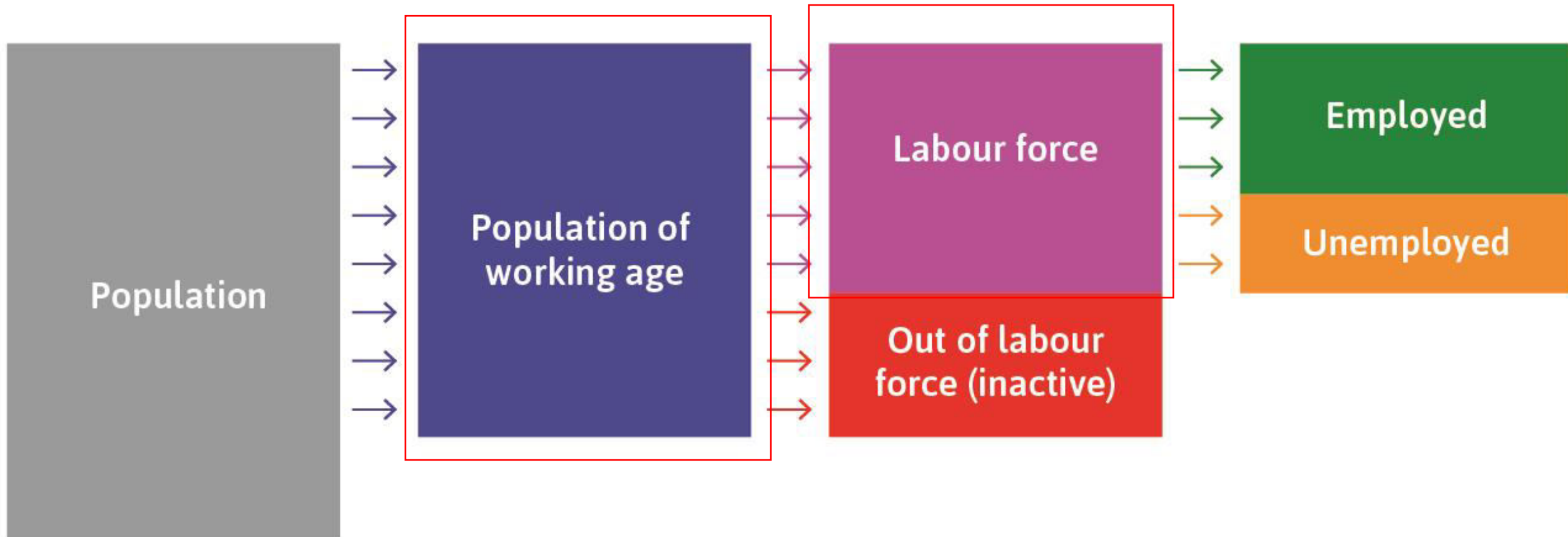
B. Measuring unemployment

The unemployed

The **unemployed** are the people who:

- are not in paid employment or self-employment
- are available for work
- are actively seeking work

The labour market



Labour market statistics

Two countries with the same unemployment rate can differ in their employment rates if one has a high participation rate and the other has a low one.

The structure of the labour market differs widely across countries.

$$\text{participation rate} = \frac{\text{labour force}}{\text{population of working age}}$$

$$\text{unemployment rate} = \frac{\text{unemployed}}{\text{labour force}}$$

$$\text{employment rate} = \frac{\text{employed}}{\text{population of working age}}$$

C. Price-setting and wage-setting

Price-setting and wage-setting

- Firms and employees: firms set wage sufficiently high to make job loss costly, in order to motivate employees to work hard in the absence of complete contracts
- Firms and customers: firms set a markup above the cost of production, to maximise their profits subject to demand.

The real wage

The real wage is the nominal wage divided by the price level of the bundle of consumer goods purchased.

$$real\ wage = \frac{W}{P}$$

1. each firm decides on its: price, wage, how many people to hire
2. adding up all of these across all firms gives the total employment in the economy and the real wage

The chain of firm's decisions

Nominal wage = $f(\text{other firms' prices and wages, unemployment rate})$



Price = $f(\text{own nominal wage, demand for own product})$



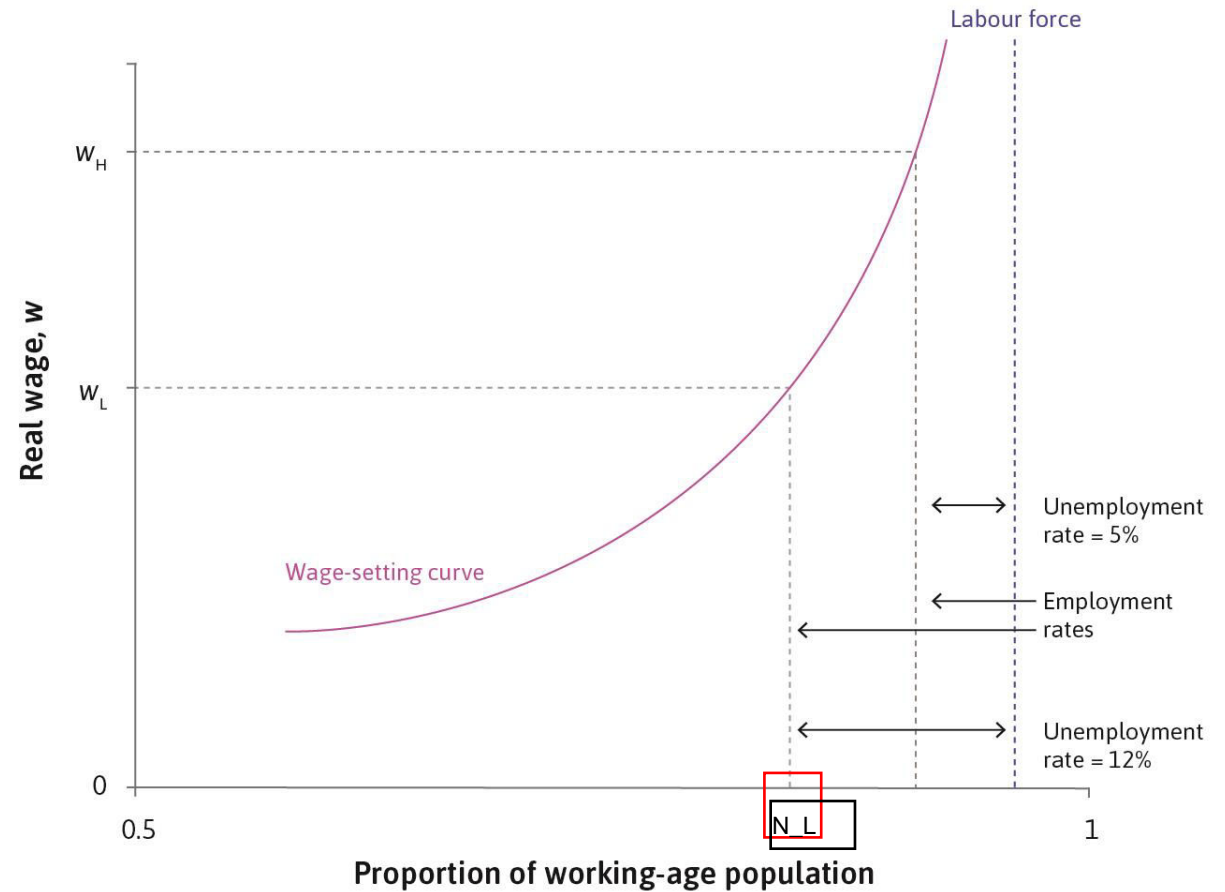
Output = $f(\text{optimal price, demand curve})$



