

Principles of Economics II

Lecture 10: Recap and exam

Fall 2019

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Lectures

Lec1: Introduction and the competitive labour market model

Lec2: The labour market: Wages, profits, and unemployment

Lec3–4: Markets, efficiency and public policy

Lec5: Political Economics

Lec6: Economic fluctuations and unemployment

Lec7: Unemployment and fiscal policy

Lec8: Inflation, unemployment, and monetary policy

Lec9: Technological progress, employment, and living standards in the long run

Exam

- **Similar to the exam in Principles I**
 - True or false statements with explanation
 - Drawing figures and explaining them (bring a ruler)
 - No long essays
 - You do not need a calculator (you cannot have a calculator, your phone, pad or anything like that in the exam)
- **Main topics from the lectures and exercises**
 - I'll prepare questions by reading the slides and answers to exercises
 - Do the same and read the corresponding material from the book to make sure you understand the lecture material

Exam

- **There is material in the slides that I will not ask about**
 - The empirical examples and papers were just examples to make the lectures interesting: I will not ask about the papers, the research design or the results of the papers
 - I will not ask about the tax rates, unemployment or other numbers in the lecture slides

The labour market model

Building blocks of the model

- **Model the labour market of an entire economy**
- **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 (employment rent, unit 6)
- **Firms and customers:**
 - Firms set a markup above the cost of production, to maximise their profits subject to demand (Unit 7)
- **Simplification:**
 - Labour the only input and wage the only cost (!)
 - Profits depend on nominal wage, price and average output by worker

Building blocks of the model

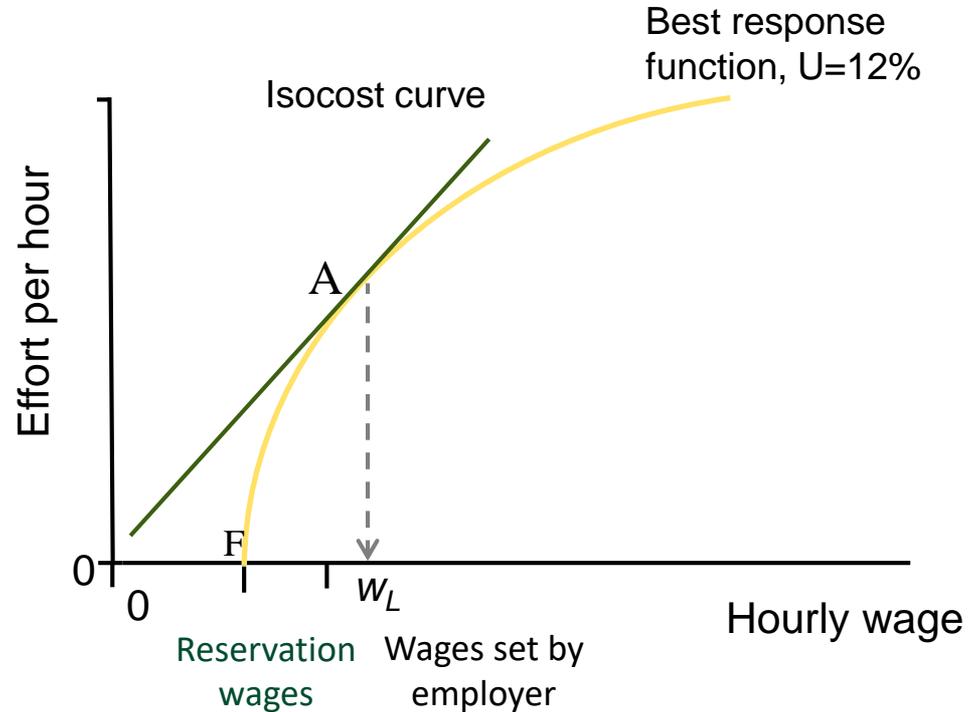
- **The real wage is the nominal wage divided by the price level of the bundle of consumer goods purchased:**
 - Nominal wage (W): wage received by a worker in form of money
 - Price level (P): price level of a standard bundle of consumer goods
 - Real wage $w = W/P$ amount of goods and services the worker can buy

Deriving the wage-setting curve

When unemployment is low, workers who lose their jobs can expect a shorter spell of unemployment

Decrease in the duration of a spell of unemployment has two effects:

- It increases the reservation wage: reducing the employment rent per hour
- It shortens the period of lost work time: decreases total employment rents (the cost of job loss)

