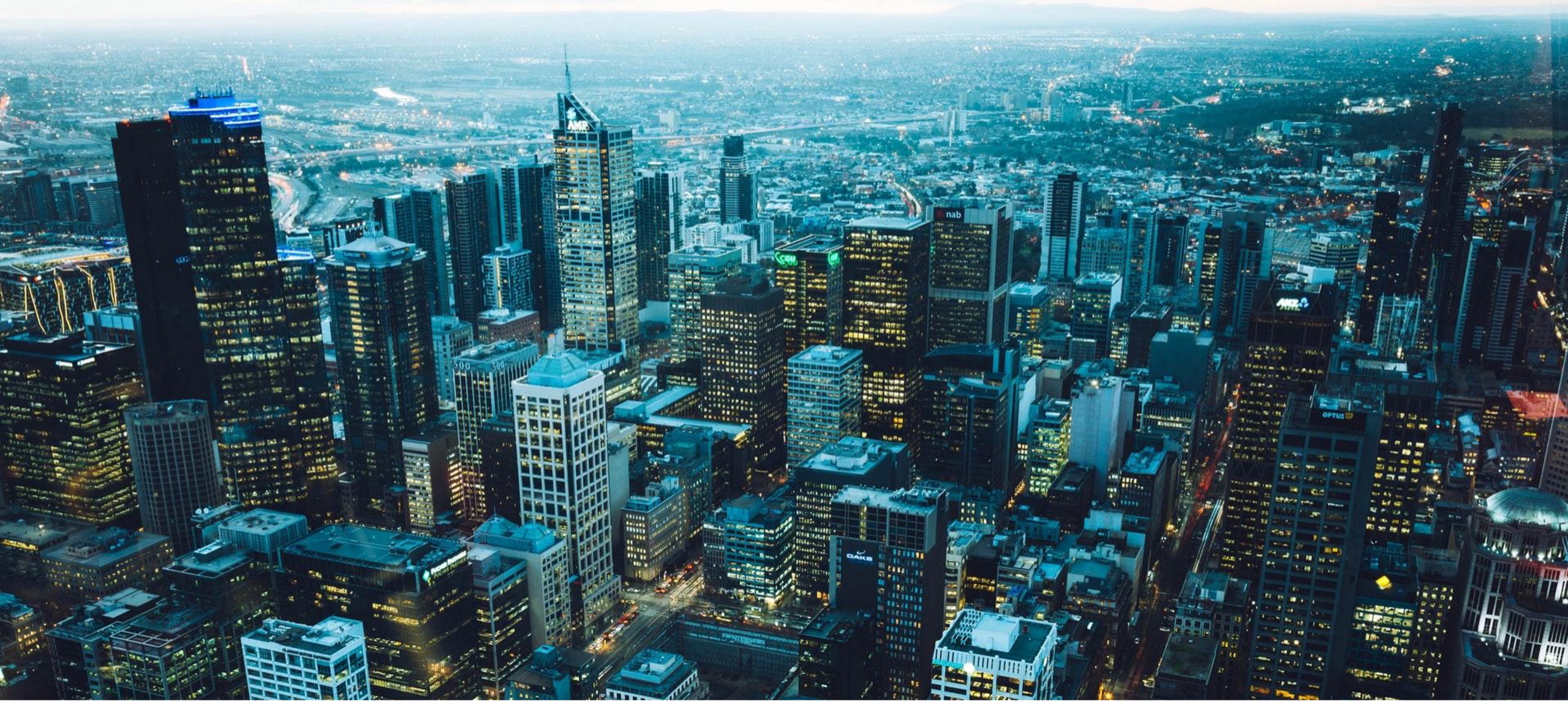


4.8 Measuring development

Learning objectives

4.8 Measuring development	Depth	Diagrams and calculations
The multidimensional nature of economic development	AO2	
Single indicators • GDP/GNI per person (per capita) at PPP • Health and education indicators • Economic/social inequality indicators • Energy indicators • Environmental indicators	AO2	

Learning objectives

4.8 Measuring development	Depth	Diagrams and calculations
Composite indicators • Human Development Index (HDI) • Gender Inequality Index (GII) • Inequality adjusted Human Development Index (IHDI) • Happy Planet Index	AO2	
Strengths and limitations of approaches to measuring economic development	AO3	
Possible relationship between economic growth and economic development	AO3	

Economic Development

Economic development refers to the improvement in the **standards of living** and the **quality of life** for an economy as a whole.