Number of employees = $f(\text{output, production function})$

The wage-setting curve

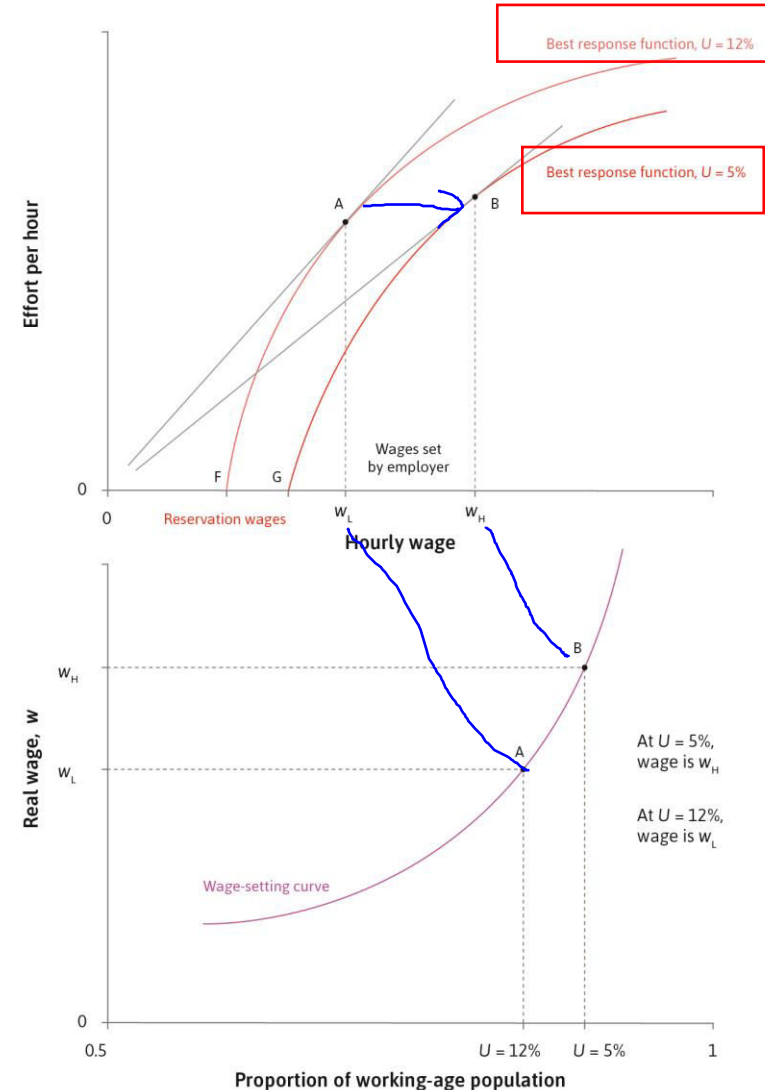
The wage-setting curve = the real wage necessary at each level of economy-wide employment to provide workers with incentives to work hard and well.



If the employment rate is X , then the equilibrium wage will be Y .

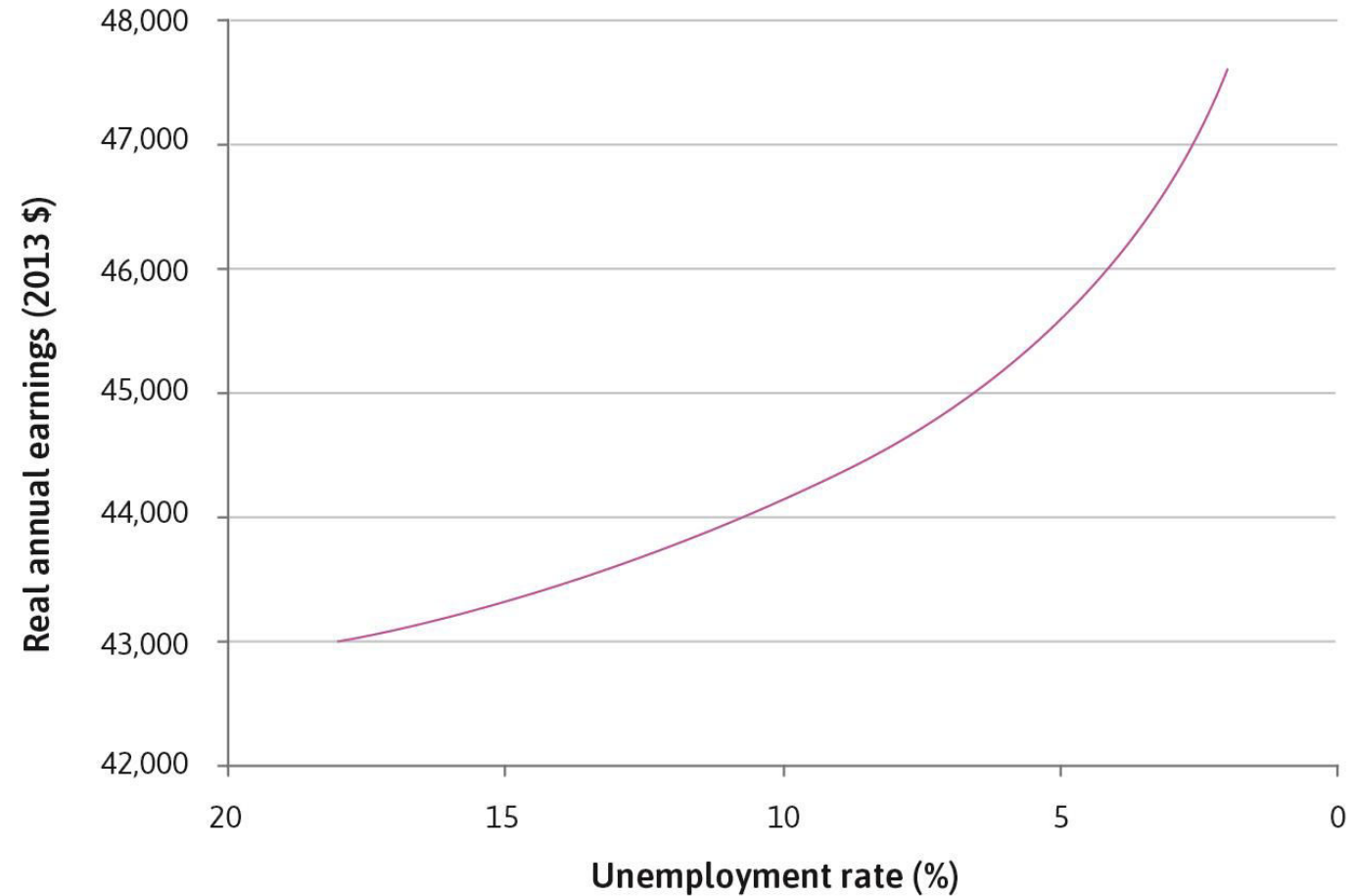
Deriving the wage-setting curve

- Start with the labour discipline model (unit 6)
- Lowering the unemployment rate will shift worker's best response curve to the right (reservation wage \uparrow) and increase wage
- This results in upward-sloping wage-setting curve