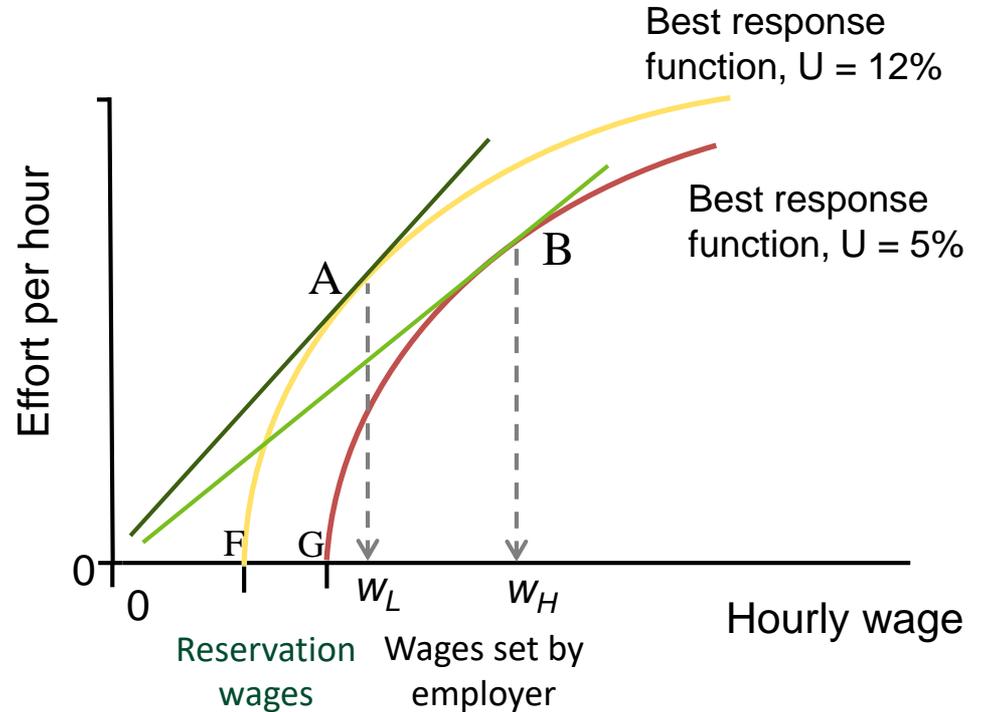


Deriving the wage-setting curve

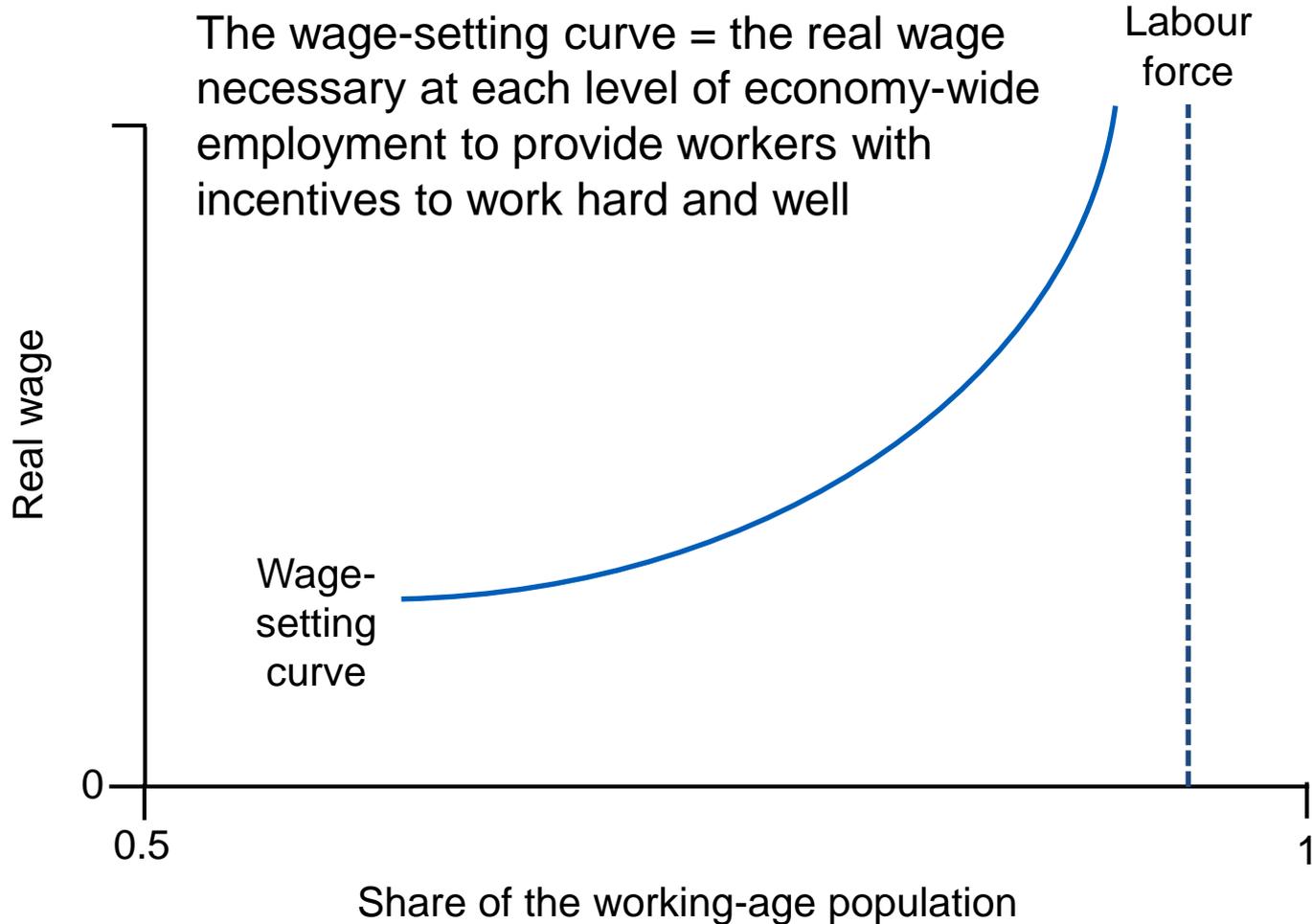
Lowering the unemployment rate will shift worker's best response curve to the right (reservation wage \uparrow) and increase wage

At each wage level, the worker is willing to put in less effort because the cost of job loss is lower

