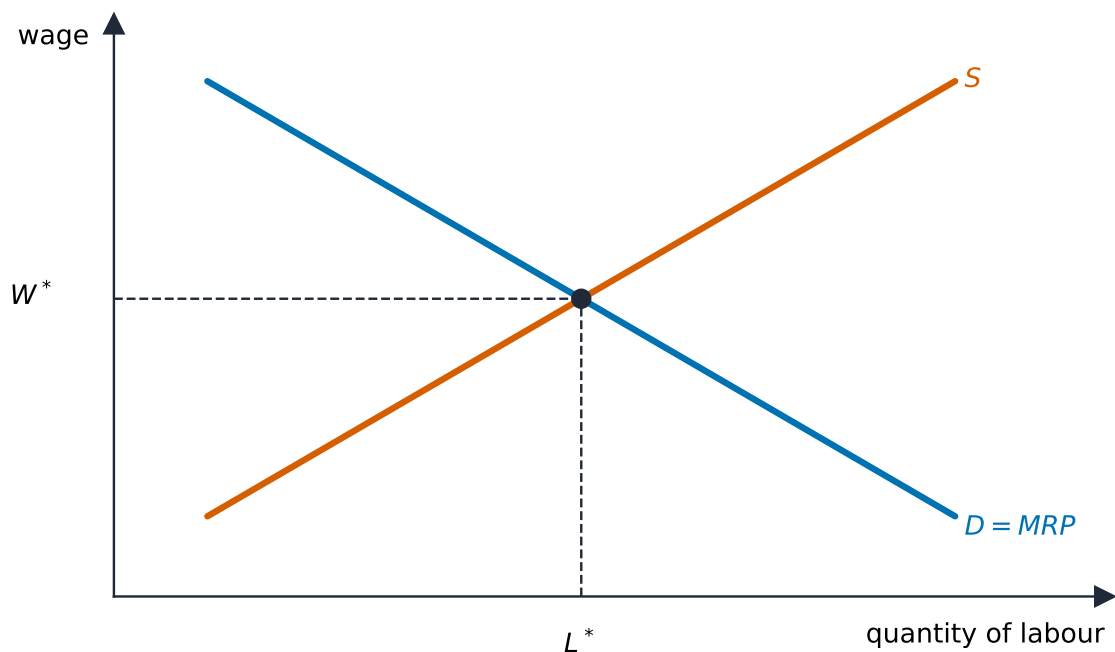


# Factor Markets

## AP Microeconomics

### Introduction to Factor Markets

A **factor market** 要素市场 is where firms buy the **factors of production** –labor, land, capital. The roles reverse: **firms demand** and **households supply**. The most-tested factor is **labor**.



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

Factor demand is a **derived demand** 派生需求—firms want labor not for itself but for the output (and revenue) it produces. So the demand for workers depends on the demand for the product they make.

### Changes in Factor Demand and Factor Supply

**Labor demand** shifts when:

- the **product price** or product demand changes (more valuable output  $\Rightarrow$  more labor demanded),
- **worker productivity** changes (better training or capital),
- the **price of other inputs** changes (a substitute input like machines, or a complement).

**Labor supply** shifts with the **number of qualified workers**, **immigration**, workers' **preferences** (wages needed to attract them), and the wages available in **other jobs**. The market wage is set where labor demand meets labor supply.

## Profit-Maximizing Behavior in Perfectly Competitive Factor Markets

A firm decides how many workers to hire with the same **marginal logic** as everything else –compare the marginal benefit and marginal cost of one more worker.

- The marginal benefit of a worker is the **marginal revenue product** 边际收益产品 (MRP): the extra revenue from one more worker,  $MRP = MP \times$  product price (in a competitive product market, where  $P = MR$ ). MRP falls as more workers are hired, because of **diminishing marginal product**.
- The marginal cost of a worker is the **wage** (in a competitive labor market the firm is a wage **taker**, so marginal factor cost = the wage).
- **Hiring rule:** hire workers up to where  $MRP =$  wage (more generally,  $MRP = MFC$ ). The MRP curve is the firm's labor **demand** curve.