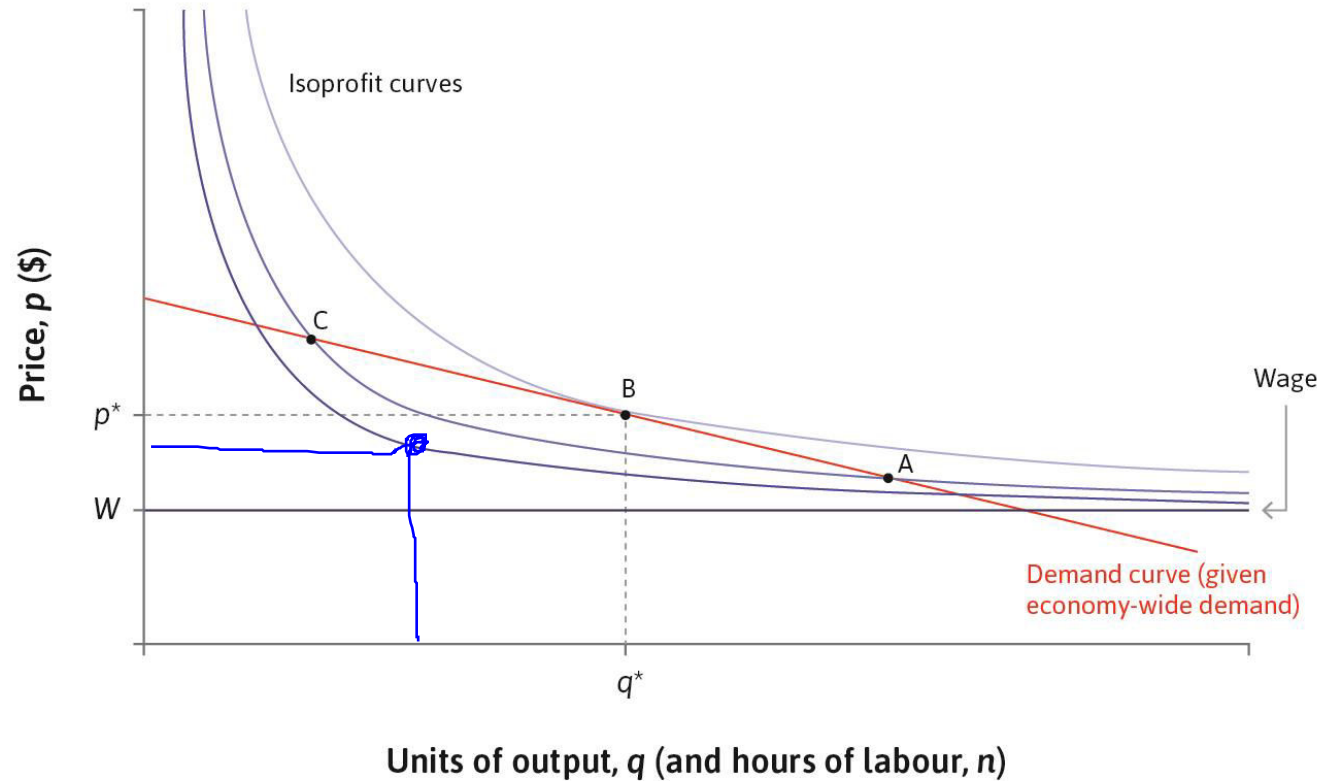


An estimated wage curve

- Estimated from US data
- Uses data on unemployment rates and wages in local areas



Profit-maximizing price



Firm's **optimal price** lies where the demand curve is tangent to an isoprofit curve (unit 7).

The firm then hires a number of employees necessary to produce the quantity of output demanded at that price.

Distribution of output

The firm's choice of profit-maximizing price also determines the firm's optimal markup above the marginal cost of production.

$$price = \frac{profit}{output} + \frac{nominal\ wage}{output}$$

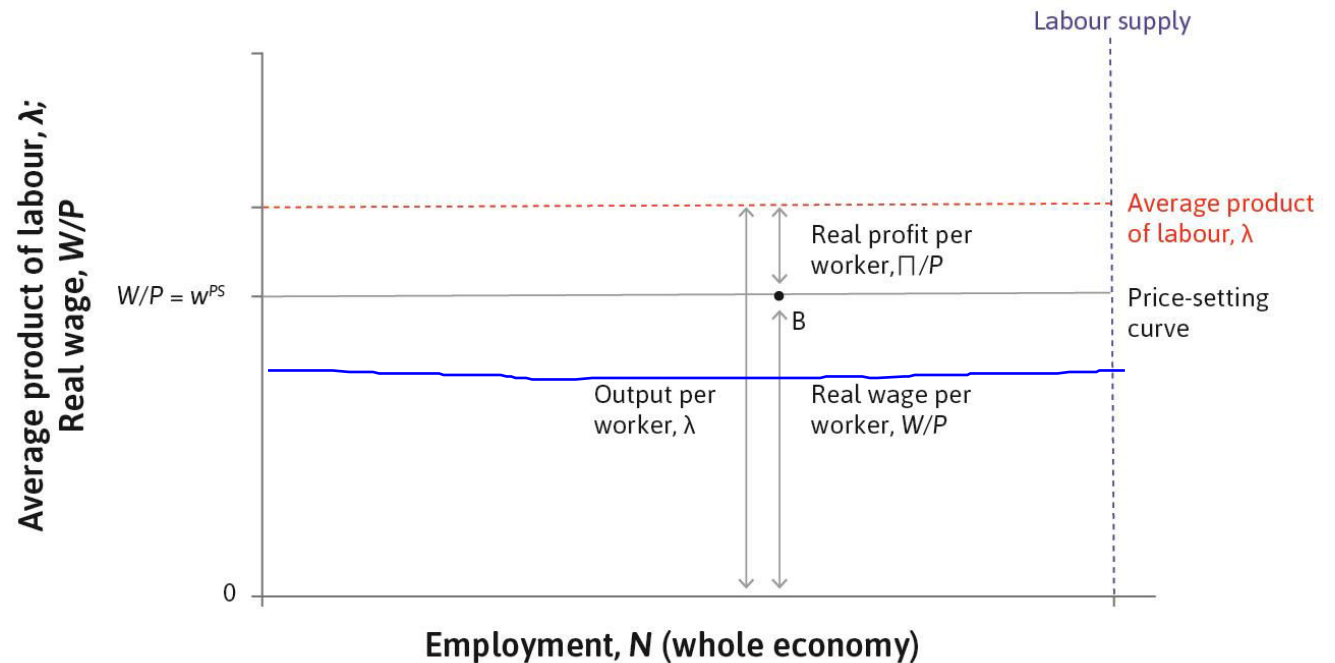
For the economy as a whole, this translates into how output is distributed between the firm-owners and the workers.