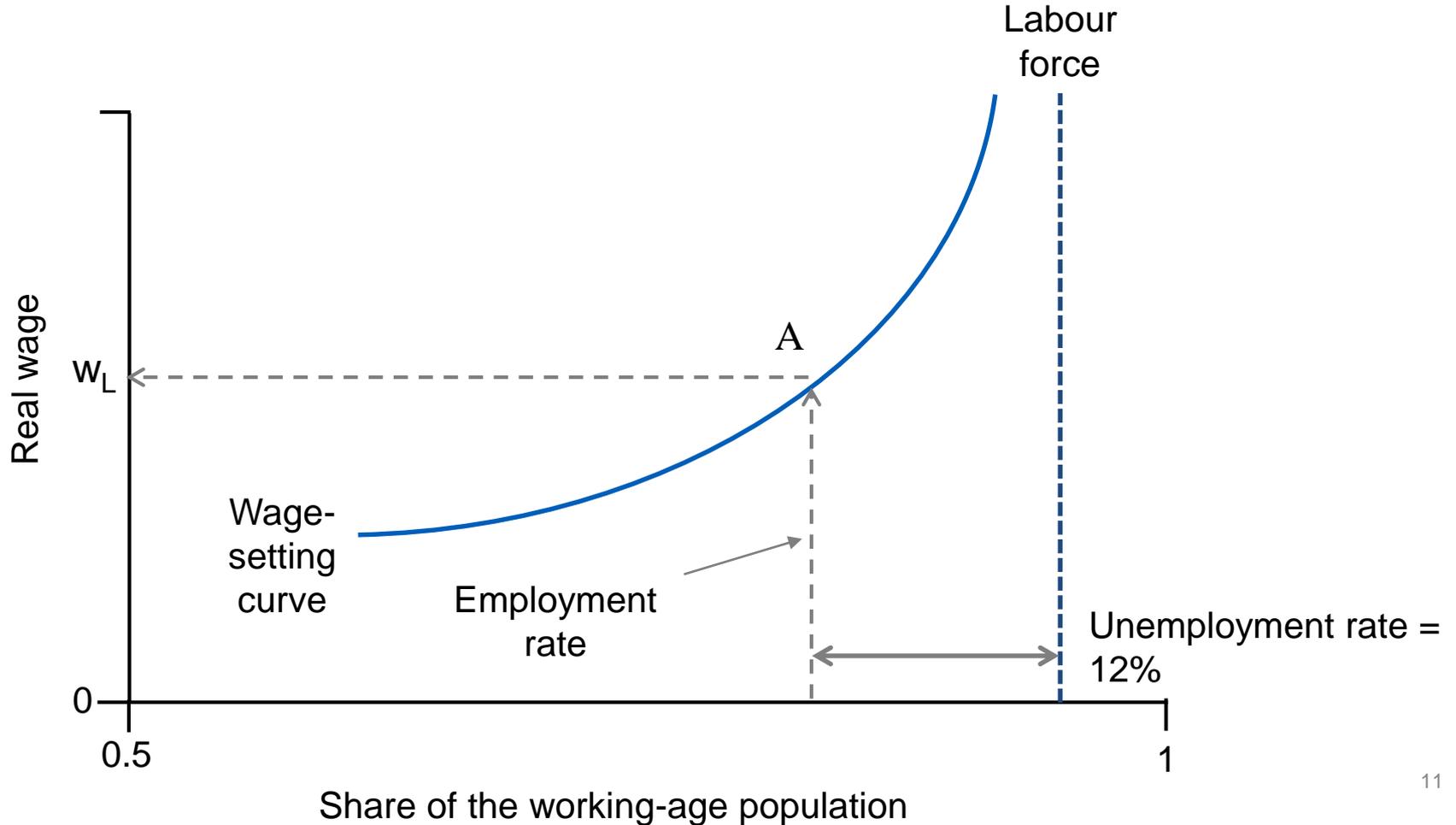
This results in an upward-sloping wage-setting curve



