

Cambridge AS & A Level · Economics 9708 · Notes

Characteristics of countries at different levels of development

A2

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Read first: [Economic development, Equity and redistribution of income and wealth](#)

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What you need to know

This topic builds on **Economic development** (how development is measured: income per head, HDI, MPI, the Kuznets curve) and on **Equity and redistribution** (the Lorenz curve as a picture of inequality). Here the question is different: what do developed, developing and least developed countries actually **look like**, in their population, their income distribution and the structure of their economy? By the end you should be able to:

1. Population growth and structure:

- measure the **birth rate**, **death rate**, **infant mortality rate** and **net migration**, and explain what causes each to change;
- explain the **optimum population** and what makes it change;
- explain the **level of urbanisation**, and why it differs between countries.

2. Income distribution: calculate the Gini coefficient and analyse Lorenz curves.

3. Economic structure:

- the **composition of employment** between the **primary, secondary and tertiary** sectors;
- the **pattern of trade** of countries at different levels of development.

Understand it

Three kinds of country

The labels come from the topic before this one; this topic fills in the detail. As a rough guide:

	Least developed / low-income	Emerging	Developed / high-income
Income per head	very low	rising fast	high
Birth and death rates	birth rate high; death rate falling but still fairly high	birth rate falling but often still high; death rate low	both low

	Least developed / low-income	Emerging	Developed / high-income
Infant mortality	high	falling	very low
Age structure	very young; high youth dependency	young, but the working-age share is growing	ageing; high old-age dependency
Urbanisation	low: most people live in rural areas	rising quickly	high: most people live in towns and cities
Income inequality (Gini)	usually high	often high, may be rising	usually lower
Employment	mostly primary (farming, often subsistence)	secondary (manufacturing) growing; farming's share falling	mostly tertiary (services)
Exports	a few primary commodities	manufactures	high-value manufactures and services
Savings, capital	low saving ratio, little capital per worker	high saving and investment	high capital per worker

Real countries do not fit every row. Some low-income countries rely on tourism (a tertiary activity), some high-income countries export oil, and some fast-growing countries have very unequal incomes. Treat the table as what is **usually** true.

Population: measuring change

Population changes for two reasons: **natural change** (births minus deaths) and **net migration** (people arriving minus people leaving). Each is measured as a **rate per 1000 people a year**, so countries of different size can be compared:

- **Crude birth rate:** live births in a year per 1000 of the population.
- **Crude death rate:** deaths in a year per 1000 of the population.
- **Infant mortality rate:** deaths of babies under one year old per 1000 **live births** in that year (not per 1000 of the population).
- **Net migration:** immigrants minus emigrants. The **net migration rate** is that number per 1000 of the population; it is negative when more people leave than arrive.

Then

$$\text{population growth (\%)} = \frac{\text{birth rate} - \text{death rate} + \text{net migration rate}}{10},$$

because a rate per 1000 divided by 10 is a percentage. A birth rate of 30, a death rate of 8 and a net migration rate of -2 give $\frac{30-8-2}{10} = 2\%$ a year.

Be careful what these rates do **not** tell you:

- A **death rate** is not a measure of how long people live. A young country can have a low death rate simply because few people are old; an ageing rich country can have a higher death rate with much longer lives. Use **life expectancy** for how long people live.
- Rates per 1000 or percentages give **no absolute numbers** unless you know the population size.
- A falling **growth rate** does not mean a falling **population**: as long as the growth rate is positive, the population is still rising, just more slowly.

Population: what changes birth and death rates

Birth rates are high in low-income countries because:

- children are an **economic asset**: they work on the family farm and support their parents in old age when there is no state pension;
- **infant mortality** is high, so families have more children to be sure some survive;
- **women's education** and paid work are limited, so the opportunity cost of time spent raising children is low;
- **contraception** and family planning are hard to get, and culture or religion may favour large families.

Birth rates **fall** as a country develops: incomes and pensions rise, infant mortality falls, girls stay in school longer and women take paid jobs, children in cities cost more to raise and earn less, and contraception spreads. Governments can push either way: limits on family size, or **pro-natalist** policies (child benefits, paid parental leave, cheap childcare) where the birth rate has fallen too far.

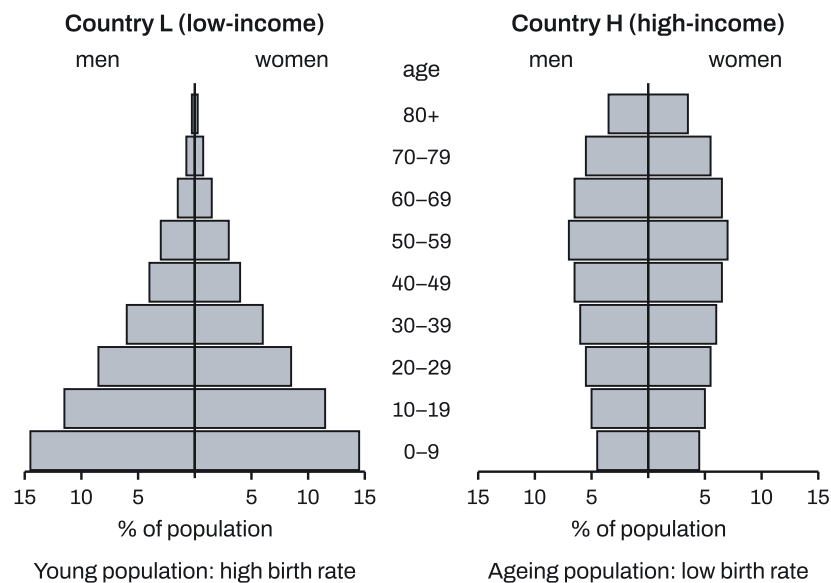
Death rates and infant mortality fall with **clean water and sanitation, better nutrition, vaccination, health care** (including care in pregnancy and at birth) and **education**, especially of mothers. They rise with famine, war, epidemics or a collapse in health services. In a developed country the death rate can rise again simply because the population is **ageing**.