Standard of Living

Standard of living refers to quantifiable metrics measuring the level of wealth, comfort, goods and services available to an economic area. These include:

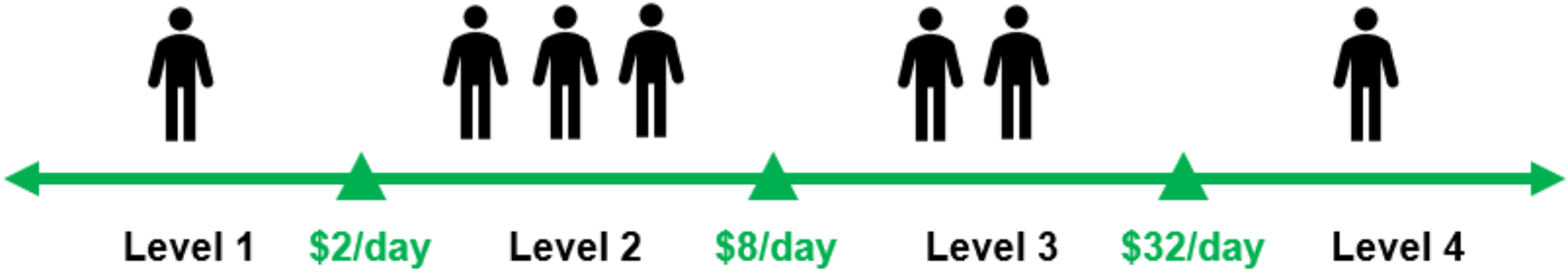
- Income per person
- Employment opportunities
- Cost of goods and services
- Poverty rates
- Economic inequality
- Accessibility to basic goods and services
- Quality of healthcare, education, housing
- Economic and political stability
- Political and religious freedom
- Environmental quality
- Safety and security

Quality of Life

Quality of life refers to a subjective concept which measures the level of happiness in an economic area. Factors contributing to this may include:

- Freedom from slavery and torture
- Equal protection under the law
- Freedom from discrimination
- Freedom of movement
- Right to marry and to have a family
- Right to privacy
- Freedom of thought
- Freedom of religion
- Free choice of employment
- Right to fair pay
- Right to vote
- Right to education

Distribution of Global Population in Billions of People



Real world example – Dollar Street

Read about the four levels of income. Then, with Gapminder's Dollar Street, use examples and pictures to compare and contrast the **standards of living** and **quality of life** amongst the 4 levels of economies.

Introduction

There are two types of indicators which can be used to measure development. They include:

Single Indicators

Composite Indicators

Strengths and limitations of measuring economic development

Due to the multidimensional nature of development, any single measure of development will have its shortcomings:

- Some indicators may measure a strength of a country, overestimating economic development as a whole
- Economic development is a qualitative process and both single and composite indicators may fail to quantify it.

Strengths and limitations of measuring economic development

Due to the multidimensional nature of development, any single measure of development will have its shortcomings:

- Development indicators can not measure political and sociocultural improvements
- Data errors and omissions will skew the value of indicators, especially in countries with poor access to data.

Strengths and limitations of measuring economic development

As a result, economists can find it challenging to use only one indicator to measure and compare development.

There are numerous indicators which measure development that interrelate and complement one another, whether they are single or composite indicators of economic development.