$$\frac{output}{worker} = real\ profit + real\ wage$$

Deriving the price-setting curve

Once firms set their prices, this determines the level of output and markup in the economy. This then pins down the real wage.

$$\frac{\text{output}}{\text{worker}} - \text{real profit} = \text{real wage}$$

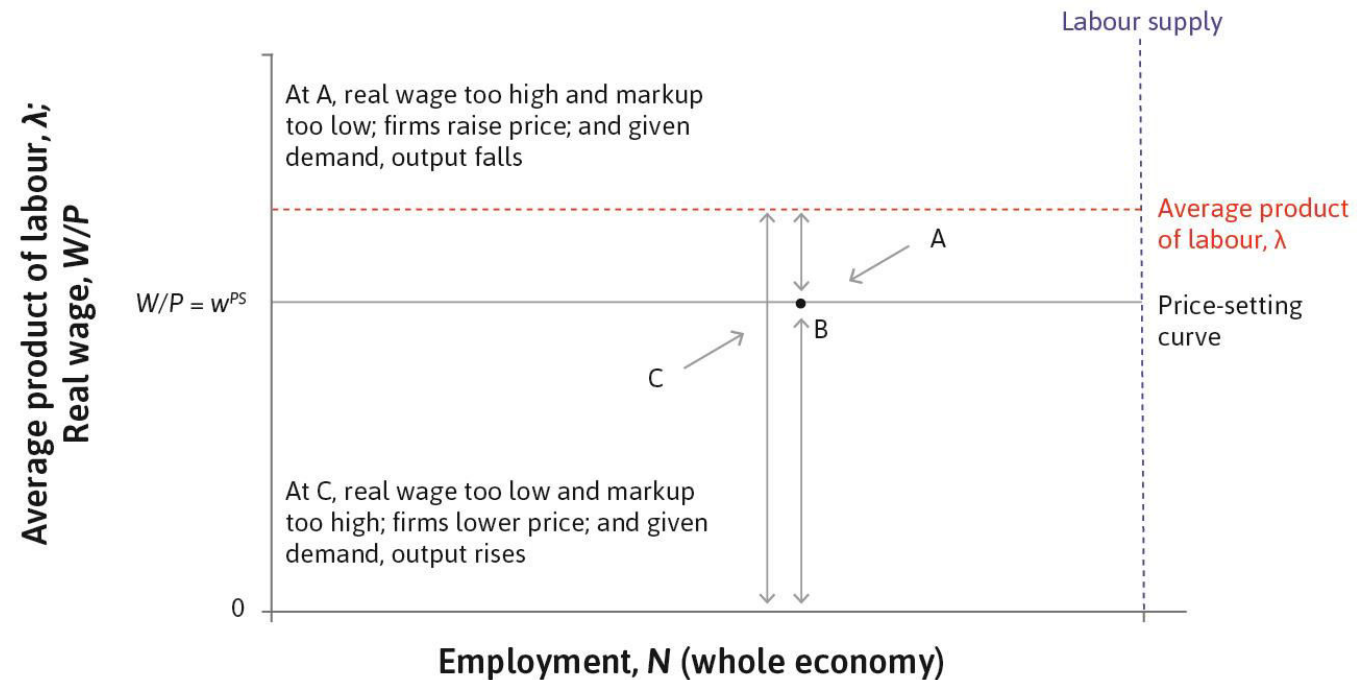


The price-setting curve

The price-setting curve = the real wage paid when firms choose their profit-maximizing price.

It depends on:

- competition, which determines markup
- labour productivity, which determines real wage for given markup

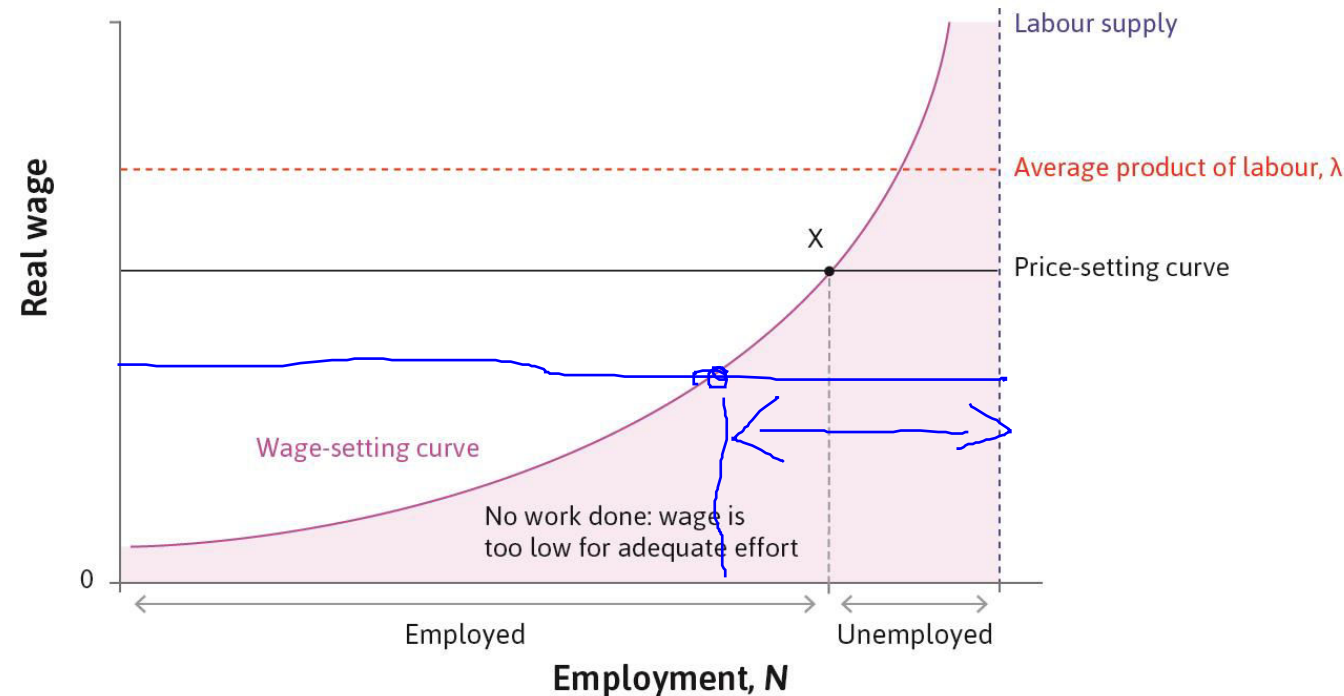


D. Labour market equilibrium

The labour market equilibrium

The wage-setting and price-setting curves are two sides of the economy.

The Nash equilibrium of the labour market is where the wage- and price-setting curves intersect.