Net migration is driven by **push** factors (unemployment, low wages, conflict, poor services at home) and **pull** factors (jobs, higher wages, safety, family already abroad), and limited by the host country's immigration rules. Migration usually flows from lower-income to higher-income countries:

- for the **origin country**: less unemployment, and **remittances** (money sent home) that raise family incomes and fund education; but a **brain drain** of the young and skilled;
- for the **host country**: a larger labour force, more tax revenue, younger workers to support pensions, more demand and new businesses; but more pressure on housing, health and school places, possible downward pressure on wages in some jobs, and short-run costs of training and integration.

Population: structure and the dependency ratio

The **structure** of a population is how it is made up: by **age**, by **sex**, by where people live (rural or urban), and by who works. It is shown by a **population pyramid**: the share of people in each age group, men on one side and women on the other. A question that asks about **structure** wants the age make-up, the birth rate, ageing and the dependency ratio, not just the total size.



The **dependency ratio** compares the people who mostly do not work with those of working age:

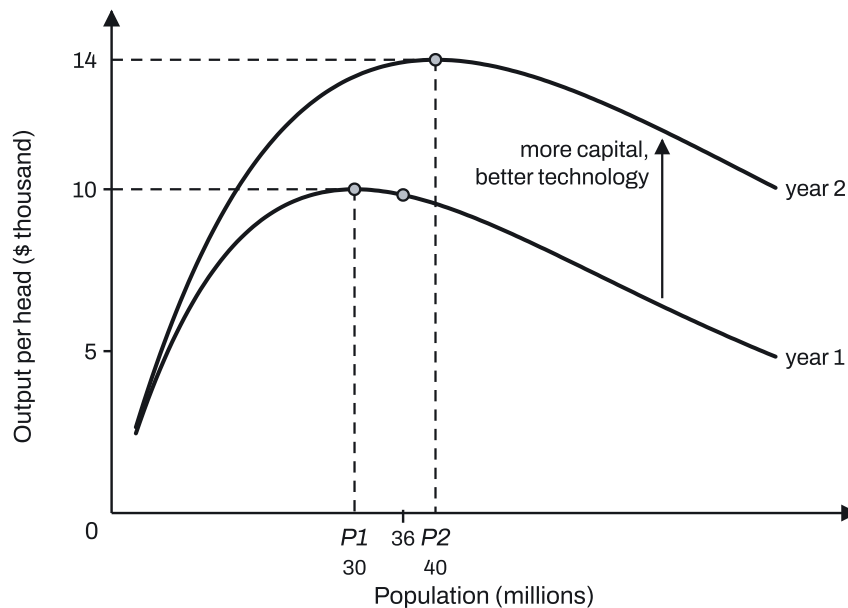
$$\text{dependency ratio} = \frac{\text{people aged 0–14} + \text{people aged 65 and over}}{\text{people aged 15–64}} \times 100.$$

- Country L's high ratio comes from **young** dependants: a high birth rate. The children need schools, health care and food now, and they will swell the labour force in 15–20 years.
- Country H's high (and rising) ratio comes from **old** dependants: a low birth rate and long lives. Each worker supports more pensioners, and spending on pensions and health care rises.

A high dependency ratio means each worker's output must support more people, so income per head is lower than it would be. But it is only one cause of low living standards: many developed countries have high dependency ratios and still high living standards, because their workers are so productive.

Optimum population

The **optimum population** is the size of population at which **output (real income) per head is at its maximum, given** the country's natural resources, stock of capital and state of technology. Both halves are needed: "the best size of population" is not a definition.



- **Below the optimum (under-population):** more people raise output per head, because there are enough workers to use the land and capital fully and to specialise.
- **Above the optimum (over-population):** extra people lower output per head. With fixed land, capital and technology, each extra worker adds less (diminishing returns), so the same output is shared among more people.
- **What moves the optimum:** anything that raises output per head at every population size shifts the curve up and usually moves its peak to the **right**: more **capital**, better **technology**, new **natural resources**, a better-educated, more **productive** labour force.
- **What does not:** a change in the **birth rate, death rate or migration** changes the **actual** population, a movement **along** the curve. It does not change the optimum.

The optimum is a useful idea but hard to use: it changes whenever technology or capital changes, and no one can measure it for a real country.