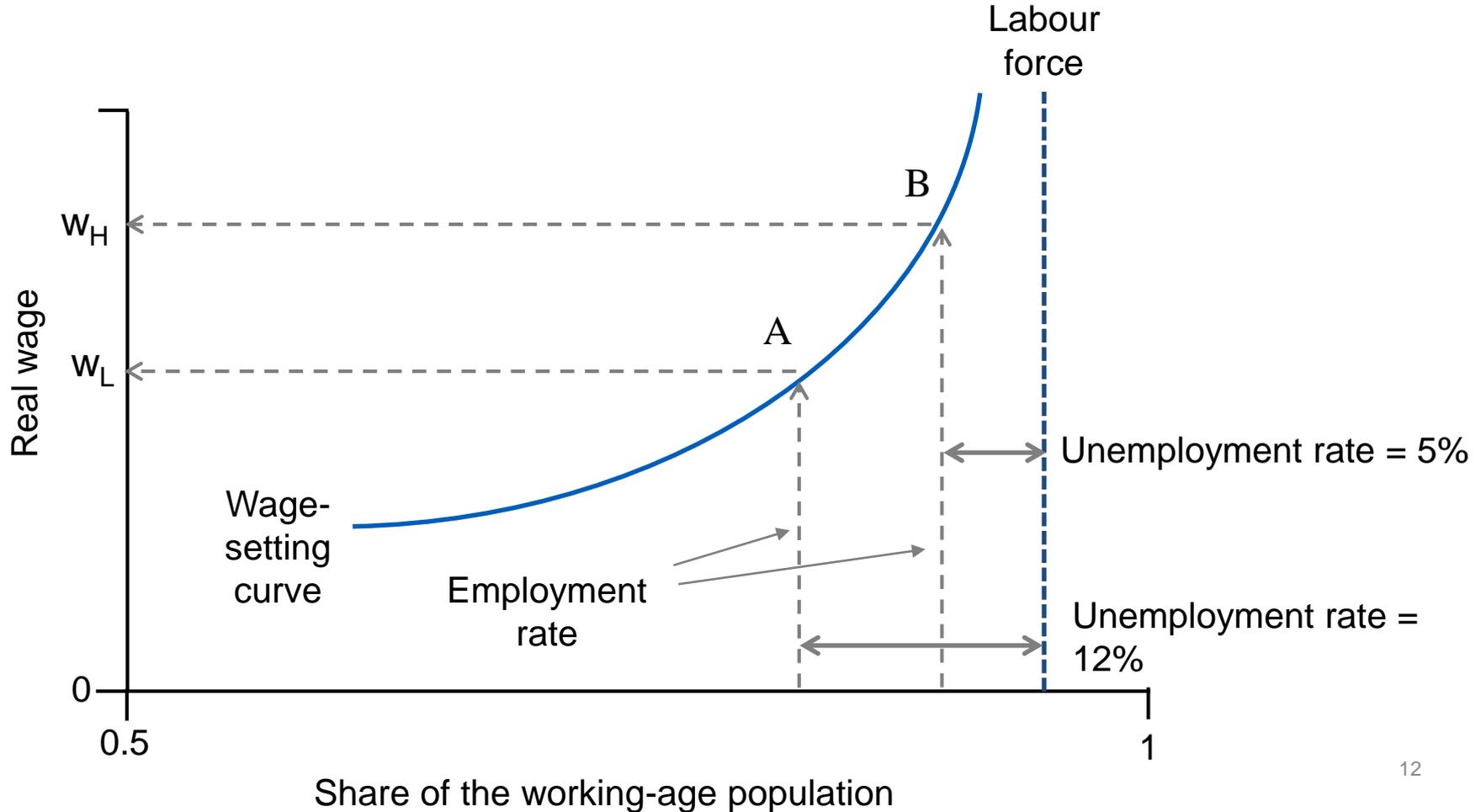
The wage-setting curve



The wage-setting curve



The wage-setting curve



The wage-setting curve

- **Like the best-effort response function of the employee on which it is based, the wage-setting curve is a mathematical version of an ‘if-then’ statement:**
 - If employment rate is x , then the Nash equilibrium wage will be w
 - This means that at the employment rate x , the wage w is the result of both employers and employees doing the best they can in setting wages and responding to the wage with a given amount of effort
- **All the points in the wage-setting curve are feasible, which point are we going to end up?**

Firm's hiring decision

- **Labour is the only input (!), so wage is the only cost**
 - One hour of labour produces one output (given the wage)
 - Average product of labour $\lambda = 1$
 - So the wage the firm pays (W) is the cost of a unit of output
- **The firm process**
 - HR sets the wage at a level sufficient to motivate the workforce
 - MD proceeds in two steps: 1. figure out the demand curve, i.e. what combinations of p and q are feasible 2. pick a point on the demand curve (p^* , q^*)
 - PD chooses the amount of workers $n^* = q^*$

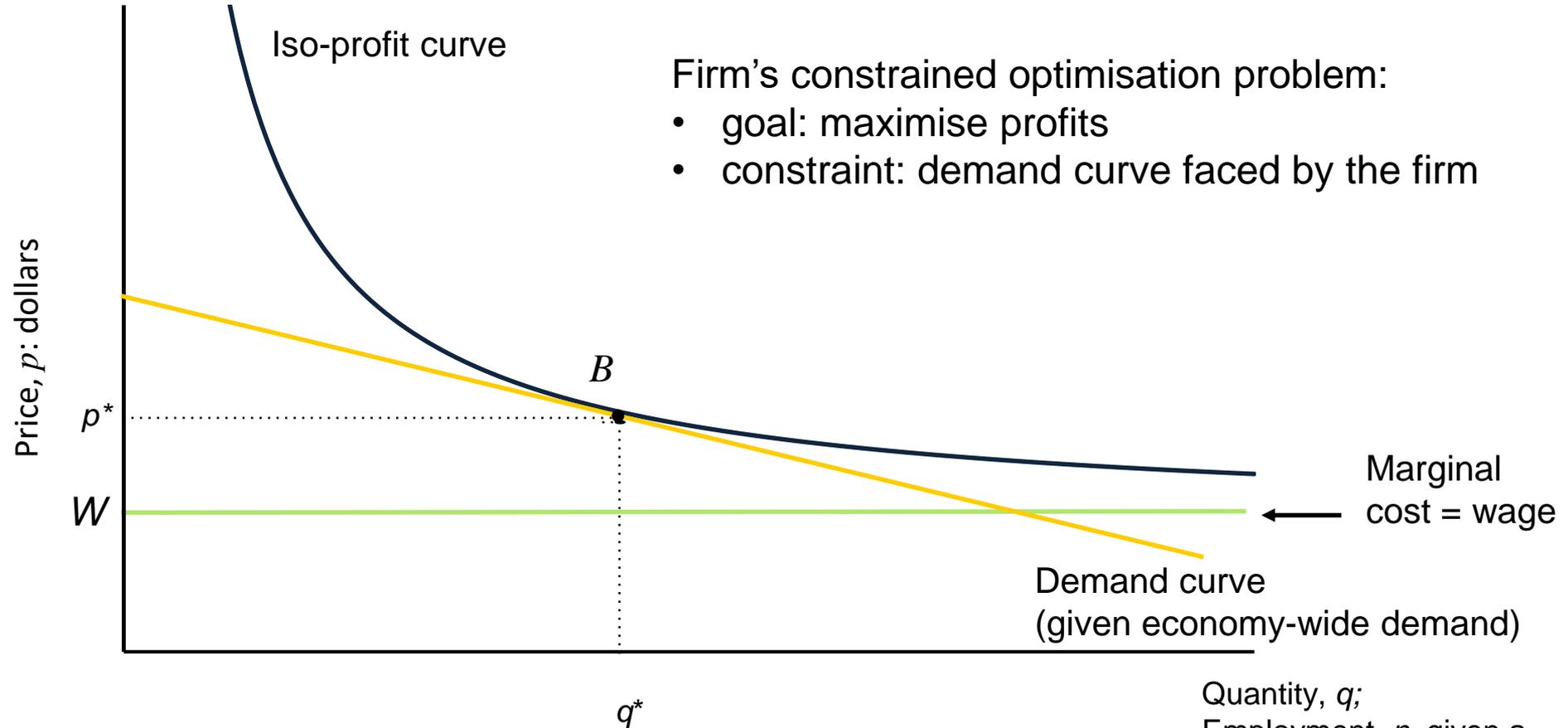
Firms hiring decision

Department	... knows	... and on this basis sets the firm's
Human resources	Prices, wages and employment in other firms	Nominal wage, W
Marketing	All of the above and firm's demand function	Price of output, p
Production	All of the above, plus labour productivity and amount the firm can sell	Employment, n

Profit-maximizing price

Firm's constrained optimisation problem:

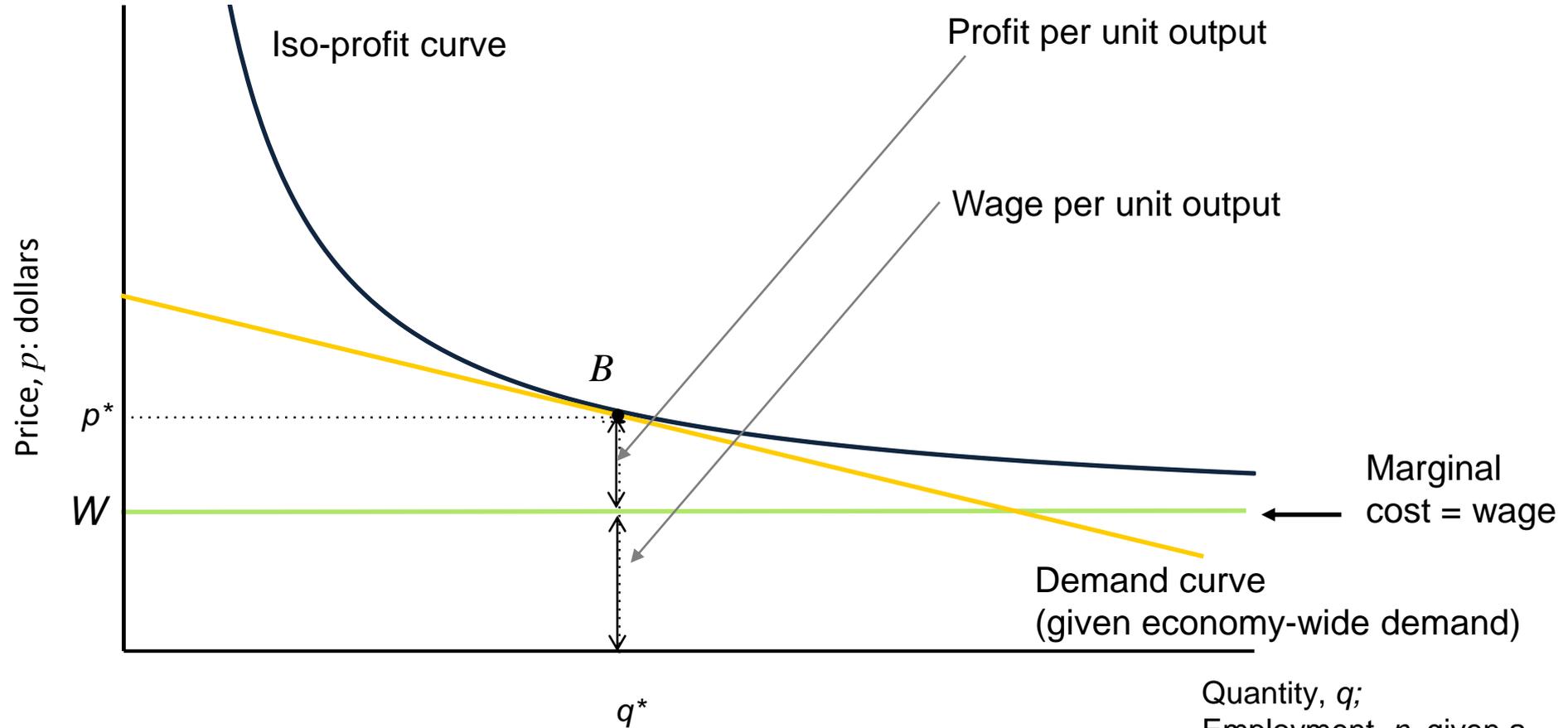
- goal: maximise profits
- constraint: demand curve faced by the firm



Production function: $q = n$

Quantity, q ;
Employment, n , given a
production function
where $APL = \lambda = 1$