Single Indicators

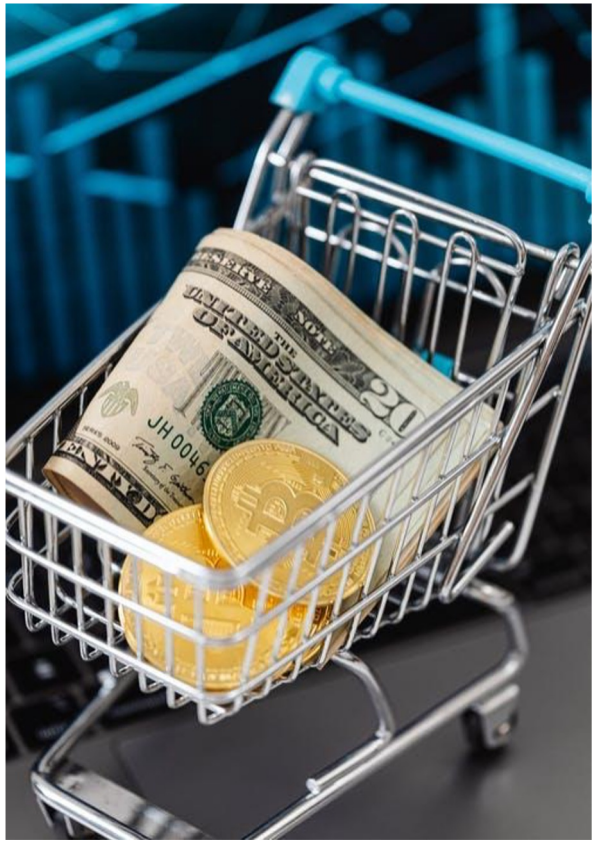
Single indicators measure one specific characteristic of development. Owing to the multidimensional nature of economic development, many single indicators are used in conjunction to measure a country's development. They include:

- GDP/GNI per person (per capita) at PPP
- Health and education indicators
- Economic/social inequality indicators
- Energy indicators
- Environmental indicators.

Single Indicators – GDP/GNI per capita at PPP

Purchasing power refers to the amount of goods and services that can be bought with one unit of a currency.

Purchasing power parity (PPP) refers to the exchange rate needed to buy the same basket of goods and services in different countries using the same amount of money, i.e., the exchange rate needed for the same purchasing power across countries.



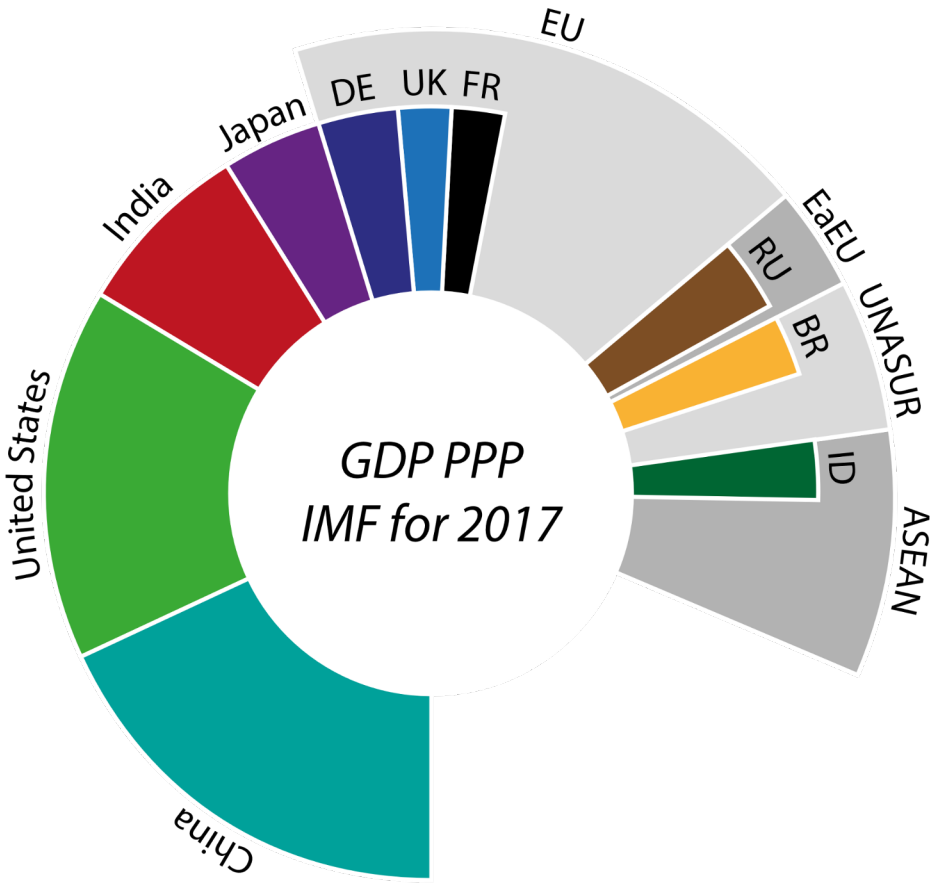
Still confused? Refer to *3.1 Measuring economic activity and illustrating its variations.*

Single Indicators – GDP/GNI per capita at PPP

GDP/GNI per capita at PPP measures the average income of an economy adjusted for differences in purchasing power and is the most common measure for the standards of living in a nation.