The labour market equilibrium

All parties are doing the best they can, given what everyone else is doing:

- The firms are offering the least wage to ensure workers' effort
- Employment is the highest it can be, given the wage
- Those who have jobs cannot improve their situation by asking for higher pay or working less hard
- Those who do not have jobs would like to work, but cannot persuade firms to hire them by accepting lower wage (labour discipline concerns)

Involuntary unemployment

Unemployment = excess supply in the labour market

There will always be unemployment in labour market equilibrium

- No unemployment → zero cost of job loss → no effort
- Therefore some unemployment is necessary to motivate workers
- These are the involuntarily unemployed

Unemployment and aggregate demand

The firm's demand for labour depends on the demand for their goods and services (derived demand for labour).

Aggregate demand = sum of the demand for all of the goods and services produced in the economy.

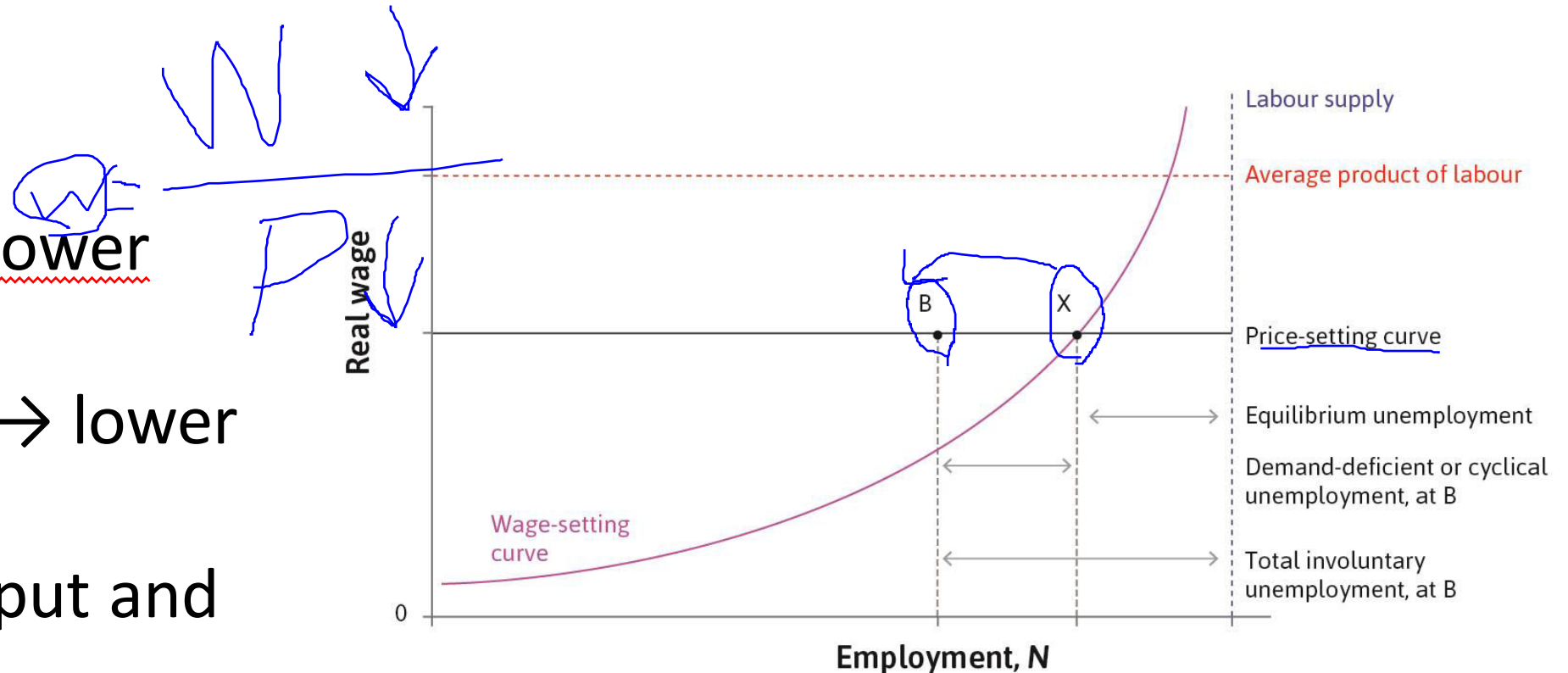
The increase in unemployment caused by the fall in aggregate demand is called **demand-deficient unemployment**.

Demand-deficient unemployment

Low aggregate demand moves the economy from labour market equilibrium (X) to point B.

B is not a Nash equilibrium:

- Firms could lower wages
- Lower costs \rightarrow lower prices
- Increase output and employment



Automatic adjustment

Point B is not a Nash equilibrium:

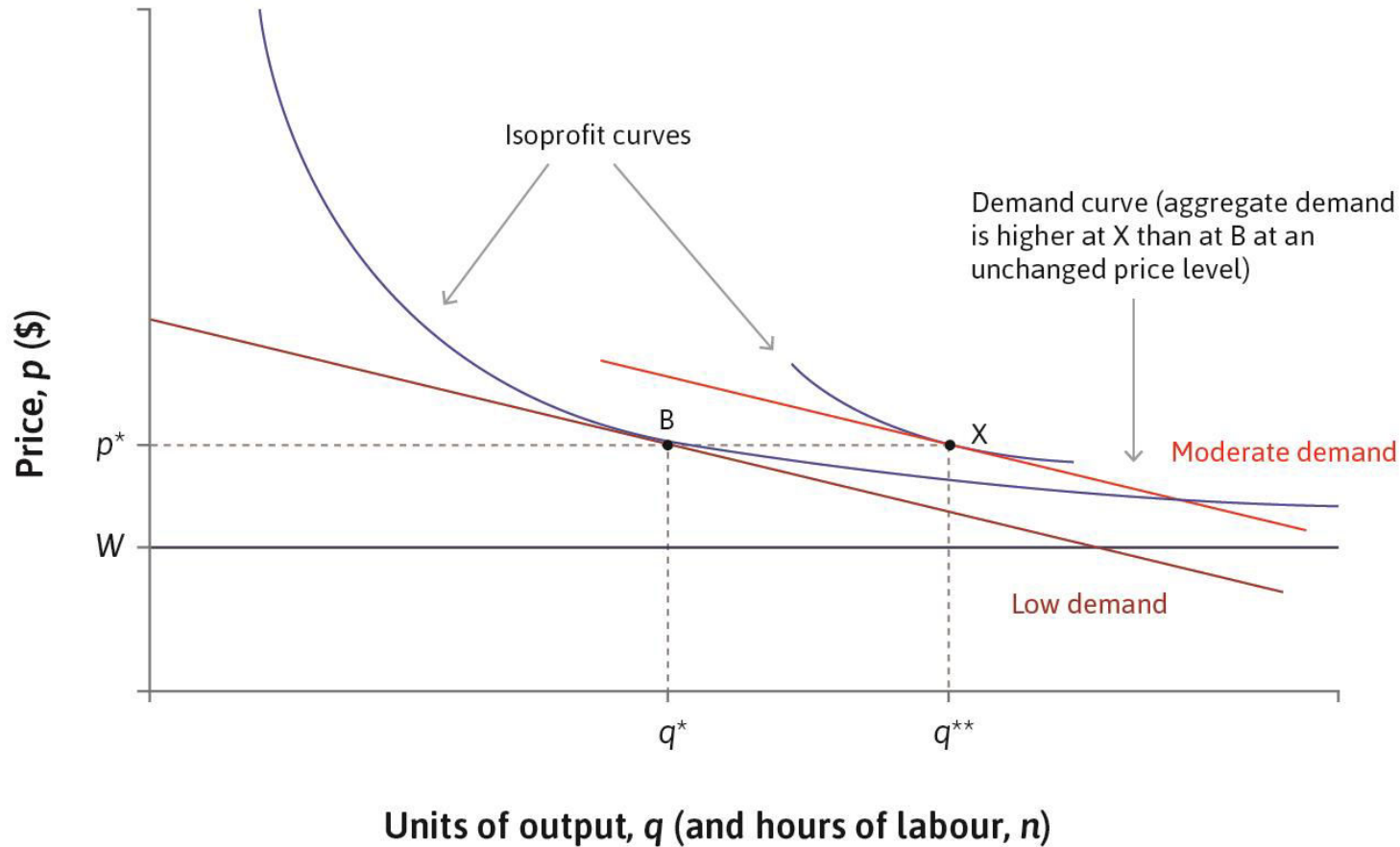
- Firms could lower wages without lowering workers' effort
- Lower wages allow them to cut their prices
- Lower prices stimulate demand → output rises
- Firms hire more workers to produce more
... unemployment falls back to X

