

## 8. Government micro intervention

### 8.1 Government policies

#### Syllabus 8.1 >

- Applications and effectiveness of measures to tackle different forms of market failure"
  - Specific & *ad valorem* indirect taxes.
  - Subsidies.
  - Price controls.
  - Production quotas.
  - Prohibitions and licenses.
  - Regulation and deregulation.
  - Direct provision.
  - Pollution permits.
  - Property rights.
  - Nationalisation and privatisation.
  - Provision of information.
  - Behavioral insights and 'nudge' theory.
- Government failure in microeconomic intervention.
  - Definition, causes, and consequences of government failure.

Overall, all policies aim to solve the **over-consumption / under-consumption** of goods. They aim to shift the **private equilibrium quantity** at  $MPB = MPC$  to the **public equilibrium quantity** at  $MSB = MSC$ .

### Policies against **negative production externalities** 产多了

#### Indirect Taxes

- Taxes to cover negative production externalities.
  - In the ideal situation Indirect Tax = Marginal External Cost, so that the externality is **internalized**.
- **Limitations:**
  - Hard to estimate the marginal external cost (e.g., the cost of pollution)
  - If the demand is **price-inelastic**, then the consumption behavior won't be changed.

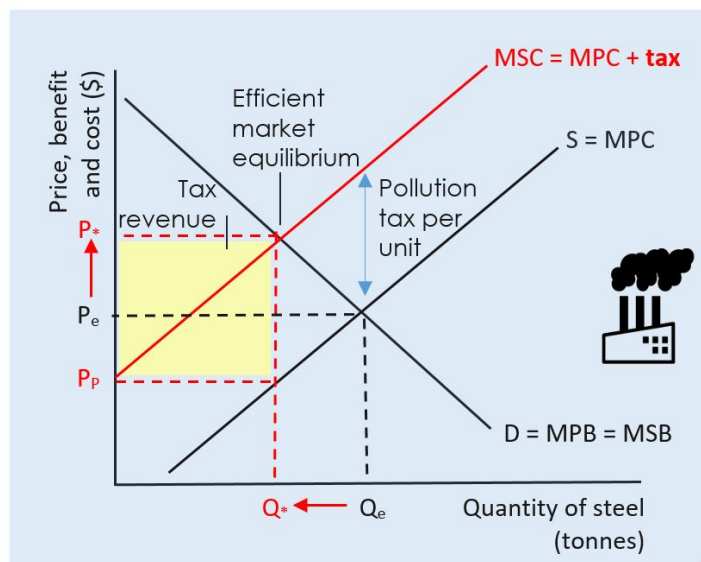


Figure 8: An indirect tax on output or pollutants

## Regulations

- Government intervention through setting legal standards and laws.
  - E.g., a legal limit on the amount of carbon emitted from a vehicle's exhaust system.
  - If the standard is broken, a regulatory body shall step in → a **command and control** approach.
- **Deregulation:** The **removal** of any regulations that act as barriers to entry.
  - **Purpose:** Encourage competition to drive out the polluting firms.

## Property Rights

- The exclusive authority to describe how a resource is used.
- *If the polluting firm has property rights:*
  - Others can pay the firm to reduce the scale of activity → the payment equal to the **loss of profit**.
- *If polluted entities have property rights:*
  - The polluting firm may be sued and obliged to compensate → the charge equal to the **marginal external cost**.
- **Limitation:** The bargaining power of entities—the polluting firm, e.g. an MNC, may have higher legal expertise in debates.

## Pollution Permits (Tradable Permits)

- The polluting firms are provided with a **permit to produce a given level of pollution**.
  - They are **market-based solutions**, so can be bought and sold.
  - A **cap and trade** approach.