GNI per capita is a better indicator of the **standards of living** of a country as it represents the average income received by *its citizens*.

A higher GDP/GNI per capita at PPP means that individuals and families can purchase more goods and services to improve their standards of living.

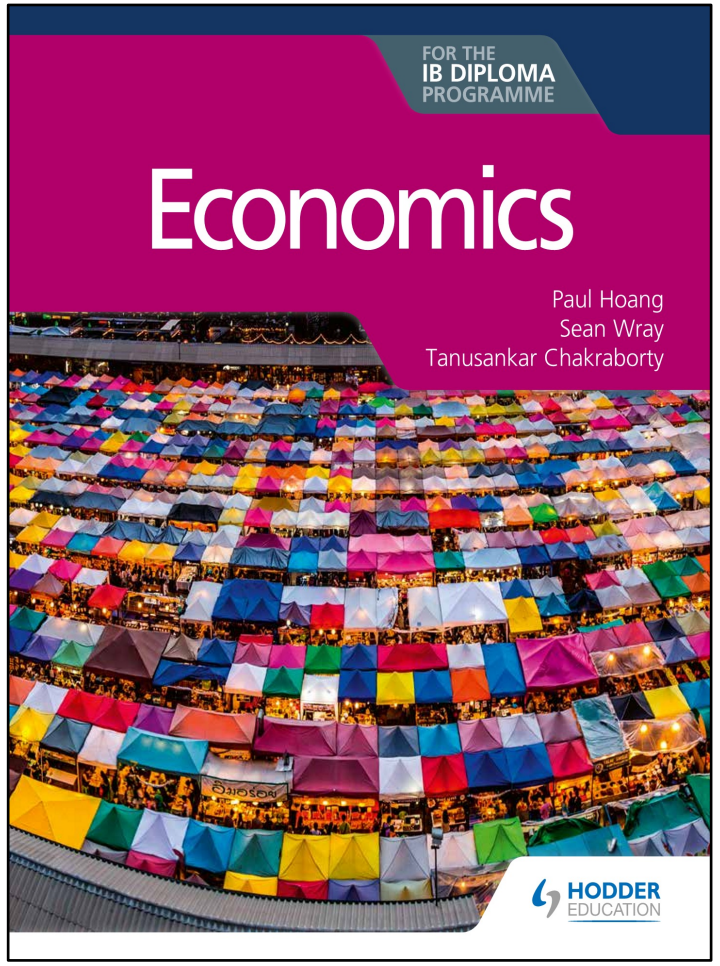


Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

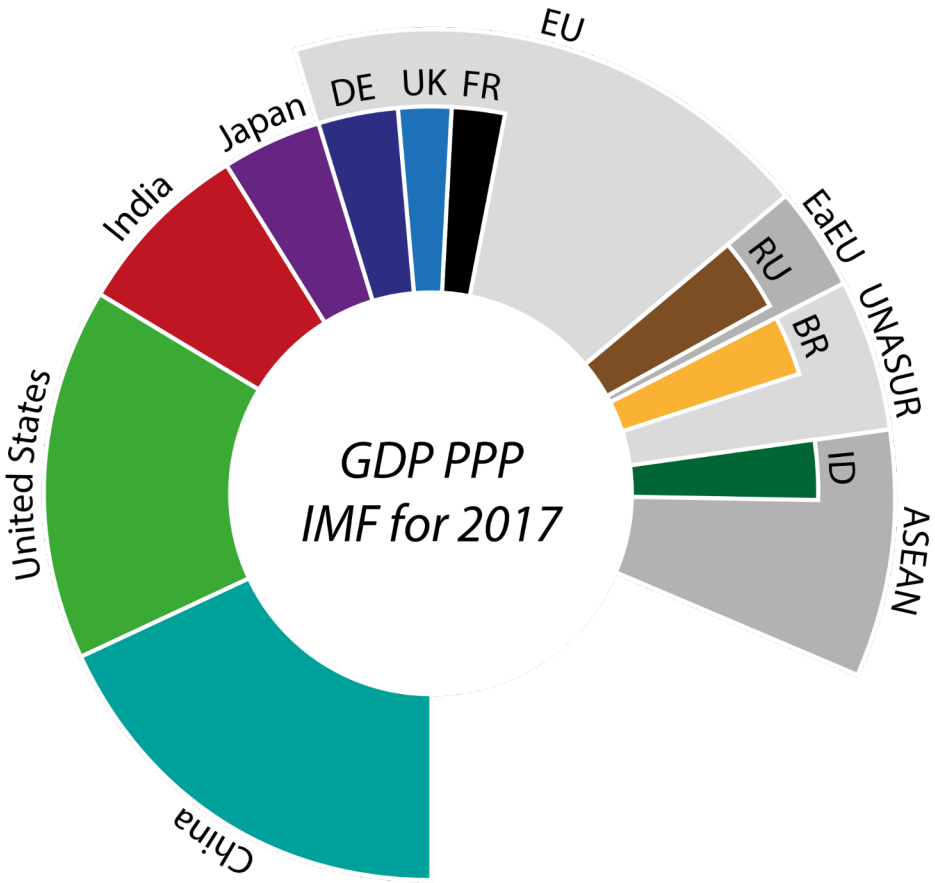
- Page 561
- Paper 2 and 3 Exam Practice Question 34.4
- [2 marks]



Single Indicators – GDP/GNI per capita at PPP

While economic growth is a necessary component of development, it does not always lead to economic development. Growth may be accompanied with:

- Negative externalities of consumption & production
- Degradation of natural resources and common access resources
- Structural unemployment due to sectorial changes.