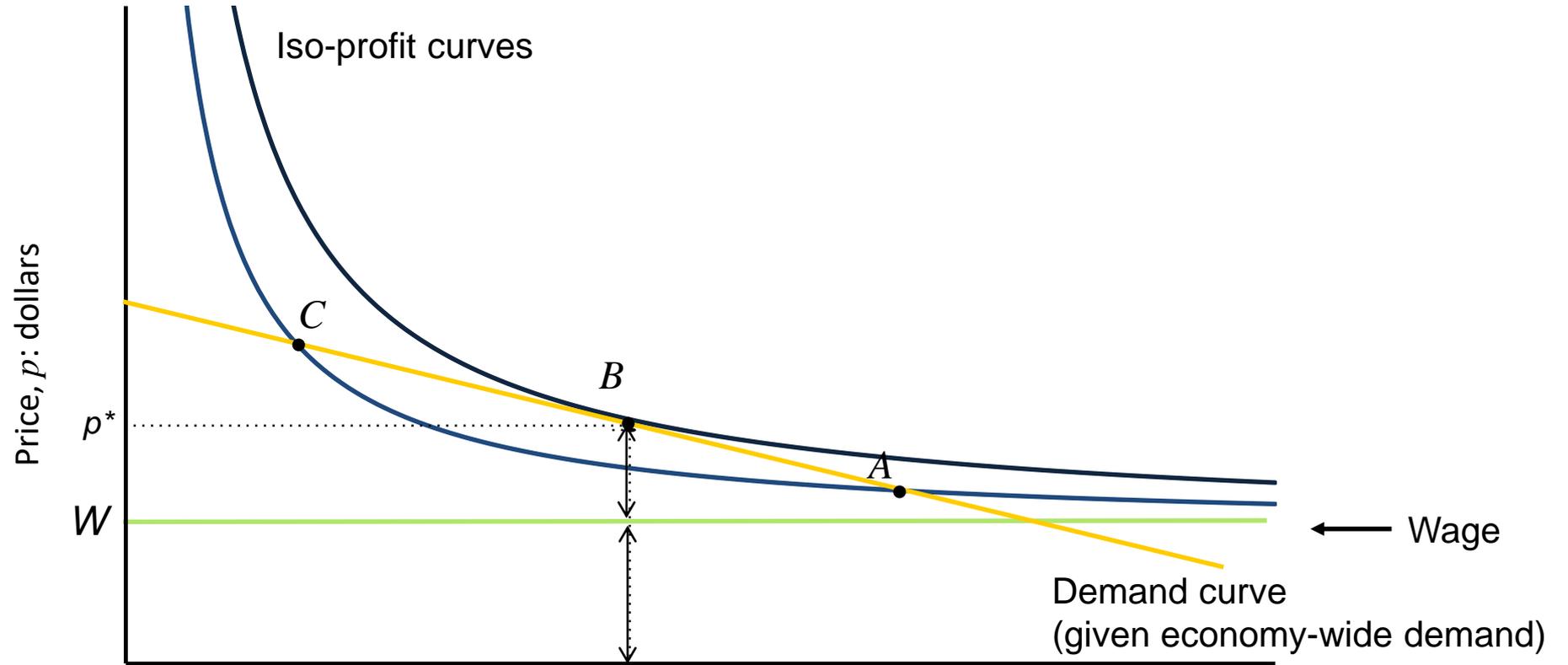
Profit-maximizing price



Production function: $q = n$

Quantity, q ;
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Profit-maximizing price



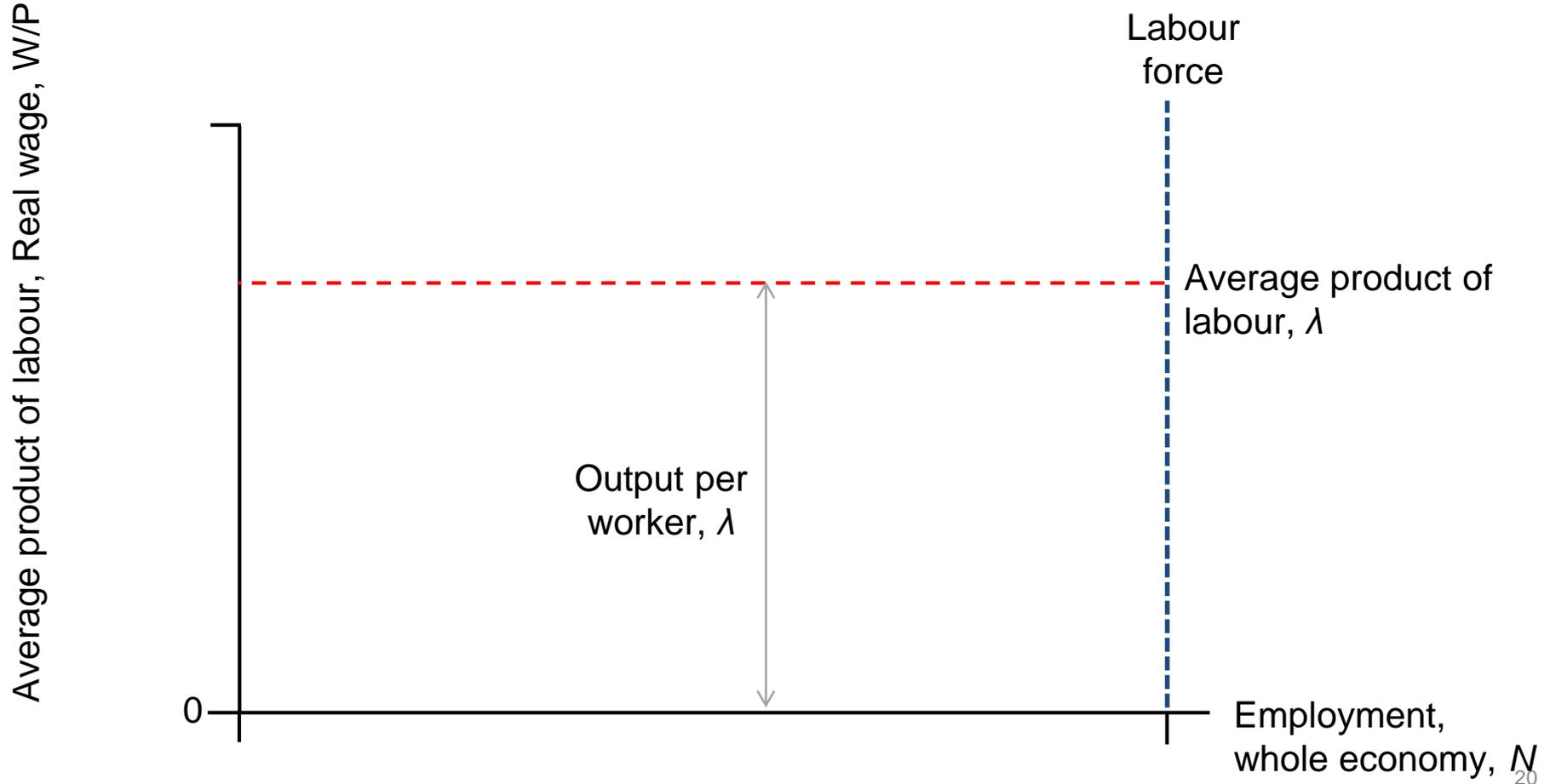
Production function: $q = n$

Quantity, q ;
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The price-setting curve