Automatic adjustment in practice

Real economies do not function so smoothly:

- Workers resist cuts to their nominal wage (lower morale, strikes)
- Lower wages means people spend less → aggregate demand falls further
- Falling prices across the economy may lead consumers to postpone their purchases in hope to get even better bargain later

Government intervention



The government could increase its own spending to expand aggregate demand.

- monetary policy
- fiscal policy

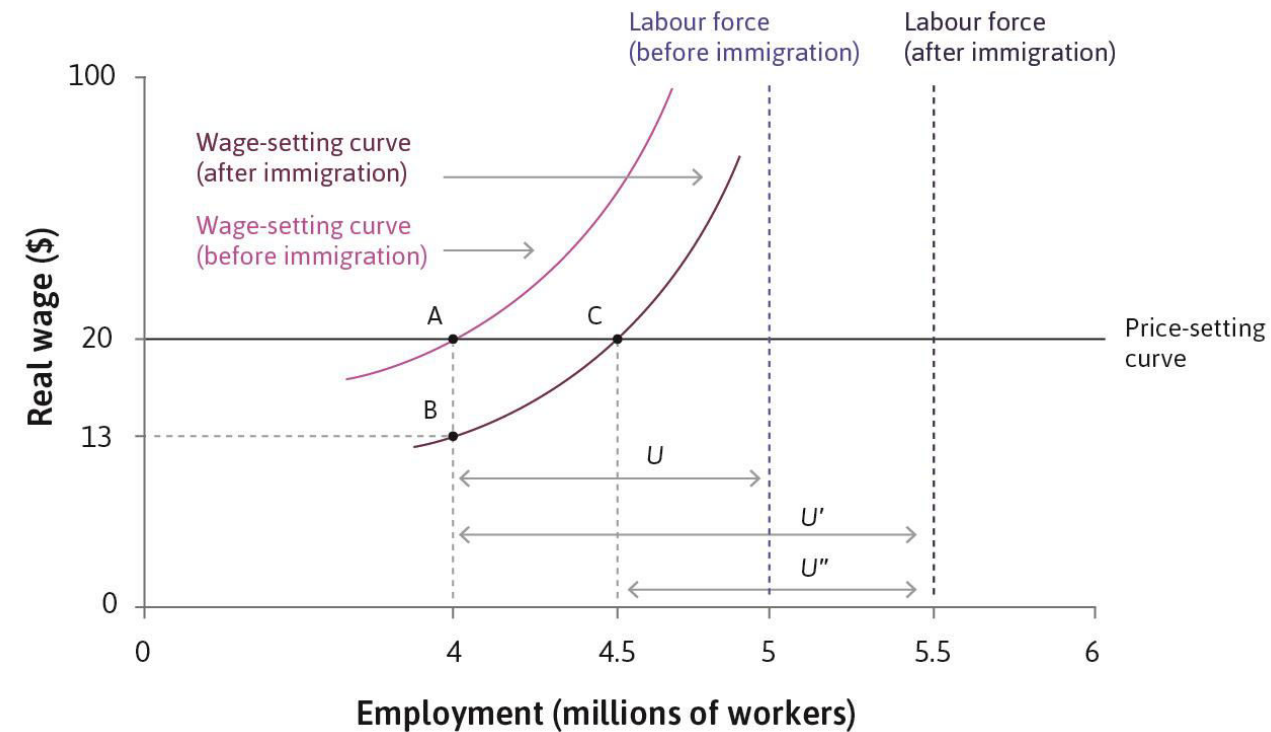
At B, firms would find it optimal to produce more (and hire more workers) instead of reducing wages.

Labour supply

The supply of labour is another important determinant of labour market equilibrium.

An increase in labour supply shifts the wage-setting curve
downward: rightward

- greater pool of unemployed
- higher employment rents
- lower cost of effort



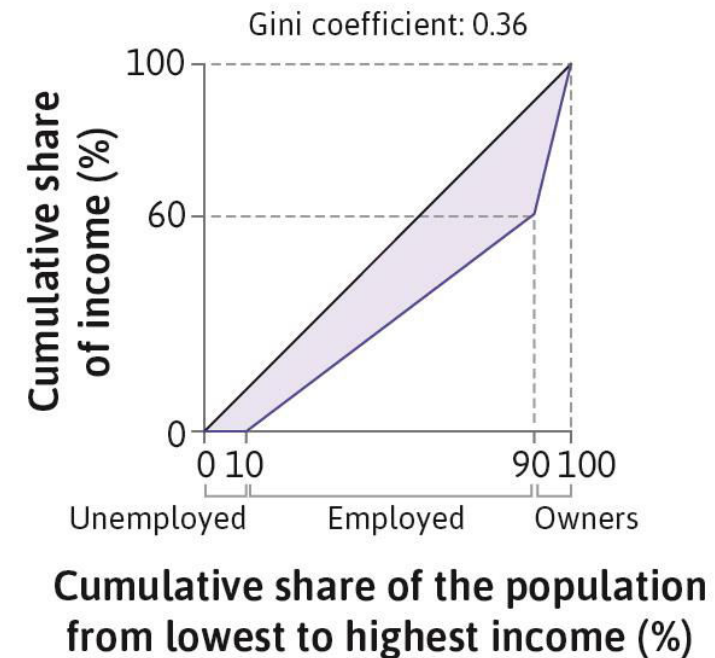
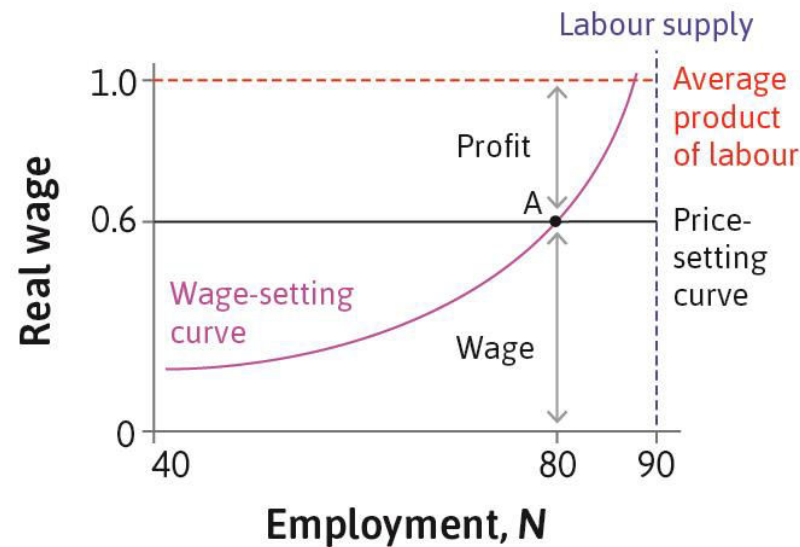
E. Division of output and labour unions

Division of output

The labour market determines the division of the economy's output between employed workers, the unemployed, and firm-owners.