**Worked example.** A worker's marginal product is 8 units and the firm sells each in a competitive market for \$5, so  $MRP = 8 \times \$5 = \$40$ . If the wage is \$30, the firm hires this worker because  $MRP >$  wage. As more workers join, diminishing marginal product pulls MRP down; the firm keeps hiring until a worker whose  $MP = 6$  gives  $MRP = 6 \times \$5 = \$30$ , exactly the wage –the profit-maximizing stopping point.

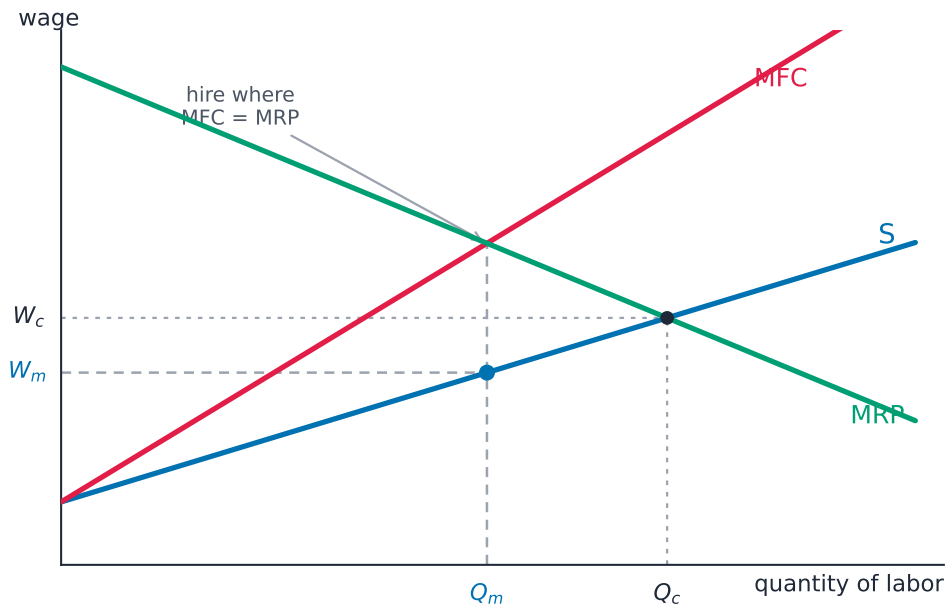
To choose the **least-cost combination** of two inputs, set the **MP-per-dollar equal** across inputs:  $\frac{MP_L}{P_L} = \frac{MP_K}{P_K}$  –the same equal-bang-per-buck rule as consumer choice.

**Exam skill:** compute MRP from a table (marginal product  $\times$  price) and find how many workers to hire at a given wage –a common free-response task.

## Monopsonistic Markets

A **monopsony** 买方垄断 is a market with a **single buyer** of a factor –for example, the only large employer in a town.

- Because it is the whole market, the monopsonist faces an **upward-sloping labor supply** curve: to hire more workers it must raise the wage **for everyone**.
- So the **marginal factor cost** 边际要素成本 (MFC) is **above** the wage (like  $MR < P$  for a monopoly, in reverse), and the MFC curve lies above the supply curve.
- The monopsonist hires where  $MRP = MFC$ , then pays the **lower wage** the supply curve allows at that quantity.
- Result: compared with a competitive labor market, a monopsony hires **fewer** workers at a **lower** wage –the mirror image of monopoly.



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

**Exam skill:** draw the monopsony graph (supply, MFC above it, MRP as demand), mark quantity at  $MRP = MFC$  and the wage down on the supply curve, and contrast it with the competitive wage and quantity.

## Exam tips

- Factor demand is **derived demand**; hire labour up to where  $MRP = \text{wage}$  ( $MRP = \text{marginal product} \times \text{price}$ ).
- $MRP$  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.