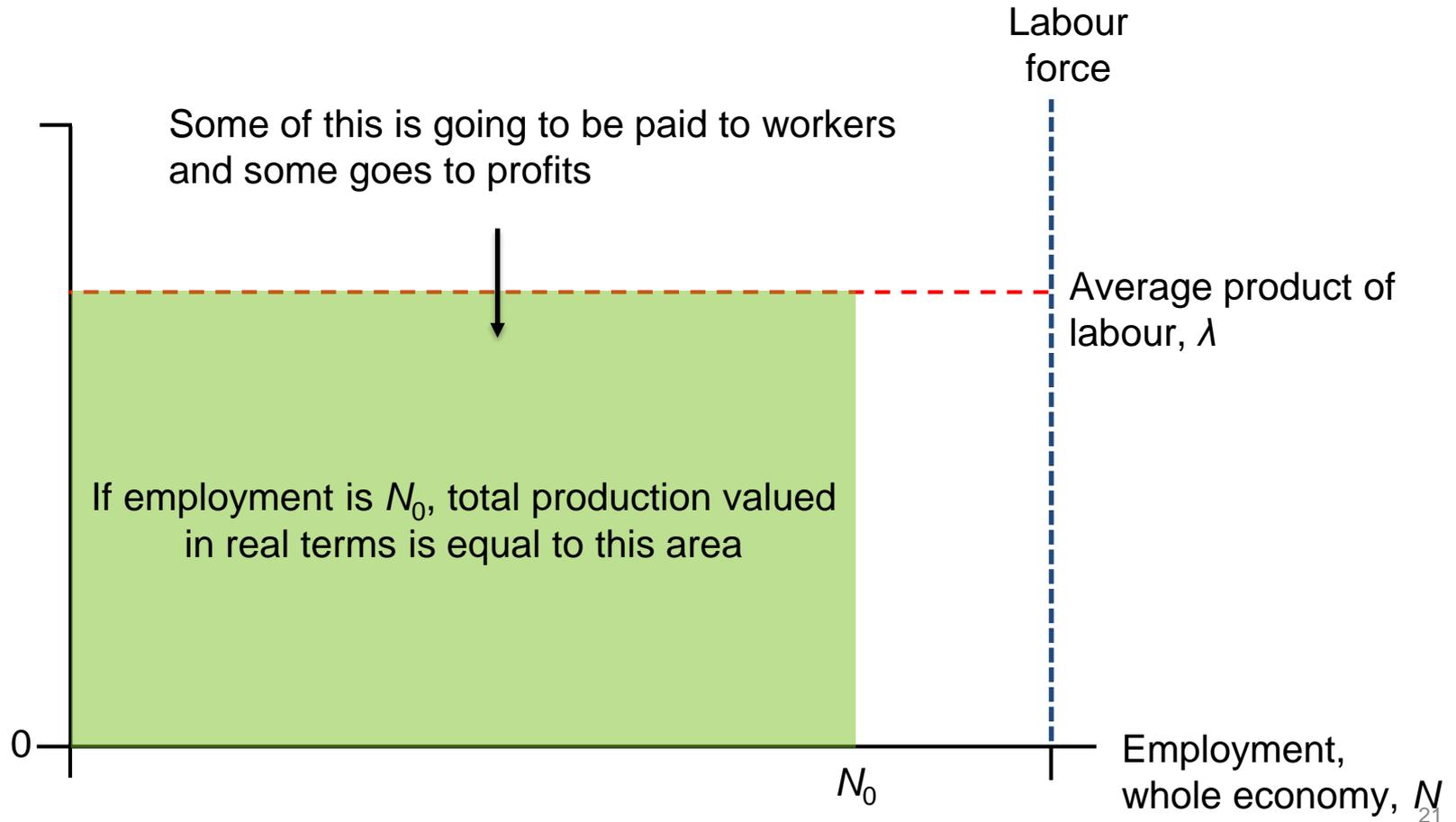
- **When the firm sets the price as a markup on its wage cost, this means that the price per unit of output is split into the profit per unit and the wage cost per unit**
- **For the economy as a whole, when all firms set prices this way, output per worker (labour productivity, or equivalently, the average product of labour, called lambda, λ) is split into**
 - Real profit per worker Π/P and
 - The real wage W/P
- **This is depicted in the next figures**