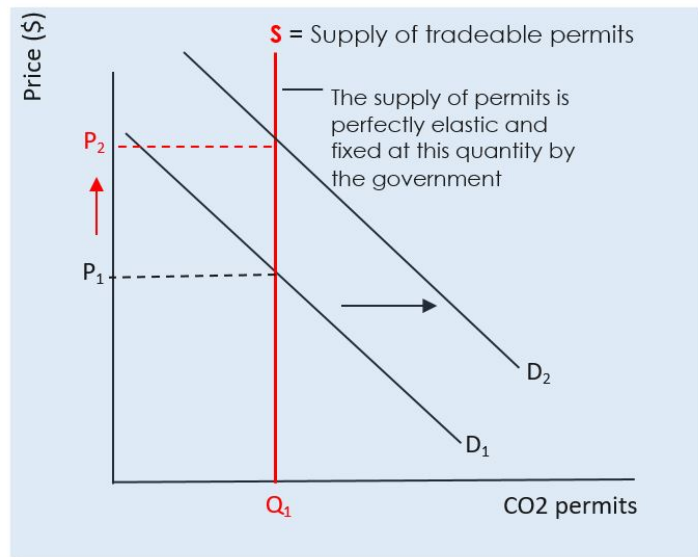


Figure 10: Tradeable permits

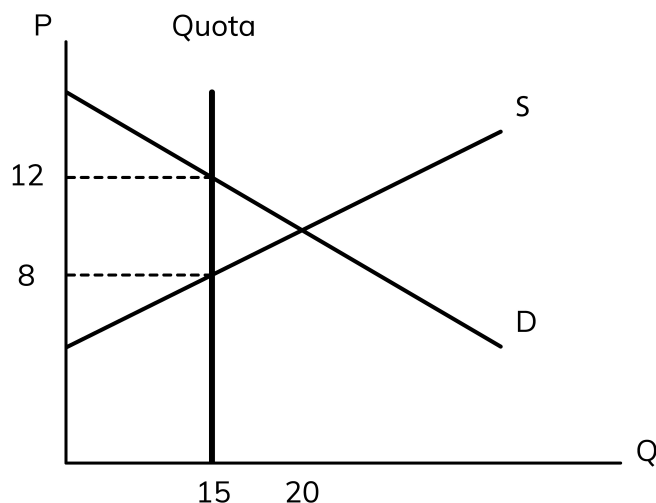
## Policies against negative consumption externalities 买多了

### Indirect Taxes

- Tax to cover negative production externalities.
- Use tax to shift the supply curve to the left so that the **equilibrium quantity** is at  $MSB = MSC$ .
  - Originally, the equilibrium quantity is at  $MPB = MPC$ .

### Price Controls, Provision of Information, Production Quotas

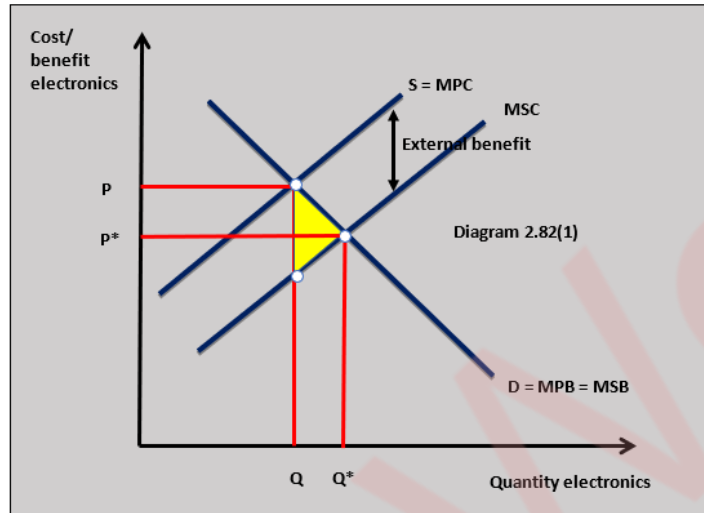
- **Minimum price:** The minimum point is set above  $MPB = MSC$ .
  - **Limitation:** Depends on the **price elasticity of demand**.
- **Provision of information:** Warning & propaganda to discourage consumption.
  - e.g., The scary photos of the tobacco, the ingredient tables, etc.
- **Production Quotas:** Limiting the quantity of goods that is **produced**.
  - **Licensing suppliers** is also used to control supply.
  - **Limitation:** Existence of informal markets.



