

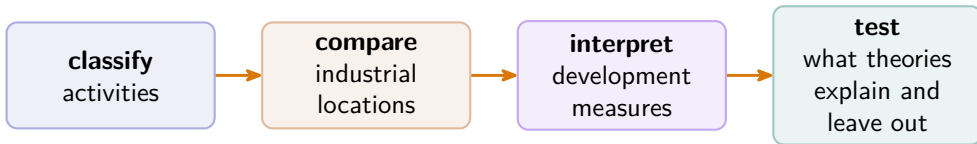
Industrial and Economic Development

AP Human Geography ■ Unit 7

AP Human Geography



Explaining uneven development



Work with original **cost, income and trade data** first. A photograph, average or sector share alone cannot establish every development outcome.

1

The Industrial Revolution

Industrialisation: technology and spatial change

Industrial Revolution 工业革命 expanded **machine production** and factory organisation, first in Britain and then unevenly elsewhere.



Demand for raw materials and markets also contributed to **colonial expansion**; no single factor explains the entire process.

Ports and industrial location



Container ship and cranes, Los Angeles

Cargo handling connects transport networks.

Break-of-bulk points 转运点 are places where goods change transport mode. Handling costs and connections can affect industrial location.

The photograph does not measure trade value, wages or local prosperity.

2

Economic Sectors and Patterns

Economic sectors: classify the activity

Sector	Activity and example
Primary sector 第一产业	Obtains raw materials: farming, fishing or mining.
Secondary sector 第二产业	Manufactures goods: assembling cars or processing metal.
Tertiary sector 第三产业	Provides services: retail, transport or healthcare.
Quaternary sector 第四产业 / quinary	Information and research / high-level decision-making. Often treated as specialised services; check dataset categories.

Manufacturing and automation



Robotic welding equipment

Classify work by the activity being performed.

An assembly operator manufactures; a research scientist develops knowledge. Both may work for a car company.

Visible robots do not establish the number of employees, their wages or the absence of human work.

Classifying jobs: original attempt



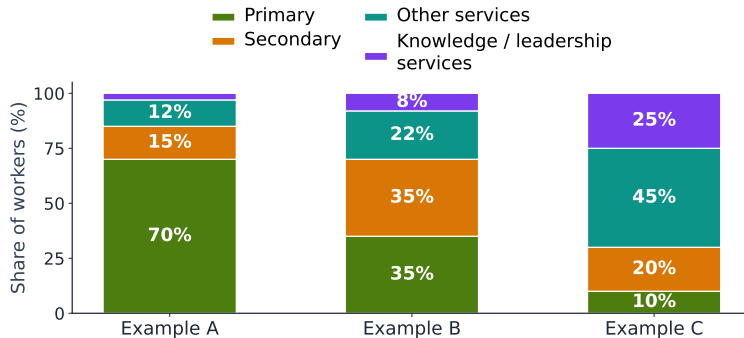
Your turn

- 1 Classify the **five activities**. Does selling a farm product make farming a **tertiary** activity?
- 2 Why could counting all service workers and then adding the information workers again **misstate total employment**?

Classifying jobs: worked check

Activity	Classification
Farming	Primary, even when the crop is sold commercially.
Assembly / delivery	Secondary production / tertiary transport service.
Research / strategy	Quaternary information / quinary high-level decisions.
Counting	If specialised services are already included in tertiary totals, adding them again double-counts workers.

Illustrative employment composition



Invented comparisons; exclusive groups total 100%.
Not a required development sequence.

Shares of **exclusive** groups always sum to **100%**.

Employment shares: original attempt

Exclusive group	Economy A	Economy B
Primary	700	350
Secondary	150	350
Other services	120	220
Knowledge / leadership services	30	80
Total workers	1000	1000

Calculate each economy's primary share. What does the comparison establish? What does it leave unknown? These are invented counts.

Employment shares: worked check

$$s = \frac{n}{N} \times 100$$

$$s_A = \frac{700 \text{ workers}}{1000 \text{ workers}} \times 100 = 70\%$$

$$s_B = \frac{350 \text{ workers}}{1000 \text{ workers}} \times 100 = 35\%$$

B has a lower primary share. This does not establish higher wages or life expectancy, nor prove that A will become B. A share can fall while its worker count grows if total employment grows faster.