Urbanisation

The **level of urbanisation** is the percentage of the population living in urban areas:

$$\text{level of urbanisation (\%)} = \frac{\text{urban population}}{\text{total population}} \times 100.$$

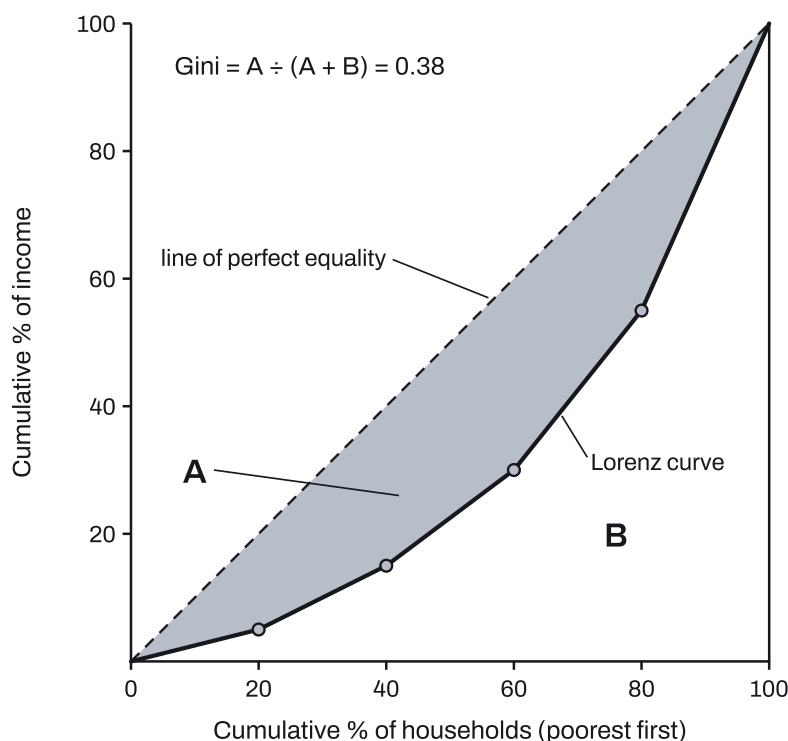
It is **low** in the least developed countries (most people farm in rural areas), **rises fast** as countries develop and is **high** in developed countries, where it rises only slowly because most people already live in towns. The rise is driven by **rural-urban migration** (people pulled by jobs in factories and services, higher wages and better schools and hospitals, and pushed by low farm incomes) and by natural increase in the towns.

- **Benefits:** firms and workers gain from being close together (bigger markets, shared infrastructure, easier hiring), so productivity is higher; services such as schools, clinics and water are cheaper to provide per person.

- **Costs:** if towns grow faster than jobs and housing, the result is **urban unemployment**, a large **informal sector**, slums without sanitation, congestion and pollution.

Income distribution: the Lorenz curve

A **Lorenz curve** plots the **cumulative percentage of households** (poorest first) on the horizontal axis against the **cumulative percentage of income** they receive on the vertical axis. If everyone had the same income, the curve would be the **45° line of perfect equality**: the poorest 20% would get 20% of income, the poorest 60% would get 60%, and so on. Real Lorenz curves sag below it. The further the curve sags, the more unequal the distribution.



Reading Lorenz curves:

- The curve **closest to the diagonal** shows the **most equal** distribution.
- A shift **towards** the diagonal means income became **more equal**: more progressive income taxes, means-tested benefits, a higher minimum wage, free state education and health care, state pensions.
- A shift **away** from the diagonal means **less equal**: cuts in top income tax rates, capital gains or inheritance taxes, a lower tax-free allowance for everyone (which takes a bigger share of low incomes), higher indirect taxes (which take a bigger share of low incomes), more long-term unemployment.
- A Lorenz curve for **wealth** usually sags further than one for **income** in the same country, because wealth builds up over generations.

Income distribution: calculating the Gini coefficient

The Gini coefficient turns the Lorenz curve into one number:

$$\text{Gini} = \frac{A}{A + B},$$

where A is the area **between** the line of perfect equality and the Lorenz curve, and B is the area **below** the Lorenz curve. $A + B$ is the whole triangle under the diagonal.

- **0** = perfect equality (the curve is the diagonal, so $A = 0$); **1** = perfect inequality (one household has all the income, so $B = 0$). It is often written as 0 to 100 instead (38 rather than 0.38).
- A **higher** Gini means **more inequality**; a fall means income is shared more equally.
- If one area is given as a multiple of the other, use the ratio: if B is three times A , then $\text{Gini} = \frac{A}{A+3A} = \frac{1}{4}$.
- With both axes running from 0 to 1, the triangle has area $\frac{1}{2}$, so $\text{Gini} = \frac{A}{0.5} = 2A$.

From income shares, you can find B by splitting the area under the curve into strips. With five equal groups of households (fifths), each strip is 0.2 wide and is a trapezium:

$$B = \sum 0.2 \times \frac{L_{\text{left}} + L_{\text{right}}}{2},$$

where L is the cumulative share of income (as a decimal) at each edge of the strip. Then $A = 0.5 - B$ and $\text{Gini} = \frac{A}{0.5}$. Example 2 works through this for the curve in the diagram.