## Policies for positive production externalities 产少了

### Subsidies

- With positive production externalities,  $MSC < MPC$ .
  - Use subsidies to shift the supply curve to the right so that the **equilibrium quantity** is at  $MSB = MSC$ .



### Provision of Information

- To increase **demand** for products with positive production externalities.
- E.g., public lectures, or other information campaigns.

## Policies for positive consumption externalities 买少了

### Subsidies

- With positive consumption externalities,  $MSB > MPB$ .
  - Use subsidies to shift the supply curve to the right so that the **equilibrium quantity** is at  $MSB = MSC$ .

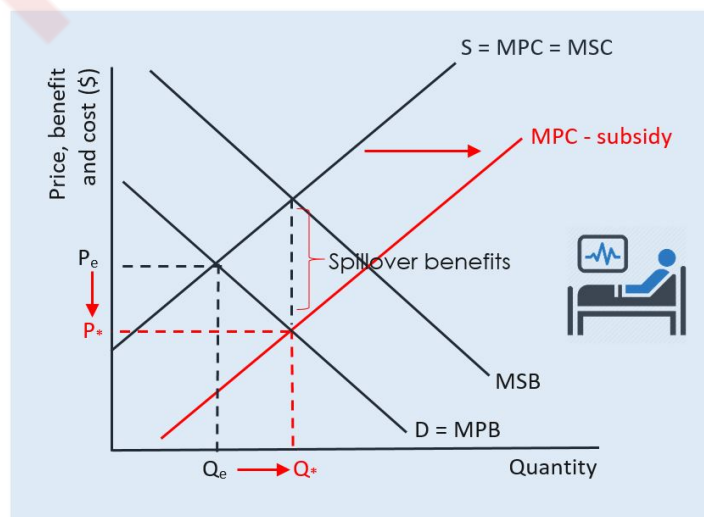


Figure 23: Using a subsidy to correct for a positive externality of consumption

## Direct Provision

- The government directly provides the goods to achieve optimum quantity.
  - If shifts the supply curve to the right with constant units of production.
- **Reasons for direct provision of merit goods:**
  - Positive externalities.
  - Imperfect information.
  - Increasing the quality of human capital (e.g., a healthier workforce).

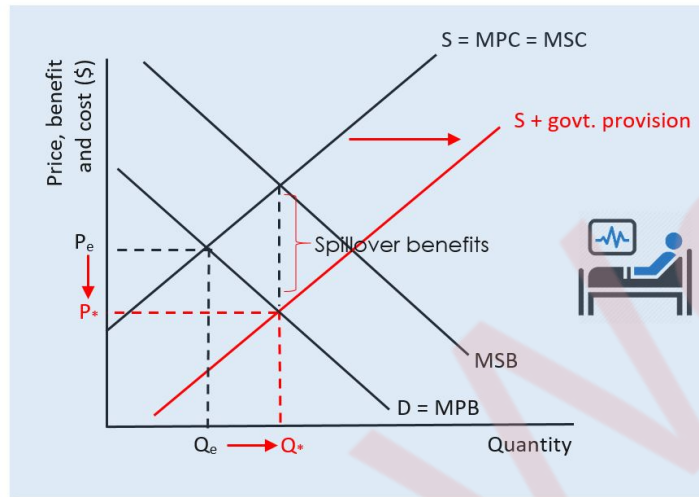


Figure 22: Direct government provision

## Other Policies

### Behavioral Insights and "Nudge" Theory

- **Nudge theory:** By **shaping the environment** (the *choice architecture*), one can influence the likelihood that individuals choose one option over another.

A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behavior in a **predictable way** without **forbidding any options** or **significantly changing their economic incentives**. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are **not mandates**. Putting fruit at eye level counts as a nudge. Banning junk food does not.

- Achieving beneficial outcomes without the need for more formal government interventions, like regulations.
  - Applied through *social media, letters, etc.*

## Nationalization and Privatisation

- **Nationalization:** Transferring the ownership of an industry into the public sector.
  - Because the industry was not being run **in the public interest**.
  - It is argued that externalities can be better managed under government control.
- **Privatization:** Transferring the ownership of an industry into the private sector.
  - Breaks **state monopoly** and creates a more efficient allocation of resources.

