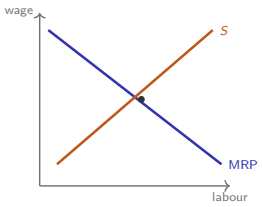
Factor Markets

AP Microeconomics ▪ Unit 5

AP Microeconomics

What we will cover

1. Factor demand & the hiring rule
2. Shifts in factor demand & supply
3. Competitive factor markets
4. Monopsony



1 Factor demand

Factor demand & the hiring rule

In a **factor market** 要素市场 the firm is a **buyer** of labour, land & capital. Factor demand is a **derived demand** 派生需求.

- **MRP** 边际收益产品 = extra revenue = $MP \times P$
- **MFC** 边际要素成本 = extra cost of one more unit

> **Hiring rule** 雇佣法则: hire until $MRP = MFC$. The MRP curve **is** factor demand.

Firms hire labour for the revenue it adds

Hiring – worked example

The baker hires labour

The 5th worker adds 8 loaves/day; each loaf sells for \$5.

$MRP = 8 \times 5 = \$40$. If the wage (MFC) is \$40, hire up to this worker: $MRP = MFC$.

A 6th worker adds only 6 loaves ($MRP = \$30 < \$40$) – not worth hiring.

2 Shifts

Shifts in factor demand & supply

- **Factor demand** shifts with **output price** 产品价格, **productivity** 生产率, related input prices
- **Factor supply** shifts with **number of workers** 可用工人数量, job appeal, training costs

A tech boom raises app prices ⇒ programmers' MRP jumps ⇒ demand shifts right ⇒ wage & jobs both rise.

Product markets drive labour demand

What moves factor demand, and the least-cost rule

marginal revenue product 边际收益产品	MRP = marginal product × marginal revenue – the demand curve for a factor
the product's price	a higher output price raises MRP, so factor demand rises
productivity	better technology or training raises marginal product, and so MRP
the price of other inputs	a substitute input (machines) or a complement – either changes demand for this one
the hiring rule	hire while MRP ≥ the wage; stop where they are equal
the least-cost combination	set the marginal product per dollar equal across inputs: $MP_L/w = MP_K/r$

The least-cost rule is the same logic as equal marginal utility per dollar in consumer choice – if one input gives more output per dollar, shift spending to it.

3 Competitive factor markets

Competitive factor markets

Many hiring firms ⇒ each is a **wage taker** 工资接受者: MFC is constant = the market wage, so hire where $MRP = W$.

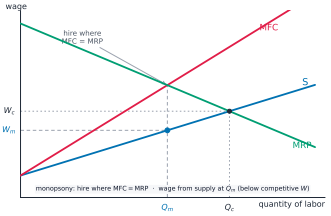
Cost-minimizing rule (many inputs)

Combine inputs so the last dollar on each buys the same output:

$$\frac{MP_L}{P_L} = \frac{MP_K}{P_K}.$$

If $\frac{40}{20} = 2 < \frac{30}{10} = 3$, capital gives more per dollar – use more capital until the ratios meet.

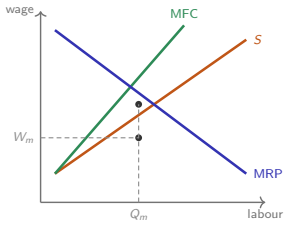
Competitive factor markets, in detail



A monopsony hires where MFC = MRP and pays a lower wage than a competitive market

4 Monopsony

Monopsony – a single buyer



A **monopsony** 买方垄断: one buyer. To hire more it must raise the wage for **everyone**, so *MFC* lies **above** *S*.

- hire where $MRP = MFC$
- pay the lower wage on *S*

⇒ fewer workers, lower wage than competitive.

The minimum-wage twist

Competitive market
a **minimum wage** 最低工资
above equilibrium
→ unemployment

Monopsony
a well-set minimum wage
raises **both** wage and jobs

The minimum wage removes the monopsonist's power to push the wage down, flattening its cost of labour so it can expand hiring.

Key points

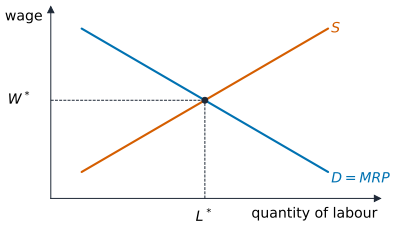
Factor demand is **derived**; hire until $MRP = MFC$

The *MRP* curve **is** the factor demand curve

Competitive: wage taker, hire where $MRP = W$

Monopsony: fewer workers, lower wage; $MFC > S$

Check yourself, in detail



A competitive labour market sets the wage where labour demand meets labour supply

Exam tips

- Factor demand is **derived demand**; hire labour up to where **MRP = wage** (MRP = marginal product × price).
- MRP falls as more workers are hired (diminishing marginal product).
- For least-cost input use, equalise the **marginal product per dollar** across inputs.
- A **monopsony** faces an upward supply, so its marginal factor cost is **above** the wage; it hires fewer workers at a lower wage.
- Draw the monopsony graph (supply, MFC above it, MRP as demand) and contrast with the competitive outcome.

5 Recap

Unit 5 – key takeaways

1 Derived demand

hire until MRP = wage

2 MRP

falls as more workers are hired

3 Least cost

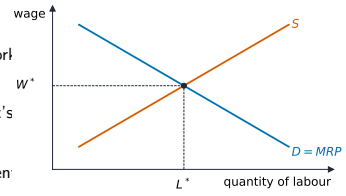
equalise MP per dollar across inputs

4 Monopsony

MFC above wage; fewer workers, lower wage

Check yourself

1. State the hiring rule for labour.
2. Why does a monopsony hire fewer workers?
3. What happens to MRP if the product's price rises?
4. Can a minimum wage raise employment under monopsony?



Answers **1.** hire while $MRP \geq$ the wage **2.** its marginal factor cost exceeds the wage **3.** it rises – factor demand is derived **4.** yes – that is the twist