What the Gini coefficient does **not** tell you: how **rich** the country is, how many people are in **poverty**, or **which** groups gained or lost. Two countries with the same Gini can have very different incomes per head; two Lorenz curves that cross can give the same Gini. Comparing Gini with income per head for several countries shows the Kuznets pattern from the topic before.

Economic structure: where people work

Every economy has three sectors:

- **primary**: extracting natural resources: farming, fishing, forestry, mining;
- **secondary**: making things: manufacturing, construction, energy;
- **tertiary**: services: retail, transport, finance, tourism, education, health, government.

As a country develops, employment moves **from primary to secondary to tertiary**:

1. **Least developed**: most workers are in **farming**, much of it subsistence, with little capital and low **productivity** (output per worker per period of time). Low productivity means low incomes, low savings and little investment, which keeps productivity low.
2. **Developing and emerging**: workers move into **manufacturing** in the towns, where capital and technology raise output per worker. The **primary sector's share** of employment and GDP **falls** (even if farm output still rises), and the secondary sector grows.

3. **Developed**: rising incomes are spent more and more on services (they have high income elasticity of demand), and machines replace many factory jobs, so the **tertiary** sector employs most workers. The primary sector is small but highly productive.

To spot the most developed country in a table of employment shares, look for the **smallest primary** share and the **largest tertiary** share; the least developed has the largest primary share.

Economic structure: the pattern of trade

	Low-income	Emerging	High-income
Main exports	a few primary commodities : crops, minerals, oil	manufactures , often labour-intensive, then more advanced	high-value manufactures, services (finance, education, software), capital goods
Main imports	manufactures, capital goods , fuel, sometimes food	capital goods, components, raw materials	everything, including many similar goods (intra-industry trade)
Trade partners	mostly high-income countries	worldwide	mostly other high-income countries

Relying on a few primary exports causes problems:

- **Unstable earnings**: supply varies with the weather and demand for commodities is **price inelastic**, so prices and export incomes swing widely.
- **Weak terms of trade** in the long run: demand for food and raw materials has **low income elasticity**, so as world incomes rise, demand for manufactures and services grows faster, and commodity prices tend to fall relative to them.
- **Little value added** at home: raw goods are exported and processed abroad.

Low-income countries also tend to have a **low saving ratio** (most income goes on necessities), a **low capital–output ratio** (production uses much labour and little capital per unit of output), often a **high ratio of government debt to GDP** (a small tax base and borrowing for development), and borrow or receive aid rather than export capital.

Key facts and formulas

There is no formula list in the 9708 exam, so everything here is "Learn it".

Formula	Status
Crude birth rate = $\frac{\text{live births in a year}}{\text{population}} \times 1000$	Learn it
Crude death rate = $\frac{\text{deaths in a year}}{\text{population}} \times 1000$	Learn it

Formula	Status
Infant mortality rate = $\frac{\text{deaths of babies under one year old}}{\text{live births in the year}} \times 1000$	Learn it
Net migration rate = $\frac{\text{immigrants} - \text{emigrants}}{\text{population}} \times 1000$	Learn it
Population growth (%) = $\frac{\text{birth rate} - \text{death rate} + \text{net migration rate}}{10}$, with all three rates per 1000	Learn it
Dependency ratio = $\frac{\text{people aged 0–14} + \text{people aged 65 and over}}{\text{people aged 15–64}} \times 100$	Learn it
Level of urbanisation (%) = $\frac{\text{urban population}}{\text{total population}} \times 100$	Learn it
Optimum population: the population at which real output per head is at its maximum, given resources, capital and technology	Learn it
Gini coefficient = $\frac{A}{A+B}$: A is the area between the line of perfect equality and the Lorenz curve, B the area below the Lorenz curve; 0 is perfect equality, 1 perfect inequality	Learn it
Gini coefficient = $2A$ when both Lorenz axes run from 0 to 1 (the triangle under the diagonal has area $\frac{1}{2}$)	Learn it
Area under a Lorenz curve from fifths: $B = \sum 0.2 \times \frac{L_{\text{left}} + L_{\text{right}}}{2}$, with L the cumulative income share as a decimal	Learn it

How to do it

We tagged 47 questions for this topic, from March 2021 to November 2025 (38 different; 9 are repeats across paper variants): 36 Paper 3 multiple choice and 11 Paper 4 data-response and essay questions. One essay ([9708/42/F/M/21 Q5](#)) has parts of two types, so the counts add up to 48.