- However, a private monopoly may take over, which is more harmful as it has the market power to raise prices and restrict output.
- Increases competition to decrease costs and prices.
- More accountable to shareholders.

## Government Failure

- A **regulatory inefficiency** caused by a government regulatory action, if the problem would not have existed in a free market.

### Causes

- **Imperfect information:** What is the correct amount of tax to impose?
- **Unintended consequences:** Households react in unanticipated ways.
  - High taxes or high unemployment benefits can reduce incentives to work.
  - High subsidies may increase firms' reliance.
- **Policy conflict:**
  - Taxes on energy to reduce harmful emissions may increase living costs.
  - As air travel becomes more economically efficient, pollution may increase.
- Policies may be designed for **power struggle**, not economic efficiency.

## 8.2 Equity and redistribution of income

### Syllabus 8.2 >

- Difference between equity and equality.
- Difference between equity and efficiency.
- Distinction between absolute poverty and relative poverty.
- The poverty trap.
- Policies towards equity and equality, for example:
  - Negative income tax.
  - Universal benefits and means-tested benefits.
  - Universal basic income.

## Equity, equality, and efficiency

### Equity

- **Fairness & impartiality** in the distribution of resources.
  - *Fairness* in a **moral sense**.
  - **Horizontal equity:** Treating people the same.
    - People in the same income group will pay the same level of tax.
  - **Vertical equity:** Redistribution of income using progressive taxes.
    - Reducing wealth inequalities.

### Equality

- Treating *everyone* **the same way**.

## Efficiency

- *Productive* efficiency and *allocative* efficiency.
- The trade-off between *efficiency* and *equity*: 我们应该把钱给工作很多但是产出很少的人（穷人），还是工作很少但是产出更多的（富人）？
  - Also, progressive taxation will decrease the rich's incentive to invest or produce.

## Poverty

### Absolute Poverty

- Household income is below a **certain level** which makes it impossible to meet the **basic needs of life**.
- **Extreme Poverty**: The international poverty line on less than \$1.90 per day.

### Relative Poverty

- Poverty defined in comparison to other people's standing in the economy.
  - Typically, it is when households receive 50% less than average household incomes.
  - This situation can be alleviated when family members get better-paid jobs, etc.

## Policies towards equity and equality

### Means-tested benefits

- Benefits paid to those only on **low incomes** out of government spending.
  - A public benefit where the granting agency considers your **income and resources** for determining your eligibility for the program.
  - A way of redistribution of income: The tax is redirected to the poor.
- E.g., *Income support & Unemployment benefit*.
  - Targeted at those who are seen to be most in need.
- Can create a **disincentive to work**.

### Poverty trap

- The situation when someone will be poorer if they **had a job**.
  - Occurs when *low income tax threshold* paired with *generous means-tested benefits up to a certain level of income*.

### Universal benefits

- Public benefits in certain categories, often age-related, **regardless of their income or wealth**.
- E.g., *Universal state pensions* and *Child benefits*.

### Universal basic income

- An **unconditional** cash payment made at regular intervals by the government.



- People receiving benefits are less likely to be disincentivized to work.

### Negative income tax

- Individuals earning below a **certain threshold** receive financial assistance from the government rather than paying taxes.
  - Those earning above the threshold pay taxes as usual.

## 8.3 Labour market forces and government intervention

### Syllabus 8.3 >

- Demand for labor as derived demand.
- Factors affecting demand for labor in a firm or an occupation.
- Causes of shifts in and movement along the demand curve for labor in a firm or an occupation.
- Marginal revenue product (MRP) theory: definition, calculation, derivation.
- Factors affecting the supply of labor to a firm or to an occupation.
- Causes of shifts in and movement along the supply curve of labor to a firm or an occupation.
- Wage determination in imperfect markets: trade unions, national minimum wage, monopsony employers.
- Determination of wage differentials by labor market forces.
- Transfer earnings and economic rent: definition and factors.