The price-setting curve

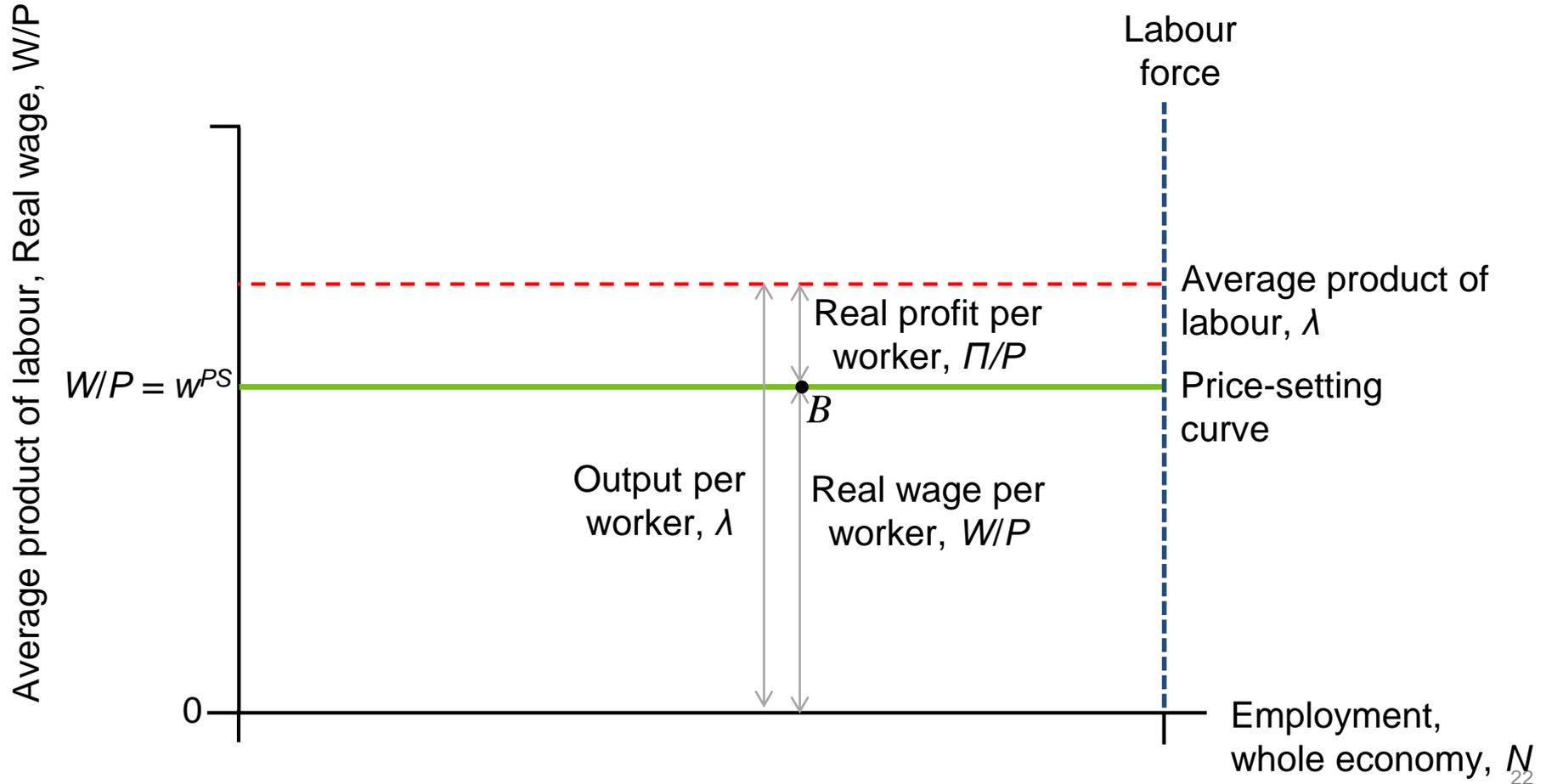


The price-setting curve

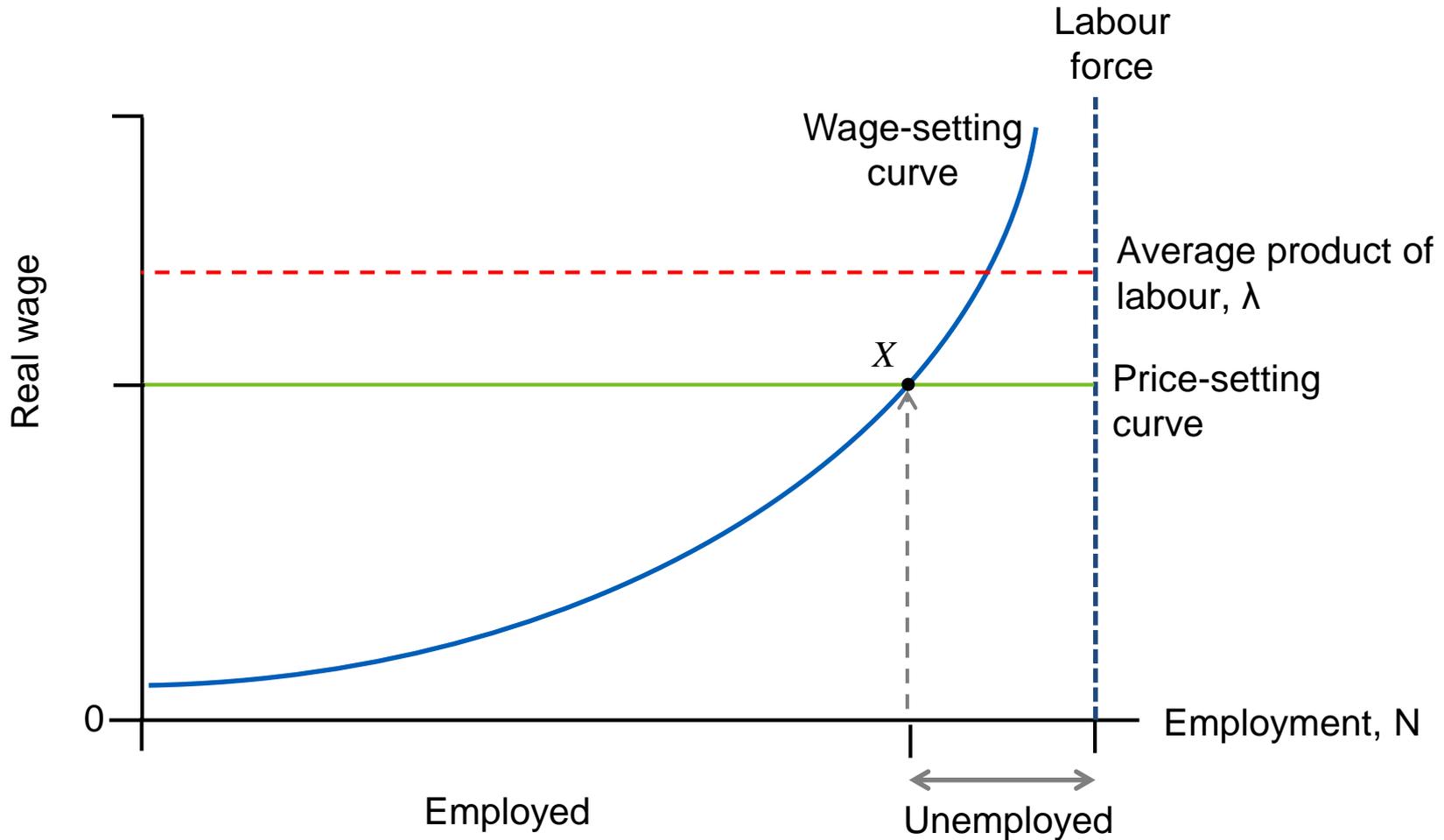
Average product of labour, Real wage, W/P



The price-setting curve



Equilibrium



Involuntary unemployment

- **Unemployment can exist in Nash equilibrium in the labour market**
- **In fact, there will always be unemployment in labour market equilibrium, i.e. equilibrium unemployment**
- **Reasoning:**
 - No unemployment → zero cost of job loss → no effort
 - Therefore some unemployment is necessary to motivate workers
 - These are the involuntarily unemployed
- **Unemployment = excess supply in the labour market**

We used the model to

- **Highlight that the labour market is not just another goods market with perfect completion**
 - Compare to the competitive labour market model with no involuntary unemployment (unless minimum wages etc.)
- **Understand economic fluctuations, unemployment and inflation**
 - Bargaining cap and inflation expectations together with the Phillips curve
- **Analyse the effects of technological progress on long run living standards and unemployment**
 - Real wage and unemployment

Good luck!