Question type	Questions
Read Gini coefficients and Lorenz curves (MCQ)	12
Recognise the characteristics of low-income, emerging and developed countries (MCQ)	10
Calculate the Gini coefficient from areas (MCQ)	5
Interpret population data and changes (MCQ)	5
Evaluate whether one characteristic is the main cause of low living standards (essay)	5
Optimum population (MCQ)	4
Gini coefficient and Lorenz curve in a data response	3
Population in a data response: optimum, structure, ageing, migration	2

Question type	Questions
Distinguish the characteristics of developed and developing countries (12-mark essay part)	2

1. Read Gini coefficients and Lorenz curves (12 questions)

1. **Lower Gini = more equal**; a curve **closer to the diagonal** = more equal. A Gini moving **towards zero** means income is being shared more equally.
2. Gini figures may be given from 0 to 100; read them the same way (24.7 is more equal than 32.7).
3. **Causes of a fall** in the Gini (curve moves in): a higher minimum wage, a more progressive income tax, means-tested benefits, state pensions, free public education. **Causes of a rise** (curve moves out): lower capital gains, inheritance or top income taxes, a cut in the tax-free allowance for everyone, higher indirect taxes, more long-term unemployment.
4. **"Least likely** to have caused" a shift: work out which way the curve moved first, then pick the option that would push it the **other** way.
5. **Income and wealth on one diagram**: the wealth curves are the ones further from the diagonal. Move each curve the way the question says (more unequal = further out).
6. **What you cannot conclude** from Gini figures: average income, income per head, or the number in poverty. A Gini of 0.75 is very unequal, not "equal".
7. **Gini against GDP per head** on one graph: read **across** for income level and **up** for inequality. The **least developed** country is the one with the **lowest GDP per head**, whatever its Gini.

Examples: [9708/33/O/N/25 Q30](#) (a falling Gini is best explained by a higher minimum wage), [9708/32/O/N/24 Q29](#) (the shift was away from equality, so a more progressive income tax is the least likely cause), [9708/32/F/M/25 Q26](#) (the country furthest left on the graph is the least developed).

2. Recognise the characteristics of low-income, emerging and developed countries (10 questions)

Use the table in "Three kinds of country". Check **every** item in an option: one wrong item makes the whole option wrong.

- **Low-income**: high birth **and** death rates, high infant mortality, low productivity, large primary sector, low real income per head, high Gini, low saving ratio, low capital–output ratio, high government debt to GDP.
- **Emerging**: high growth potential, rising access to education, birth rates that can still be high, and agriculture's share of GDP **falling**, not growing.
- **More developed**: low death rate, low Gini, large tertiary sector, smallest primary share; life expectancy **rises** and the population growth rate **falls** as a country develops.

Traps: "a large tertiary sector" is not a low-income feature; "a low birth rate" is not; "high GDP" is not.

3. Calculate the Gini coefficient from areas (5 questions)

1. Find which labelled area lies **between** the diagonal and the Lorenz curve (A) and which lies **below** the curve (B).
2. $\text{Gini} = \frac{A}{A+B}$: the gap area over the **whole** triangle. Never $\frac{B}{A+B}$ (that is $1 - \text{Gini}$) or $\frac{A}{B}$.
3. If the gap is split into two areas (say F and G , with H below the curve), add them: $\frac{F+G}{F+G+H}$.
4. If one area is a multiple of the other, use the ratio: $B = 3A$ gives $\frac{1}{4}$.

4. Interpret population data and changes (5 questions)

1. **Natural increase** = birth rate – death rate; add net migration for the growth rate; divide by 10 for a percentage.
2. **Infant mortality** compares directly: the highest rate has the highest share of babies dying in their first year.
3. Do not read **life expectancy** from a death rate, or **numbers of people** from rates or percentages.
4. **Urbanisation data**: separate the **level** (the % urban) from its **rate of increase**, and from the **total** urban population. More developed regions already have a high level, so it rises least.
5. **Effects of a change**: a high birth rate with falling life expectancy keeps the population young, so more schools are needed and the **working population becomes a smaller share**; it does not create an ageing population.
6. **Quickest policy** to add workers when the workforce is shrinking: **immigration** of labour. More births add workers only after 15–20 years, and new technology takes time.

5. Evaluate whether one characteristic is the main cause of low living standards (5 questions)

Paper 4 essays: 25 marks in 2021–2022 (levels L1–L4); 20 marks since 2023 (Table A, knowledge, understanding and analysis, 14 marks; Table B, evaluation, 6 marks). The characteristic changes: a **high dependency ratio**, reliance on **primary exports**, **low productivity**, **population** growth. The plan:

1. **Define** the characteristic (dependency ratio, primary sector, productivity as output per worker per period of time) and **standard of living** (material: real income per head; non-material: health, education, environment).
2. **Explain why** developing countries have it (high birth rate; lack of capital and skills; weather and inelastic demand for primary goods).
3. **Analyse 2–3 chains** from it to low living standards. Dependency ratio: fewer workers per person → less output per head, low tax base → less spending on schools and health. Primary exports: unstable prices and incomes, low value added, weak terms of trade → low growth. Productivity: low output per worker → low wages, low savings → little investment.
4. **Evaluate**: name **other causes** (low saving and investment, poor infrastructure, weak education, inequality, debt, corruption) and weigh which matters most; show it is not always true (some developed countries have high dependency ratios; some developing countries rely on tourism, not commodities);

question the link to living standards (growth may not reach the poor; living standards include health and the environment; higher productivity from imported capital may cut jobs, profits may go abroad, the government may not spend the tax revenue on services).

5. **Conclude** on "main" or "to what extent": say which part of the statement holds, for which kind of country, and what else would need to change.