### Demand for Labor

- The **quantity of labor** that a firm is **willing and able** to hire **at various wage rates** over *given period of time*.
- The demand for labor is **derived demand**.
  - The demand for labor is the consequence of demand for other goods and services.
- **Assumptions:**
  1. The hiring firm operates in **perfectly competitive market**.
    - No single firm or worker can affect the wage paid.
  2. The firm is a **profit maximizer**.
    - Its demand for labor is based on maximizing the difference between total revenue and total cost.

### Marginal Revenue Product (MRP)

#### Marginal revenue product of labour ✓

- The **extra revenue** earned when **one more worker is employed**,

$$\text{Marginal revenue product} = \text{Marginal physical product} \times \text{Marginal revenue}$$

- MRP first increases, then decreases → *Law of diminishing returns*.

- **Difficult to measurement:** e.g., the marginal product of a teacher.
  - In **manufacturing**, it's relatively easier to measure the MRP of a labor.



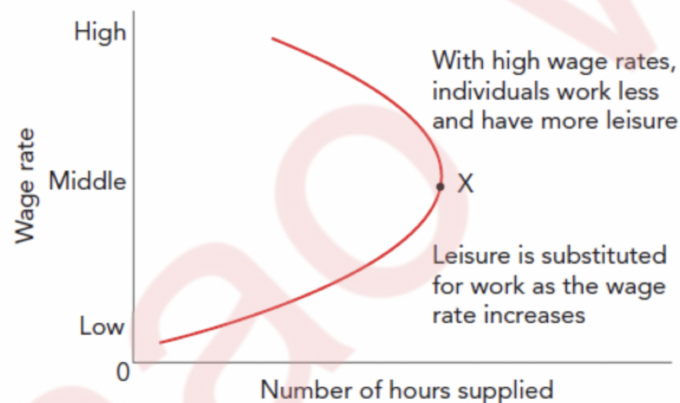
## Factors of Demand for Labor

1. **Wage Rate** → affects the **quantity of labor** demanded by a firm.
  - Wage rate is a **direct reflection of a labor's marginal revenue product**.
  - Change in wage rate induces a **movement** along the demand curve.
2. **Productivity** → affects the **position** of the demand curve.
  - If workers are more productive, output increases, and they become more attractive.
  - A change in the **marginal productivity of labor** will shift the demand curve to the right.
3. **Demand for the product** → affects the **position** of the demand curve.
  - When the demand for the product increases, firms need more labor to fulfill the demand, and hence the labor becomes more attractive.
  - A **shift** in product demand curve induces a **shift** in labor demand curve.

## Supply of Labor

- The **total number of hours** that labors are **able and willing** to work **at various wage rates** over a *given period of time*.

### Individual's Supply of Labor



- **Factors** affecting individual's supply of labor:
  1. **Wage rates** → affects the **number of hours** a labor is willing to spend.
    - There is a **positive relationship** between the hours and wage rate.
  2. **Income tax rate**.
    - A **change in tax policy** (e.g., high tax rate) results in a **shift** of the curve.
    - A **change in after-tax wages** results in a **movement** on the curve.
      - E.g., in a progressive tax system, higher wage may result in lower disposable income, experiencing **bucket creep**.
- **Backward-bending labor supply curve:**
  - After point X, an individual thinks that **wage rate is high enough** and would hence reduce working hours to gain more leisure.
    - This depends on **work attitude, personal and family circumstances, and type of economy** (individuals have higher non-wage income in wealthier countries).

## Firm's and Industry's Supply of Labor



- The **sum of individual supply curves** of workers employed in a firm or industry.
- The **shape of the supply curve**:
  - It is usually **upward-sloping**.
  - Gradient determined by **elasticity of supply of labor** (the extent to which labor supply responds to a change in the wage rate.)
    - $L_1$  is more inelastic, and  $L_2$  is more elastic, as calculated with:

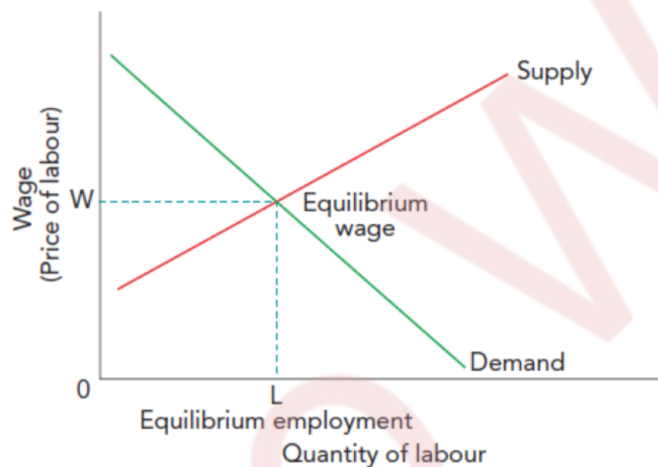
$$1 + \frac{c}{mQ_i}, \text{ where } S = mQ_i + c$$

- Factors include *level of skills required, availability of alternate job opportunities, etc.*
    - A high-level job is more **inelastic**, because gaining the skill level requires time, deferring labors from quickly entering the market.
  - The supply curve is determined by both **wage** and **non-wage** factors.
- **Factors** affecting firm's supply of labor:
  - **Wage rate** offered by the firm → affects the **quantity** of labor supplied.
  - **Indirect wage-related factor** (**wage rate** compares to other firms) → affects the **position** of the labor supply curve.
  - **Non-wage factors** → affects the **position** of the labor supply curve.
    - *Geographic location*: Better transportation areas will have more supply.
    - *Firm reputation*: Better reputation will have more supply.
    - *Firm's skill level required*: Lower skill level will have more supply.
- **Factors** affecting industry's supply of labor:
  - **Wage rate** offered by the industry → affects the **quantity** of labor supplied.
  - **Indirect wage-related factor** (**wage rate** compares to other industries) → affects the **position** of the labor supply curve.
  - **Non-wage factors** → affects the **position** of the labor supply curve.
    - *Cultural and social factors*: Some industries may have better **social prestige**, e.g., medical and law.
    - *Working conditions*: Dangerous industries will have less supply.
    - *Perceived growth prospects*: Industries that are believed to be **stably growing** (e.g., technology), will have more supply.

## Long-Run Factors of Firm's and Industry's Supply of Labour

- These **shifting factors** affect the **number of workers** into the market,
1. **The size of population.**
    - Increasing population shifts the supply curve to the right.
  2. **The labor participation rate.**
    - Number of working-age individuals actually in employment.
  3. **The tax and benefits levels.**
    - High rate of benefits may disincentivize working.
  4. **Immigration and emigration.**
    - Migrants influence the size of population.

## Wage Determination in Perfect Markets



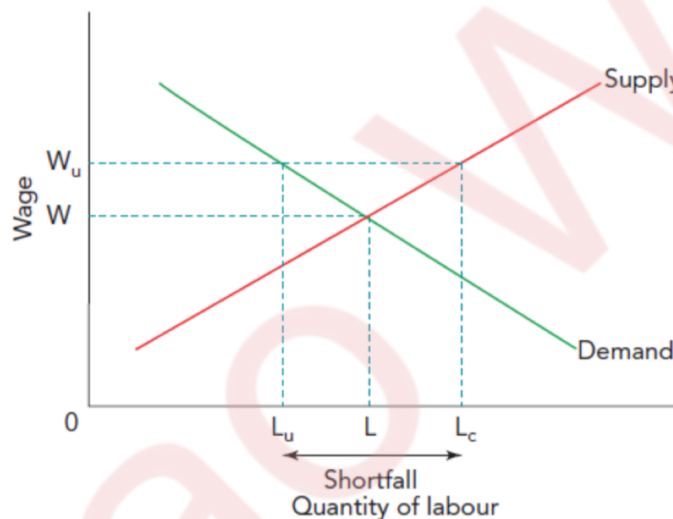
- **Perfect market:** Labor supply and demand operate without external influences.
  - **Assumptions:**
    - **Many, small firms** hiring workers.
    - Firms are **wage takers**.
    - Skill level of workers is **identical**.
    - Firms will hire workers as long as  $MRP > MRC$ .
      - $MRC = \text{Marginal Resource Cost}$ .
  - In **perfect competitive labor market**, the **equilibrium wage** is where the **supply of labor equals the demand for labor**.
    - It is where **marginal revenue product** equals the **wage rate**.
      - Where the firm cannot earn profit from hiring one more unit of labor.
    - **Demand curve:** Marginal revenue product; **Supply curve:** Wage rate.
  - **Shifts** in the demand and supply curves will change the market equilibriums.