Weber: compare total costs

Weber's least-cost theory 韦伯最小成本理论 considers **transport**, **labour** and savings from **agglomeration**.

bulk-reducing: can favour
raw-material locations

bulk-gaining: can
favour **markets**

- **Agglomeration** gives shared suppliers, skills and infrastructure; congestion and land prices can offset savings
- Weight alone does not settle location when rates, labour and other costs differ

Factory location: original cost task

Daily dollars	Site R	Site M
Transport T	90	50
Labour L	70	110
Clustering savings S	10	20

Other costs are equal. Compare $C = T + L - S$. Then raise M's labour cost to 130 dollars/day and compare again. Does the lowest transport cost always give the cheapest site?

Factory location: worked comparison

$$C = T + L - S$$

$$C_R = 90 u + 70 u - 10 u = 150 u$$

$$C_M = 50 u + 110 u - 20 u = 140 u$$

u = dollars/day. M is cheaper initially. The savings are subtracted, not treated as another cost. This model excludes other unequal costs.

Location can change when costs change

$$C = T + L - S$$

$$C_M = 50 u + 130 u - 20 u = 160 u$$

u = dollars/day. R remains at 150 dollars/day and is now cheaper.

M still has cheaper transport, but its total cost is higher. Explain the competing costs rather than deciding from distance or product weight alone.

3

Measures of Development

Development: choose evidence for the question

Development 发展 economic and social well-being; no single average describes all people or places.

output

income

health

schooling

distribution

gender inequality

energy use

employment composition

Each answers a **different question**. Use consistent **dates, denominators, currency and definitions**; a national comparison can hide regional and household differences.

Output and national income are distinct

Measure	Meaning and limit
GDP	Production within a territory, not total income received by its residents.
GDP per capita	GDP divided by population: an average, not every person's income.
GNI per capita	Resident income per person, including net primary income from abroad. GNP is a related older national-product measure.
Comparison	Check currency, price adjustments and year before interpreting differences.

Gross Domestic Product (GDP) per capita 人均国内生产总值

HDI: three dimensions, with limits

Dimension	Indicator
Health	Life expectancy at birth.
Education	Mean adult schooling and expected schooling for children.
Standard of living	GNI per capita, not GDP per capita.
Interpretation	Normalised component indices are combined; raw years and money are not simply added.

Human Development Index (HDI) 人类发展指数 summarises average achievement; it does not capture every inequality or environmental cost.

Gender and distribution measures

Gender Inequality Index (GII)

性别不平等指数

Covers **reproductive health**, **empowerment** and **labour-market participation**. Lower values: less inequality in those dimensions.

Gini coefficient 基尼系数

Describes **distributional inequality**.
Check: **income or wealth**? A **0–1** or **0–100** scale?

Neither is interchangeable with **GDP per capita** or a wage-gap statistic.

Equal GDP: original interpretation task

Fictional indicator	Country X	Country Y
GDP per capita (dollars)	20000	20000
Life expectancy (years)	79	61
Mean adult schooling (years)	12	6

What does equal GDP per capita establish? Can you calculate either country's HDI or infer its exact ranking from these data? Explain what is missing.

Equal GDP: worked interpretation

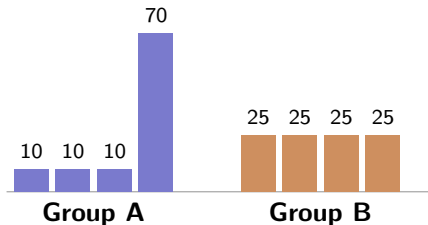
✓ same stated **average output per person**

✗ different **health** and **schooling** outcomes

- An exact HDI comparison needs **GNI per capita**, expected schooling and the index method: equal GDP $\neq$ equal HDI income inputs
- Distribution and environmental effects need **other data**

Choose the measure for the question rather than claiming HDI is always superior.

Same average, different distribution: attempt



household incomes, thousand dollars per year

Original data

- 1 Calculate each **average**.
- 2 What important **difference** remains?
- 3 Why must these household means **not** be relabelled GDP per capita?

Household means: worked check

$$\bar{x} = \frac{\text{total income}}{\text{number of households}}$$

$$\bar{x}_A = \frac{10 + 10 + 10 + 70}{4} = 25 \text{ thousand dollars/household}$$

$$\bar{x}_B = \frac{25 + 25 + 25 + 25}{4} = 25 \text{ thousand dollars/household}$$

Equal means hide a more unequal distribution in A. These are household incomes; GDP concerns territorial production and uses population for per-capita output.