Statements with **two halves** (rising population in developing countries **and** falling population in developed ones) need both halves with equal weight before a judgement.

6. Optimum population (4 questions)

1. Optimum = population where **output per head is greatest, given** resources, capital and technology.
2. **Raises the optimum**: more capital, better technology, more natural resources, higher labour productivity.
3. **Does not**: a higher birth rate, a lower death rate, a lower retirement age, lower productivity. Population changes are movements **along** the curve.
4. A diagram where the whole curve **shifts up** cannot be explained by a rise in population.

7. Gini coefficient and Lorenz curve in a data response (3 questions)

Point-marked, 3–6 marks a part.

- **Describe or explain** the Gini coefficient: it measures how unequally income (or wealth) is distributed (1); its range is 0 to 1 (or 0 to 100) (1); 0 is perfect equality and 1 perfect inequality (1).
- **"With the help of a diagram"**: draw the Lorenz curve with both axes labelled (cumulative % of households, cumulative % of income), the line of perfect equality and the curve below it, with areas *A* and *B* marked (2); give $\text{Gini} = \frac{A}{A+B}$ (1); then the meaning and the 0 and 1 ends (1 each).
- **Use a table of Gini figures**: quote the figures (up to 2 marks for using the data), say whether they rise or fall, and test the claim in the question. A pattern across a handful of countries does not prove **cause**; check whether the countries with the highest Gini really have the worse outcome. A world average and one country's figures can move in opposite directions without contradicting each other.

8. Population in a data response (2 questions)

- **Optimum population** (2): output per head at its maximum (1), given resources and technology (1).
- **Population structure** (3): birth rate falling, an ageing population, a rising dependency ratio, one mark each. Then read the graph: if the **growth rate** is falling but still positive, the population is still **rising**.
- **Effects of an ageing population on GDP** (6): for each change, identify it (1), develop it (1) and finish with the effect on GDP (1):
 - fewer young people → a smaller future labour force and fewer new entrepreneurs and innovators → lower output and productivity growth, so GDP grows more slowly;
 - more older people → more spending on pensions, health and care (transfer payments) → higher taxes or a bigger budget deficit, and less saving and investment → a negative effect on GDP.

- **Effects of immigration on the host country (7):** up to 3 benefits (bigger labour force, more taxes, support for pensions, more demand, new firms), up to 3 costs or missing information (housing, health and school places, wage pressure in some jobs, integration costs), then a justified conclusion (1).

9. Distinguish the characteristics of developed and developing countries (2 questions)

12-mark essay parts in 2021–2022, marked in levels: the top level (9–12) needs **three or more** characteristics, each explained, with the **links** between them analysed; two characteristics reach about 7–8.

1. Pick three or four: income per head, population growth and age structure, employment by sector, productivity, education and health, urbanisation, infrastructure, foreign debt.
2. For each: state the difference, then explain **why** (cause) and what it **leads to**.
3. **Link** them: high birth rate → young population → high dependency ratio → low savings; large primary sector → low productivity → low incomes → low savings → little capital.
4. End with which difference matters most. For "productivity versus production": production is the **total** output in a period; productivity is output **per unit of input** (per worker) **in a period of time**.

Worked examples

Example 1

The table shows population data for three countries in one year (all rates per 1000).

Country	Birth rate	Death rate	Infant mortality rate	Net migration rate
P	32	9	48	–6
Q	11	10	4	+7
R	24	6	22	–3

What can be concluded?

A Country P's population grew fastest. **B** Country Q's population fell, because its birth rate was only just above its death rate. **C** Country R had the largest number of infant deaths. **D** People in country Q have the shortest lives, because it has the highest death rate. **[1]**

Growth: $P = \frac{32-9-6}{10} = 1.7\%$; $Q = \frac{11-10+7}{10} = 0.8\%$; $R = \frac{24-6-3}{10} = 1.5\%$. **A (1).**

B ignores Q's net immigration: its population rose. C needs absolute numbers, and P's infant mortality rate is higher anyway. D reads a death rate as life expectancy; Q's death rate is probably high because its population is old.

Example 2

In a country, the poorest fifth of households receives 5% of total income, the second fifth 10%, the third fifth 15%, the fourth fifth 25% and the richest fifth 45%.

Calculate the Gini coefficient. [4]

Cumulative shares of income: 0, 0.05, 0.15, 0.30, 0.55, 1.00 (1). These are the points on the Lorenz curve in the diagram above.

Area below the curve, five strips each 0.2 wide:

$$B = 0.2 \times \left(\frac{0 + 0.05}{2} + \frac{0.05 + 0.15}{2} + \frac{0.15 + 0.30}{2} + \frac{0.30 + 0.55}{2} + \frac{0.55 + 1}{2} \right) = 0.2 \times 1.55 = 0.31 \text{ (1)}$$

Area between the line of equality and the curve: $A = 0.5 - 0.31 = 0.19 \text{ (1)}$.

$$\text{Gini} = \frac{A}{A+B} = \frac{0.19}{0.5} = 0.38 \text{ (1)}.$$

Marks: 1 + 1 + 1 + 1 = **4/4**.