## Wage Determination in Imperfect Markets

- **Imperfect market:** Where various factors interfere with the free interaction of demand and supply.
  - These factors include *trade unions, minimum wage, and monopsony*.

## Trade Unions

- **Trade Unions:** Organizations that represent the collective interest of labors.
  - They exist because individuals have very little power to influence the conditions of employment.
- Through **collective bargaining**, trade unions aim to:
  - Increase the wage of their members.
  - Improve working conditions.
  - Maintain pay differentials between skilled and unskilled workers.
  - And more.
- **Impact on wage determination:**
  - A **powerful** trade union can secure wages above the equilibrium wage rate.
    - The power of a trade union is determined by *regulation, elasticity of labor supply, and the size of the trade union.*
  - The negotiated wage falls at  $W_u$ , creating a surplus of  $L_c - L_u$ .

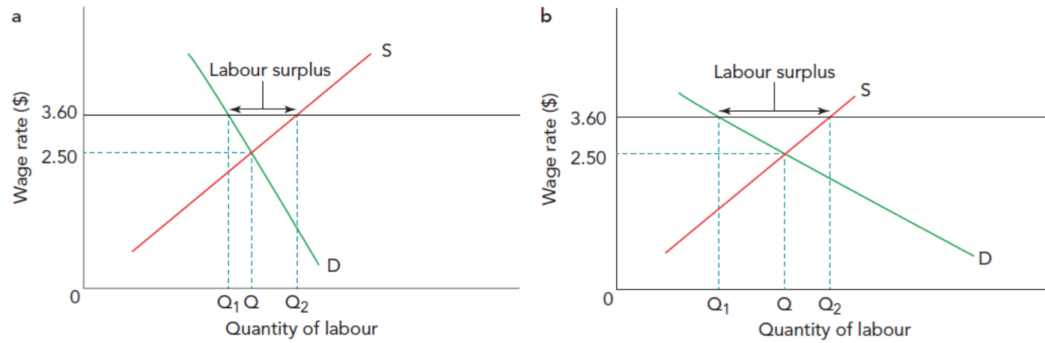


- If the labor cost is too high due to trade unions, firms may consider *switching to capital-intensive production, or relocating the production* to other countries where costs are lower.

## Minimum Wages

- **Minimum Wage:** The **minimum level** of wage that employers are legally required to pay workers for their labor.
  - **Aim:** To reduce poverty and who exploitation of workers who have limited bargaining power.
- **Impact on wage determination:**
  - The minimum wage can secure wages above the equilibrium wage rate.
    - The scale of its effect depends on the **price elasticities**.

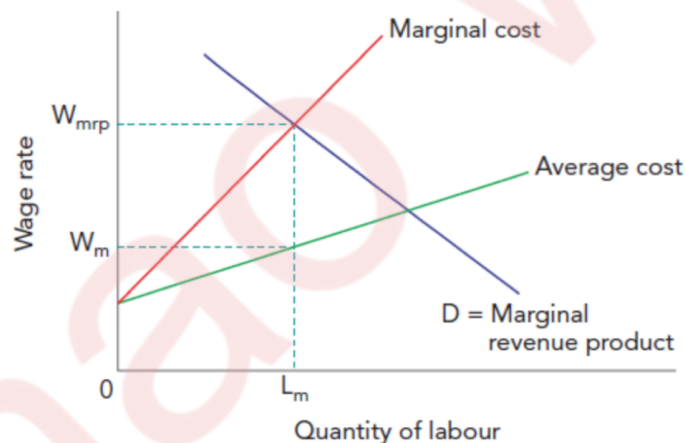
- The new wage falls at \$3.60, creating a surplus.