Formal and informal activity

Informal economy activities outside or insufficiently covered by formal arrangements: **not necessarily illegal** or wholly omitted from national estimates.

registered **factory**

informal **repair
business**

both provide work; **records,
protections, security and pay** can differ

Use literacy, infant mortality, healthcare access, fertility and energy data for dimensions **sector shares alone** cannot establish.

4

Women and Economic Development

Participation does not establish equality

Can expand choices and income

education, **paid work**, entrepreneurship

Can remain barriers

care responsibilities, **discrimination**,
transport, unequal **land or credit**
access

- More participation does **not automatically** establish equal wages, security or decision-making power
- Fertility also involves healthcare, preferences and institutions: paid work alone does not determine every woman's choices

Microfinance: opportunity and repayment

Microfinance 小额信贷 small-scale financial services.

✓ loans can support
business investment
and livelihoods when an
enterprise earns enough

✗ credit can create **debt**
pressure

- **Demand, costs, repayment terms** and **control over earnings** affect outcomes
- Assess what changes for borrowers; not every loan produces empowerment or profit

Small enterprise: original cash-flow attempt

$$B = S - C - P$$

B cash left, S weekly sales, C inputs and operating costs, P loan payment

sales **180** dollars

costs **100** dollars

loan payment **50** dollars

Your turn

- 1 Calculate the **cash left**; then reduce sales to **140 dollars**, outflows unchanged.
- 2 What evidence is needed to assess the borrower's **well-being** and **control over earnings**?

Enterprise cash flow: worked check

$$B = S - C - P$$

$$B_{\text{initial}} = 180\,u - 100\,u - 50\,u = 30\,u$$

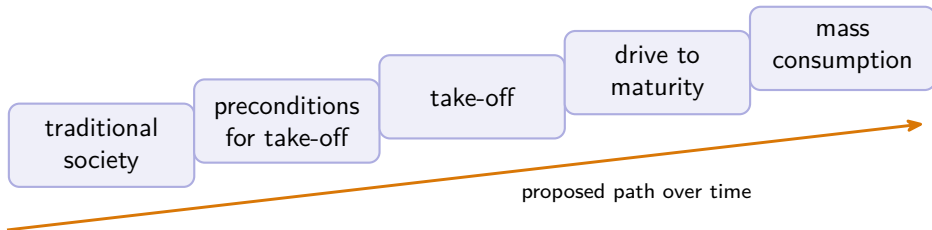
$$B_{\text{lower sales}} = 140\,u - 100\,u - 50\,u = -10\,u$$

u = dollars/week. Lower sales create a cash shortfall under these assumptions. This is simplified cash flow, not complete profit accounting or proof of a causal effect on gender equality.

5

Theories of Development

Rostow: a proposed sequence

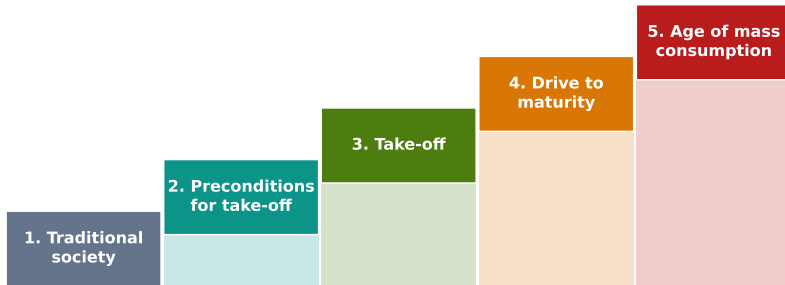


Rostow's stages of growth 罗斯托发展阶段 emphasise **investment, industrialisation** and internal change.

It does not prove every country follows the same route: **external relationships**, history and environmental limits can challenge it.

Five stages within Rostow's model

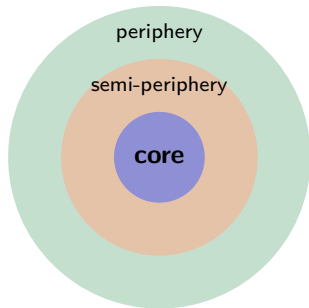
A proposed growth model



Not a universal timetable; historical and external conditions matter.

This is a proposed model, not a universal timetable or evidence that mass consumption is sustainable.

World-systems: roles in an interconnected economy



Wallerstein's world-systems theory

沃勒斯坦世界体系理论 relationships between core, periphery and semi-periphery.

- **Core:** greater capital, high-value production, influence
- **Periphery:** often dependent on lower-value production
- **Semi-periphery:** combines features

Relational categories, not permanent labels establishing identical conditions for every resident.