Example 3

Extract: Between 1995 and 2025 the birth rate in Tarvonía fell from 19 to 8 per 1000. People aged 65 and over rose from 7% to 18% of the population, while people of working age (15–64) fell from 68% to 62%.

Using the extract, analyse two ways in which these changes in Tarvonía's population structure are likely to affect its real GDP. [6]

The falling birth rate means fewer young people are entering the labour force each year (1). With fewer new workers, and fewer young people starting businesses and bringing new ideas, the economy's productive capacity grows more slowly (1), so real GDP growth falls and real GDP may eventually fall (1).

The share of people aged 65 and over has risen from 7% to 18%, so the dependency ratio has risen: 32 dependants per 68 workers (about 47 per 100) became 38 per 62 (about 61 per 100) (1). The government must spend more on pensions and health care, financed by higher taxes on fewer workers or by a bigger budget deficit, and retired people save less (1). Higher taxes reduce work incentives and less saving means less investment, so the growth of aggregate supply, and of real GDP, slows (1).

Marks: 3 + 3 = **6/6** (identify, develop, effect on GDP, for each change).

Example 4

"Low-income countries stay poor mainly because they save and invest too little." Evaluate this view. [20]

Model answer (paragraph plan):

1. **Definitions and context:** a low-income country (low real GNI per head; usually a large primary sector, high birth rate, low productivity); the saving ratio (saving as a share of income); investment (spending on capital goods); productivity (output per worker per period of time). (AO1)
2. **Why saving is low:** incomes are close to subsistence, so almost everything is spent on necessities; weak banks and little trust in them mean savings are kept in cash, land or livestock; a high dependency ratio means many mouths per earner. (AO2)
3. **The chain to low incomes:** low saving → little finance for investment → little capital per worker and poor infrastructure → low productivity → low incomes → low saving again. Low income is both a cause and a result. An AD/AS diagram with LRAS hardly shifting, or a PPC that barely moves out, shows the limit on growth. (AO2)
4. **Other characteristics that keep incomes low:** rapid population growth and a high dependency ratio spread output over more people; reliance on a few primary exports exposes earnings to price swings and weak terms of trade; poor education and health limit the quality of labour; urbanisation can outrun jobs, leaving a large informal sector; high inequality means growth may not reach most people. (AO2)
5. **Weighing the view:** saving is not the only source of finance: FDI, aid and remittances can fund investment, so a country can invest more than it saves. And investment does not guarantee growth: capital may be wasted on poor projects, lost to corruption, or used by foreign firms that send profits home. Education and institutions decide how productive new capital is. (AO3)
6. **Evidence from patterns of development:** countries that grew fast from low incomes usually had high saving and investment, but they also moved workers out of farming into manufacturing for export, and invested in schooling. Saving was necessary but worked alongside structural change. (AO3)
7. **Conclusion:** low saving and investment are a central part of the cycle that keeps incomes low, so the view is largely right; but they are as much a result of poverty as a cause, and on their own they are not enough. The **main** cause is the low productivity that low investment, poor education and a narrow, primary-based economy produce together. (AO3)

Table A Level 3 (11–14): accurate definitions, developed chains linking saving, investment, productivity and income, and other characteristics analysed. Table B Level 2 (4–6): the view weighed on both sides (other sources of finance, other causes, quality of investment) and a justified conclusion that answers "mainly".

20/20.

Common mistakes

- **Thinking a higher birth rate raises the optimum population.** In June 2024 (9708/33/M/J/24 Q29, also Paper 31) nearly half of candidates chose a rise in the birth rate, and only a little more than a third chose the correct answer, a rise in the stock of capital. A higher birth rate changes the actual population, not the optimum.
- **Defining the optimum population with a synonym.** In March 2025 (9708/42/F/M/25 Q1(a)) "the best" or "the ideal" population scored nothing; full marks needed output per head at its highest **and** given resources and technology.

- **Describing size when asked about structure.** In the same paper, part (b), most candidates described the total population instead of its structure (birth rate, ageing, dependency ratio), and said the population was falling when the graph showed only its **growth rate** falling. In part (d), almost all discussed a policy the question did not ask about, and few wrote a conclusion.
- **Mixing up 0 and 1 on the Gini coefficient, and equality with equity.** In June 2024 (9708/43/M/J/24 Q1(a), also Paper 41) a number of candidates confused what 0 and 1 represent. 0 is perfect equality; 1 is perfect inequality; a rise means **more** inequality.
- **Claiming the data prove a link.** In part (c) of the same question, a number of candidates said the table showed greater inequality linked to lower female literacy and more poverty, when the figures showed no such pattern. Check the numbers before agreeing with a claim, and do not infer cause from a few countries.
- **Writing a general essay instead of the one asked.** In November 2022 (9708/43/O/N/22 Q6) many answers discussed the causes of low living standards in general without focusing on the dependency ratio; good answers noted that many developed countries also have high dependency ratios but high living standards, and compared it with other causes.
- **Treating all developing countries as primary exporters.** In March 2022 (9708/42/F/M/22 Q5) good answers pointed out that some developing countries rely on services such as tourism, then dealt in turn with each part of the statement: reliance on primary exports, low growth, and low living standards.
- **Leaving out "per period of time", or one half of a question.** In March 2021 (9708/42/F/M/21 Q5) the most common weakness in defining production and productivity was no mention of a time period; in part (b) some answers dealt with only one of the two halves.