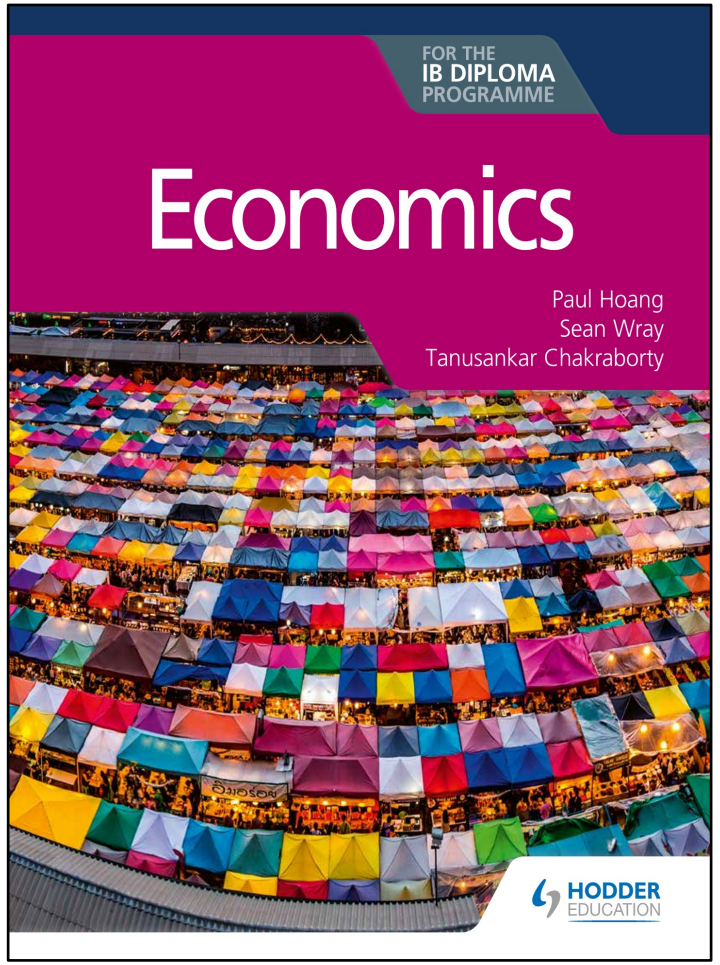


Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

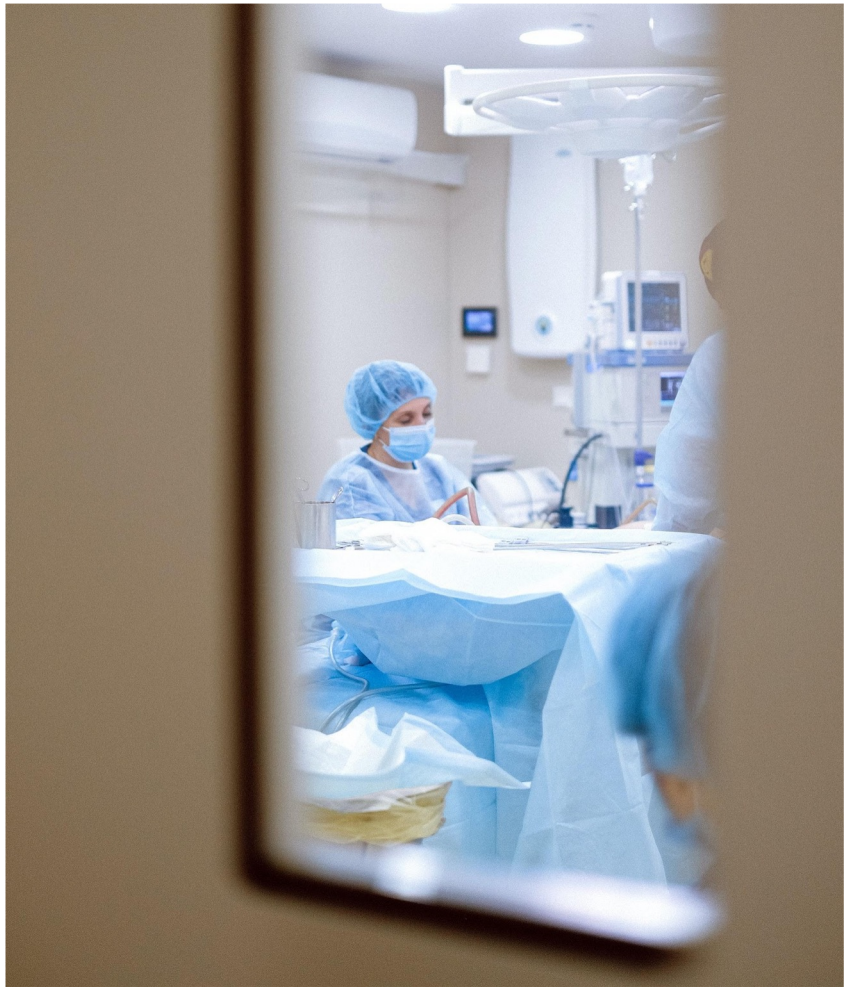
- Page 546
- Paper 2 and 3 Exam Practice Question 34.1, 34.2
- [2 marks] + [2 marks]



Single Indicators – Health and education indicators

Health indicators measure health-related determinants which impacts one's quality of life, such as:

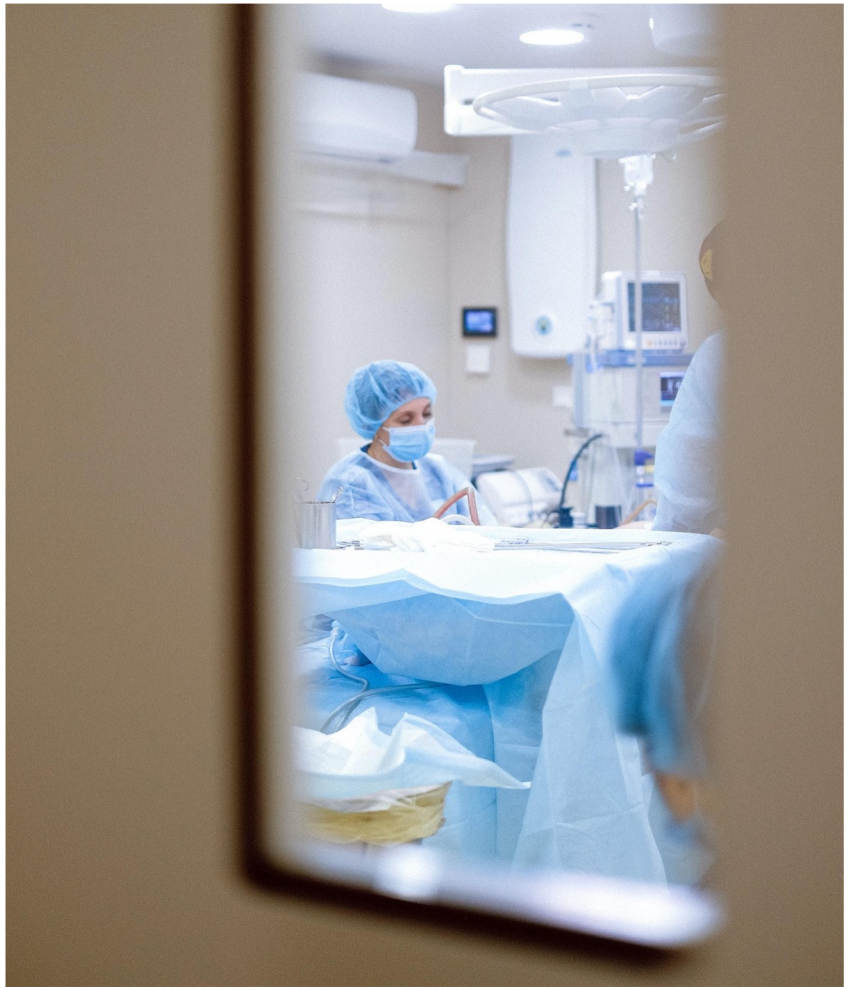
- Life expectancy at birth
    - Quality-adjusted life years
- Healthcare expenditure (as a percentage of GDP)
- Infant mortality rates.



Single Indicators – Health and education indicators

Life expectancy at birth indicates the average number of years one is expected to live. An alternative includes **quality-adjusted life years** which estimate the average number of years one is in ‘perfect health’.

Infant mortality refers to the number of infant deaths from the time of birth until the age of one, as a proportion of all births.