Dependency and commodity exposure

Dependency 依附 **perspective** how **unequal external relationships** constrain development.



- Trade alone does **not** establish exploitation, permanent poverty or the impossibility of local industrial change
- **Core** 核心, **periphery** 边缘, **semi-periphery** 半边缘: investigate evidence about **value, investment and bargaining**

Applying theories: original attempt

Original economy

Invests in **roads and factories** but relies on **one foreign buyer** for most commodity-export earnings.

What would
Rostow emphasise?

What would a **dependency**
or **world-systems**
approach investigate?

Your turn

Identify one **limitation** of concluding from these facts that the economy must become wealthy or must remain poor.

Applying theories: worked comparison

Approach	Explanation and further evidence
Rostow	Investment and industrial change may support growth. Check productivity, skills and access to markets.
Dependency / world-systems	Examine concentrated buyer power, export prices and control of higher-value activities.
Limit	Neither the presence of factories nor a single buyer establishes the whole future path. Compare evidence rather than declaring one model universally true.

6

Trade and the World Economy

Comparative advantage: the sacrificed alternative

Comparative advantage 比较优势 a **lower opportunity cost**: giving up less of another good when producing a unit.

Absolute advantage more **output** from the same resources.

- A producer can have absolute advantage in **both** goods while a partner has comparative advantage in **one**
- **Complementarity** links supply in one place to demand in another; infrastructure, policies and costs also affect trade

Opportunity cost: original production task

One day's maximum output	Economy A	Economy B
Grain units, or	10	6
Cloth units	5	4

Assume constant trade-offs. Which economy has absolute advantage? Calculate cloth forgone per grain and grain forgone per cloth. Identify comparative advantage in each good.

Opportunity cost of grain: worked check

$$OC_{\text{grain}} = \frac{\text{maximum cloth}}{\text{maximum grain}}$$

$$OC_{A,\text{grain}} = \frac{5 \text{ cloth units}}{10 \text{ grain units}} = 0.5 \text{ cloth/grain}$$

$$OC_{B,\text{grain}} = \frac{4 \text{ cloth units}}{6 \text{ grain units}} \approx 0.67 \text{ cloth/grain}$$

A sacrifices less cloth per grain: comparative advantage in grain. A also has absolute advantage in both outputs, but this does not decide comparative advantage in cloth.

Opportunity cost of cloth: worked check

$$OC_{\text{cloth}} = \frac{\text{maximum grain}}{\text{maximum cloth}}$$

$$OC_{A,\text{cloth}} = \frac{10 \text{ grain units}}{5 \text{ cloth units}} = 2 \text{ grain/cloth}$$

$$OC_{B,\text{cloth}} = \frac{6 \text{ grain units}}{4 \text{ cloth units}} = 1.5 \text{ grain/cloth}$$

B sacrifices less grain per cloth: comparative advantage in cloth. A trade rate between 1.5 and 2 grain per cloth can offer gains before transport and adjustment costs; gains need not reach everyone equally.

Comparative advantage: actual exam connection

2025 Set 2 Q2(C)

Define **comparative advantage**.

Precise explanation a **lower opportunity cost** of producing the good.

- Use the original production task to distinguish this from simply having **greater output**
- The official scheme accepts **multiple formulations**: no compulsory example, calculation or two-part response for every definition

Trade policies and institutions differ

Policy / institution	Distinction
Tariffs / agreements	Import taxes can change prices. Agreements reduce specified barriers, not every rule.
WTO / EU / Mercosur	Trade rules and regional integration have different functions and powers.
OPEC	Petroleum-producer organisation, not interchangeable with a free-trade area.
Neoliberal policies	Market liberalisation, privatisation and reduced barriers; effects depend on context.

Finance links economies and policy choices

debt service: may reduce funds for public spending and investment

new lending (including IMF programmes): finance with repayment obligations and conditions

- International lending connects **domestic policy** with **external finance**
- Explain the **particular link** in the question

Assess **terms and local outcomes**: not every loan benefits or harms every group in the same way.

