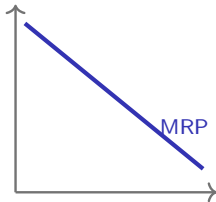


Factor Markets

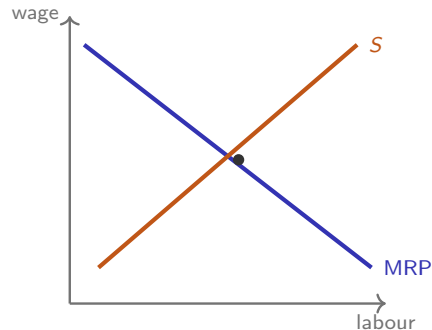
AP Microeconomics ■ Unit 5

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

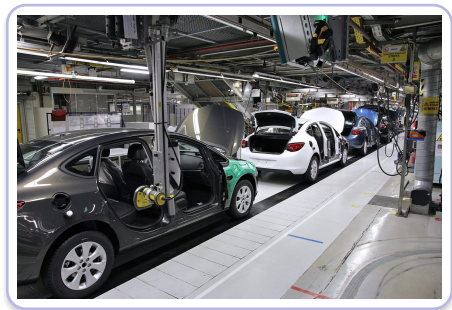
Factor demand

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 $\Rightarrow$ programmers' MRP jumps $\Rightarrow$ demand shifts right $\Rightarrow$ 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 $\times$ 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 $MRP \geq$ the wage; stop where they are equal

the least-cost combination

set the marginal product per dollar equal across inputs: $\frac{MP_L}{w} = \frac{MP_K}{r}$

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

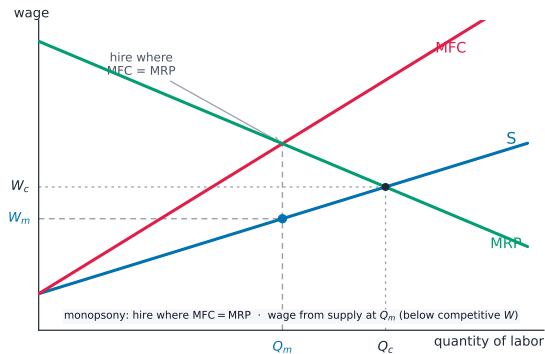
Cost-minimizing rule (many inputs)

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

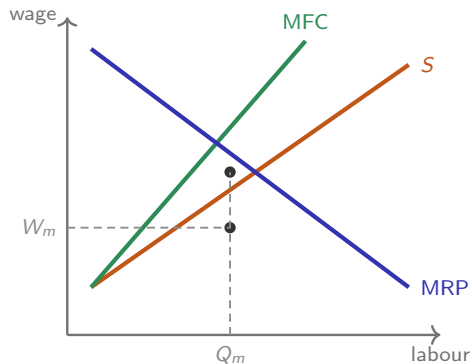


A monopsony hires where $MFC = MRP$ and pays a lower wage than a competitive market

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

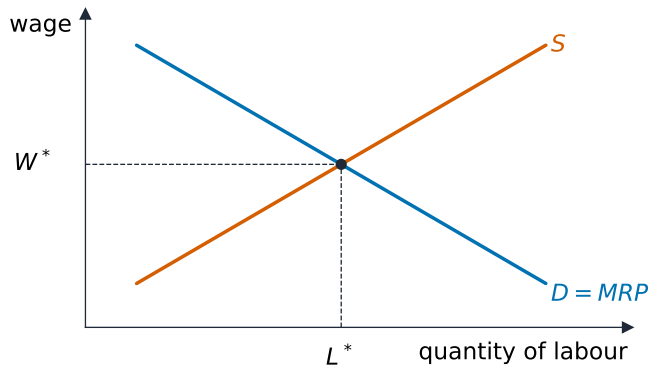
Factor demand is **derived**;
hire until $MRP = MFC$

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

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

Monopsony: fewer work-
ers, 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 $\times$ 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 $MRP = \text{wage}$

2

MRP

falls as more workers are hired

3

Least cost

equalise MP per dollar across inputs

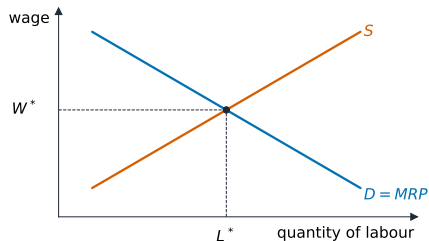
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Monopsony

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