How to get the marks

- **Multiple choice:** for every option, check each item against the usual characteristics; for Lorenz and Gini questions, decide first which way the curve moved. Read "not", "least likely" and "most likely" carefully.
- **Definitions earn the first marks:** birth rate and death rate (per 1000 per year), infant mortality (per 1000 live births), net migration, optimum population (maximum output per head, given resources and technology), dependency ratio, urbanisation, Gini coefficient (0 to 1, what 0 and 1 mean), Lorenz curve, primary, secondary and tertiary sectors, productivity (output per worker per period of time).
- **Diagrams:** a Lorenz curve needs both axes labelled as cumulative percentages (households; income), the line of perfect equality, the curve below it, and the areas used in $Gini = \frac{A}{A+B}$. An optimum population diagram has output per head against population, with the optimum at the peak.
- **"Analyse"** needs a chain for each point: identify the change → explain the mechanism → finish with the effect asked about (GDP, living standards, inequality). In 6-mark parts, two complete chains of three steps earn full marks.
- **"Consider", "assess", "evaluate", "to what extent"** need both sides, then a justified judgement. Use the data: quote figures, calculate changes, and say what information is **missing**.
- **Read the question's key word:** "structure", "rate" and "level" mean different things; "the government's policy" means that policy, not one you prefer.

- **Essays (20 marks since 2023):** Table A (14) rewards accurate definitions and developed analysis of every part of the question; Table B (6) rewards evaluation that weighs the stated cause against others and a conclusion that answers "main" or "to what extent". In 2021–2022 the essays were worth 25 marks (some split into 12- and 13-mark parts) and marked in levels; the top level needed three or more characteristics with their links, or both sides and a conclusion.

Quick check

1. A country has 52 million people. In one year there are 1.3 million births, 0.39 million deaths, 0.05 million immigrants and 0.18 million emigrants. Find the birth rate, the death rate and the net migration rate (per 1000), and the population growth rate as a percentage.
2. A country has 9.6 million people aged 0–14, 28 million aged 15–64 and 2.4 million aged 65 and over. Find the dependency ratio. If the number aged 65 and over doubles while the other groups stay the same, find the new ratio.
3. On a Lorenz diagram with both axes from 0 to 100%, the area between the line of perfect equality and the Lorenz curve is 1400 (in units of % × %). Find the Gini coefficient. After a change in policy the area rises to 1900; find the new Gini coefficient, say what happened to inequality and name one policy that could cause it.
4. Output per head in a country is greatest at a population of 45 million; its population is 38 million. Is the country under-populated or over-populated? What is likely to happen to output per head as the population grows to 45 million? Name one change that would raise the optimum. **[3]**
5. The table shows the percentage of employment in each sector in three countries. Which is most likely to be low-income, which emerging and which high-income? Explain briefly.

Country	Primary (%)	Secondary (%)	Tertiary (%)
J	62	12	26
K	3	20	77
L	28	34	38

Answers

1. Birth rate = $\frac{1.3}{52} \times 1000 = 25$; death rate = $\frac{0.39}{52} \times 1000 = 7.5$; net migration = $0.05 - 0.18 = -0.13$ million, so the rate is $\frac{-0.13}{52} \times 1000 = -2.5$ per 1000. Growth = $\frac{25-7.5-2.5}{10} = 1.5\%$ a year.
2. $\frac{9.6+2.4}{28} \times 100 = 42.9$. With 4.8 million aged 65 and over: $\frac{9.6+4.8}{28} \times 100 = 51.4$.
3. The triangle under the diagonal has area $\frac{1}{2} \times 100 \times 100 = 5000$, so Gini = $\frac{1400}{5000} = 0.28$. Afterwards $\frac{1900}{5000} = 0.38$: the curve moved away from the diagonal, so inequality rose. A possible cause: a cut in the top rate of income tax (or a rise in indirect taxes, or cuts in means-tested benefits).
4. Under-populated, because the population is below the optimum (1). Output per head is likely to **rise** as the population grows towards 45 million, since the extra workers make fuller use of land and capital and allow more specialisation (1). More capital, better technology, new natural resources or a more productive labour force would raise the optimum (1).
5. J is most likely low-income: most workers (62%) are in the primary sector, mainly farming. L is most likely emerging: the primary share has fallen to 28% and manufacturing (34%) has grown. K is most likely high-income: the smallest primary share (3%) and the largest tertiary share (77%).

Past questions to try

- **9708/33/O/N/24 Q29**: the Gini coefficient from the areas on a Lorenz diagram.
- **9708/32/M/J/24 Q29**: drawing conclusions from birth, death and infant mortality rates.
- **9708/32/F/M/25 Q27**: what does and does not change the optimum population.
- **9708/43/O/N/22 Q6**: a 25-mark essay on whether a high dependency ratio is the main reason for low living standards.