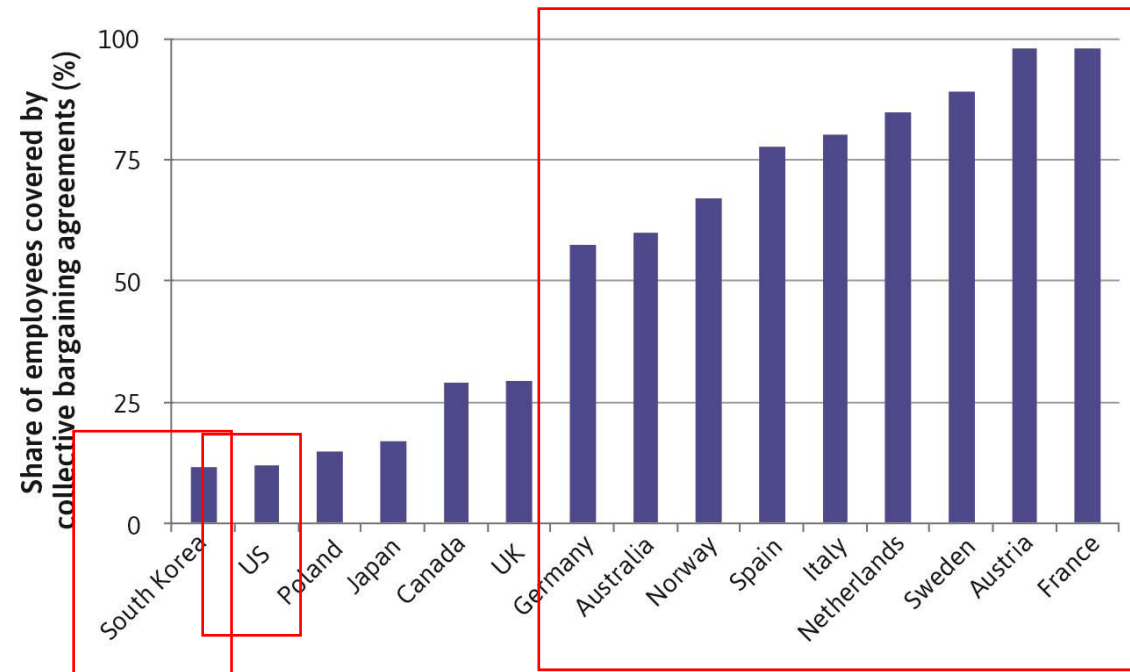
Gini coefficient will rise with:

- unemployment rate \uparrow
- real wage \downarrow
- markup \uparrow
- productivity \uparrow



Labour unions

Labour union = an organization consisting predominantly of employees. Its main activities include the negotiation of rates of pay and conditions of employment for its members.



Wage bargaining

Where workers are organized into trade unions, the wage is not set by the employer but instead is negotiated between union and firm.

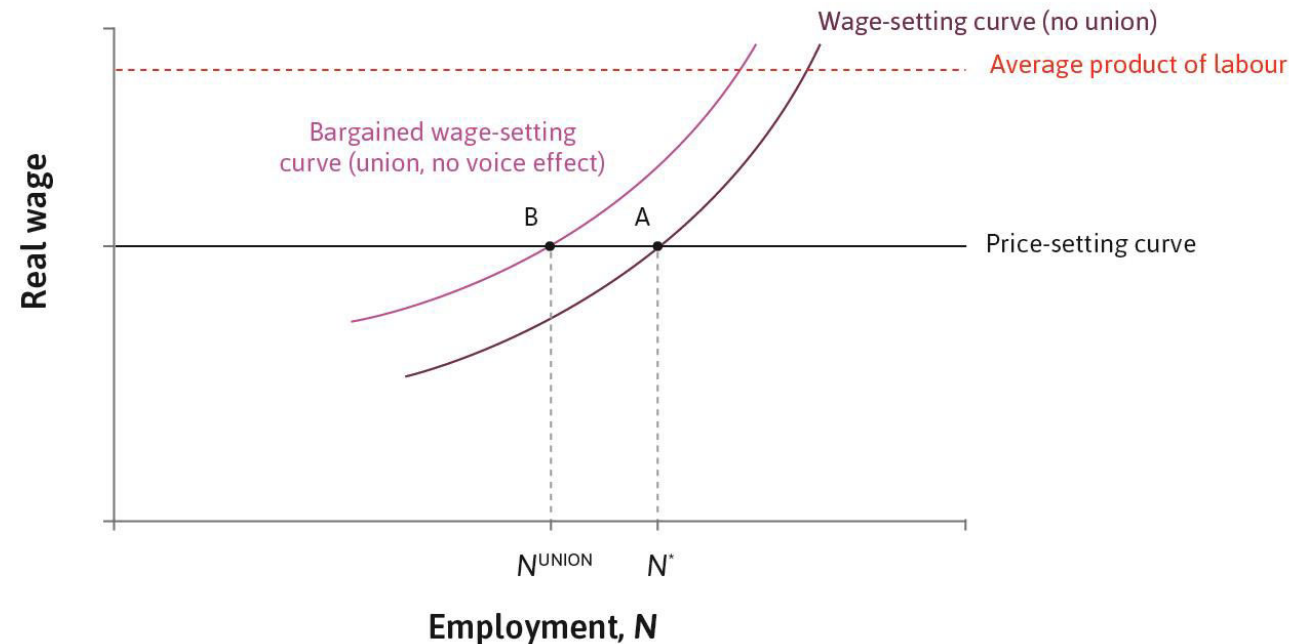
The **bargained wage** can be above the wage-setting curve

- the wage-setting curve is about the employer's threat of firing a worker
- the union can threaten to “dismiss” the employer by going on strike

Bargained wage setting curve

Bargained wage setting curve indicates the wage that the union-employer bargaining process will produce for every level of employment.

Its position above the wage-setting curve depends on the relative bargaining power of the union and the employer.