Outsourcing, offshoring and new industrial zones

Outsourcing 外包:
contracts work to
another organisation

Offshoring: moves
activity **abroad**

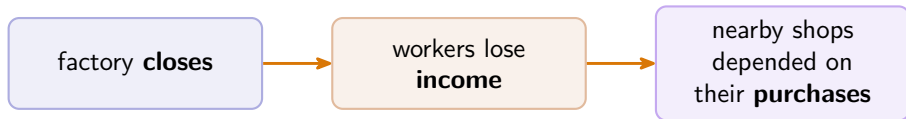
one can occur without the other

- **Special economic zones 经济特区**, free-trade zones and export-processing zones use distinctive **incentives or rules**; arrangements vary
- New manufacturing may create jobs: **wages, skills, conditions** and local supplier links determine who benefits

Production networks and local effects

Process	Mechanism and limit
Post-Fordism / just-in-time	Flexible production and lower inventories; supply disruption can stop production.
Scale / agglomeration	Fixed costs spread across output; clustering supports shared inputs but may cause congestion.
Growth poles / multiplier	Concentrated activity and spending can support linked businesses. Imports and saving limit local circulation.
Restructuring	Jobs and activities move unevenly; not every displaced worker gains a new high-paid job.

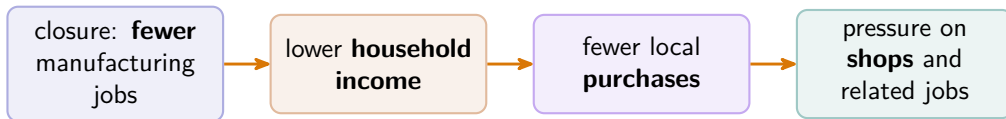
Deindustrialisation: original explanation attempt



Your turn

- 1 Explain one **direct effect** and one **local spending effect**.
- 2 Why can a growing **national** service sector coexist with hardship in **this town**?
- 3 Connect the mechanism to **2025 Set 1 Q1(D)** on core-country economies.

Deindustrialisation: worked reasoning



- National service growth need not occur in the **same place** or employ workers with the **same skills**
- The official 2025 scheme accepts **several** economic effects, including sector shifts and unemployment

Do not promise a full mark from a memorised template irrespective of the question.

7

Sustainable Development

Sustainability: assess consequences across time

Sustainable development 可持续发展 meets present needs without compromising **future generations'** ability to meet theirs.

economic

social

environmental

assess the three together

- Depletion, mass consumption, pollution and climate change can **transfer costs** across places and generations
- An **ecological footprint** estimates demand on biologically productive area under a specified method; it does not measure every harm

Solar equipment and development evidence



Solar panels in Spain

The image identifies a technology, not every outcome.

Evaluate affordability, reliability, maintenance, access and lifecycle effects.

Renewable generation can support development while still requiring evidence about social and environmental trade-offs.

Ecotourism: original project assessment

✓ more visitors;
guide jobs

✗ **water use** and
waste rise

✗ outside firms
retain most **hotel**
income

Original reserve project

Explain one **benefit** and two **limits**. What evidence is needed before calling the project **sustainable**?

Ecotourism 生态旅游 can support conservation and livelihoods; the **label** does not guarantee either.

Ecotourism: worked assessment

Effect	Mechanism and evidence
Jobs	Guide earnings can support households; check pay, seasonality and who obtains work.
Resource pressure	Visitors increase water demand and waste; compare use with capacity and management.
Income leakage	Outside ownership may limit local retention; measure local wages, purchases and conservation funding.
Judgment	Assess benefits, costs and their distribution over time, not visitor totals alone.

Goals and indicators

Sustainable Development Goals (SDGs) 可持续发展目标 shared goals and indicators: poverty, health, education, environmental conditions.

- Public transport and small-scale finance can support **particular goals**, depending on implementation and access

an **indicator**

an affected **group**

a **time period**

A solar installation or loan programme alone does **not** prove progress on every goal.

8

Exam tips

Development: retrieval

- 1 Why can the same GDP per capita coexist with different social outcomes?
- 2 How can a producer with lower output have comparative advantage?
- 3 Why might lower transport costs fail to make a factory site cheapest?
- 4 Why do more service jobs or tourists not establish benefits for everyone?

Development: retrieval checks

Question	Reasoning
Measures	Average production is distinct from health, schooling and distribution.
Trade	Compare opportunity costs, not absolute output alone.
Location	Labour and clustering savings can offset transport advantages.
Distribution	Specify who receives jobs and income, and who bears costs.

Check yourself

Original transfer task

An export-processing zone attracts factories near a port. National output rises, but wages are uneven and water pollution increases.

Explain one location advantage and one possible local spending effect. Choose evidence to assess social outcomes and sustainability. State why neither higher GDP nor the zone's existence proves every resident is better off.