- However, minimum wage is always carried out at a **national scale**, which disregards the regional cost of living differences.

## Monopsony Employers

- Monopsony:** When there is a **single or dominant buyer** of labor.
  - It is able to **determine the price or wage** that is paid for the workers.
- Impact on wage determination:**
  - The monopsony will produce at  $\text{Marginal Cost} = \text{Marginal Revenue Product}$ .
  - It will charge a price at **Average Cost**, below what the employer shall pay if workers are paid full value for their marginal revenue product.



- Monopsony often exists in **local labor markets**.

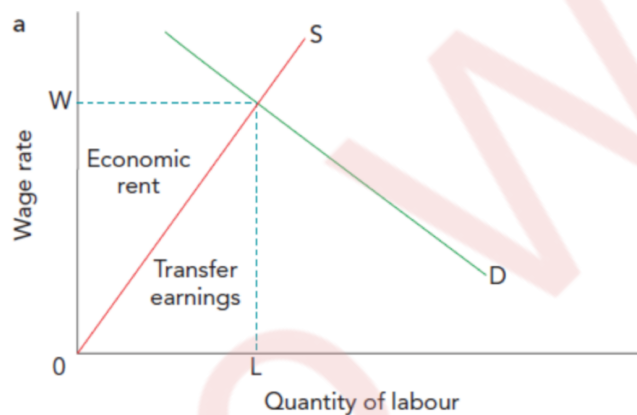
## Wage Differentials

- Wage differentials:** The differences in wages earned by individuals.
  - Occurs between *industries, firms, and regions*.
- Wage differentials are determined by **labor market forces**:
  - An occupation that is in high demand and low supply will pay a higher wage.
- Factors influenced by the labor market force:**
  - Demand从productivity和demand for the good考虑; supply从non-wage factor和indirect wage factor考虑.
  - Skilled & unskilled labors** (education & training).
  - Part-time & full-time labors:** Part-time labors tend to be paid less.
- Factors other than labor market force:**
  - Bargaining strength, Male and female workers* (tendency where women are paid less in some countries), *Government policy* (minimum wage to reduce wage

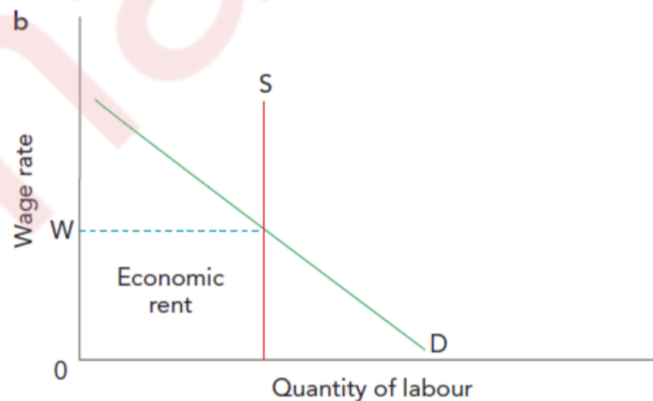
differentials for low-paid workers).

## Transfer Earning and Economic Rent

- Earnings are split into **two elements**:
  - Transfer Earning**: The **minimum payment** necessary to keep labor in its present job instead of transferring to other activities.
    - It reflects the *opportunity cost* of labors.
  - Economic Rent**: Any payment to labor which is **over transfer earnings**.
- Transfer earnings** is the **area below the supply curve**.
  - Because the supply curve denotes the wage each labor requires.
- Economic rent** is the **area above the supply curve**.
  - It is the difference between the paid wage and the wage that each labor requires for working.



- For **perfectly inelastic labor supply**, there is **zero transfer earning**.
  - Because they will stay in the work regardless of their wage.
  - For example, *superstars*.



- For **perfectly elastic labor supply**, there is **zero economic rent**.
  - Because they will only stay in the work at a particular wage level.
    - The employees are not willing to supply above wage W, because they know that the employers will switch to other production methods.
  - For example, *menial labors*.