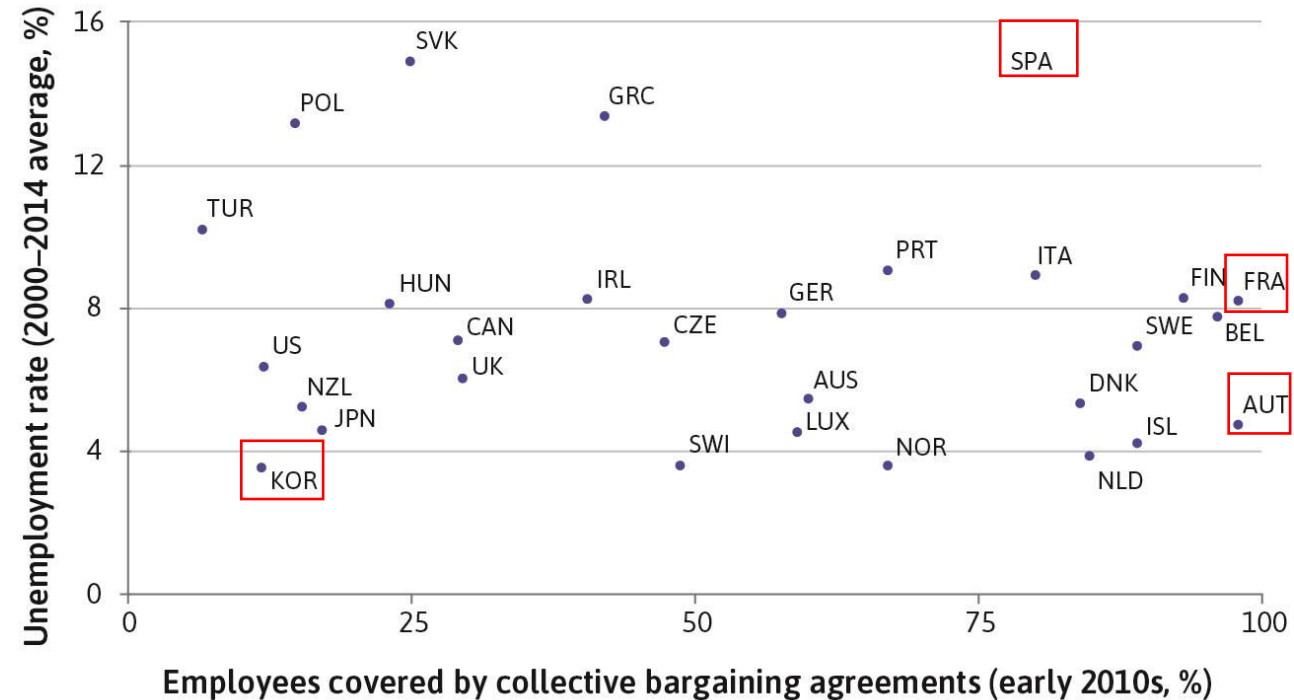


Labour unions and unemployment

In equilibrium, wage is unchanged, but employment and firm's profits are lower.

The model tells us that labour unions will increase unemployment rates.

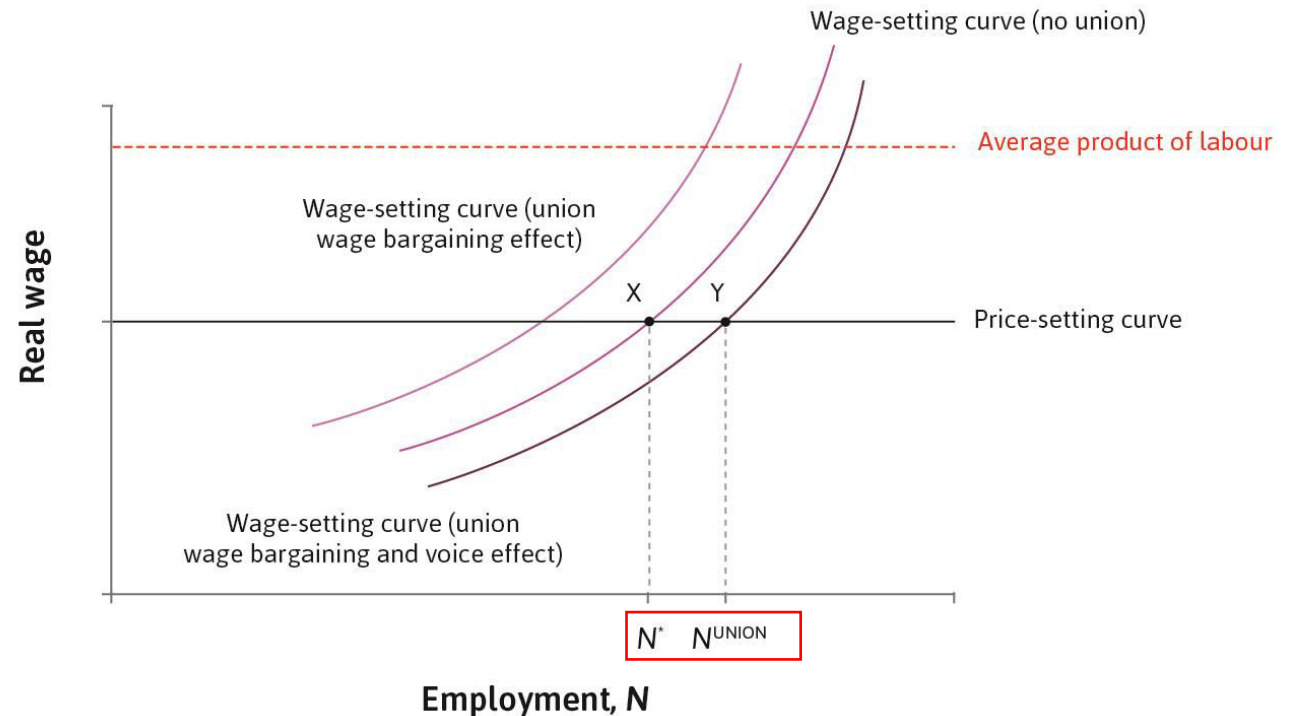
However, this is not clear in the data.



The union voice effect

Providing employees with a **voice** in how decisions are made may induce them to provide more effort for the same wage.

- The bargained wage curve shifts ~~downward~~. rightward
- The overall effect of labour unions on employment is ambiguous.



F. Labour market policies

Labour market policies

Shifts in the price-setting curve:

1. Education & training: labour productivity \uparrow
2. Wage subsidy: Production costs and prices \downarrow

Shifts in the wage-setting curve:

1. Lower unemployment benefit: reservation wage \downarrow

Shifts in labour supply curve:

1. immigration policies: labour supply \uparrow
2. childcare provision: female labour participation \uparrow

Summary

1. Behaviour of firms sets **wages** and **employment** in an economy
 - The wage-setting curve tracks the combinations of wages and unemployment feasible with workers' effort
 - The price-setting curve determines the real wage corresponding to profit-maximising price
2. There will always be involuntary unemployment
 - Incomplete contracts
 - Deficient demand
3. **Labour unions** bargain over wages with firms, which affects employment
 - Voice to workers may improve their effort and productivity

In the next unit

- A closer look at financial markets: the banking system
- How individuals choose borrowing, saving, and consumption
- Banks: Firms that create money in the process of supplying credit