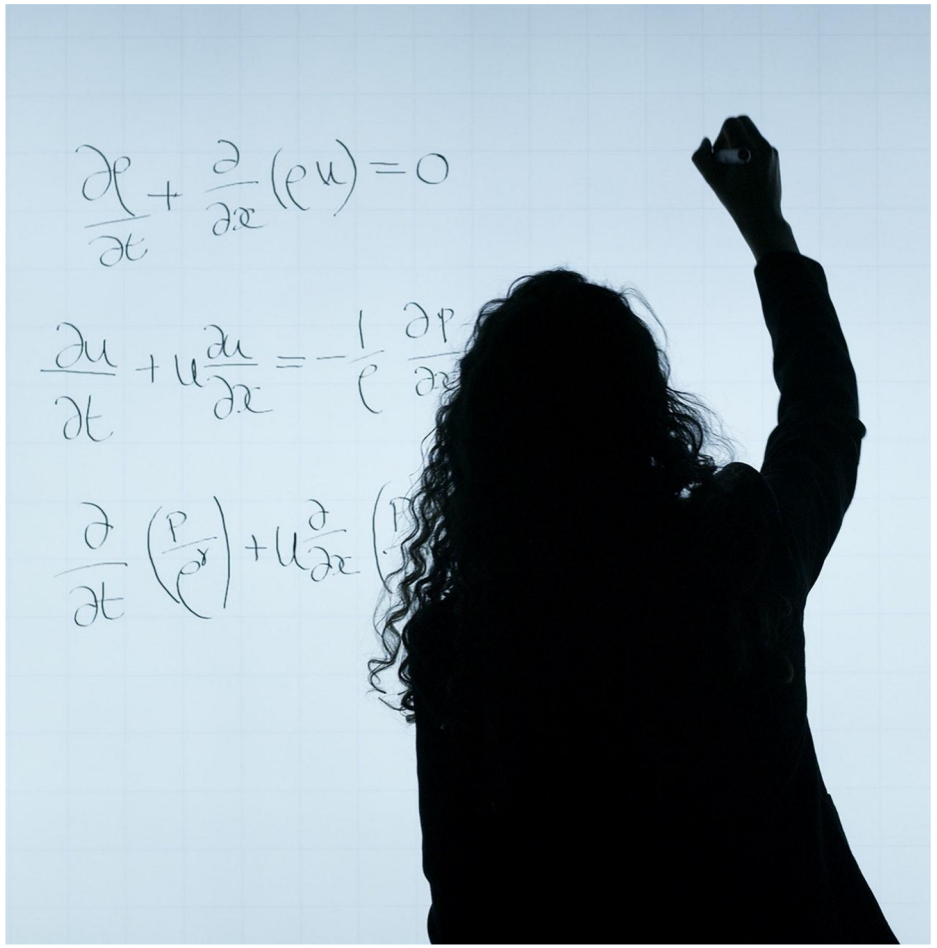


Single Indicators – Health and education indicators

Education can improve a country's human capital and help it break out of the poverty cycle (see topic 4.9).

Education indicators measure the education-related determinants of development, such as the:

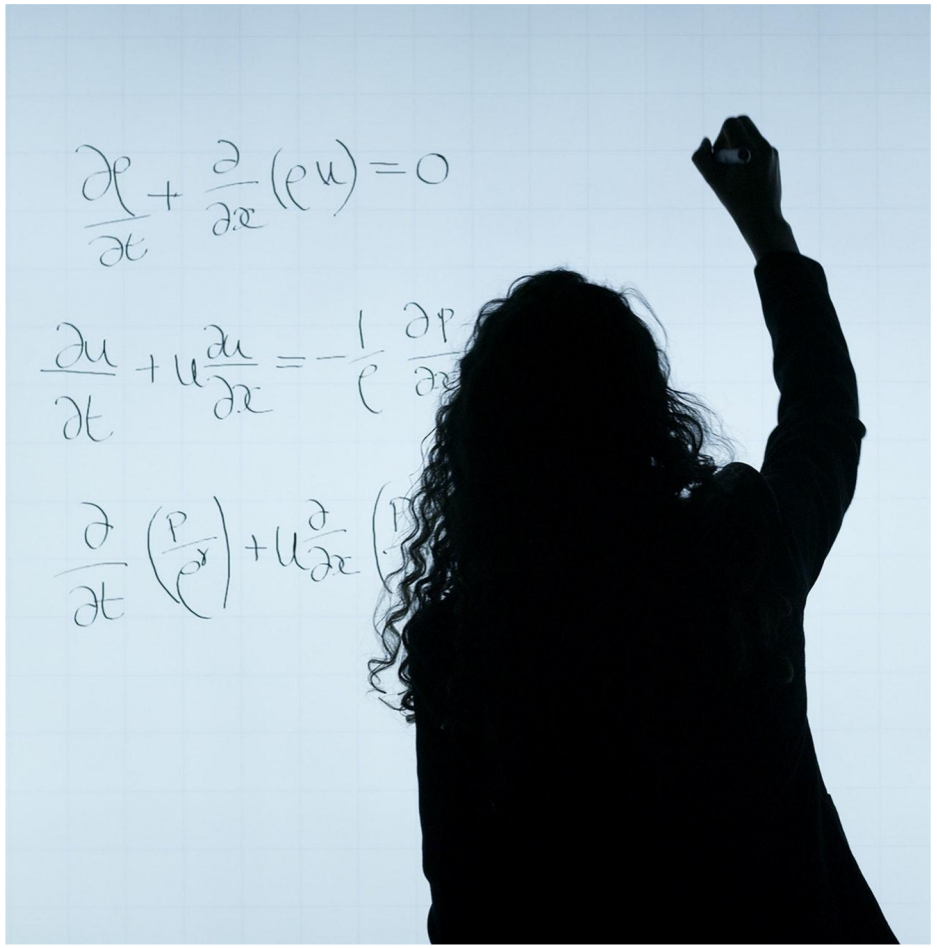
- Mean years of schooling
- Expected years of schooling
- Adult literacy rate.



Single Indicators – Health and education indicators

Mean years of schooling measures the average years of formal education received by people aged 25 and older in their lifetime.

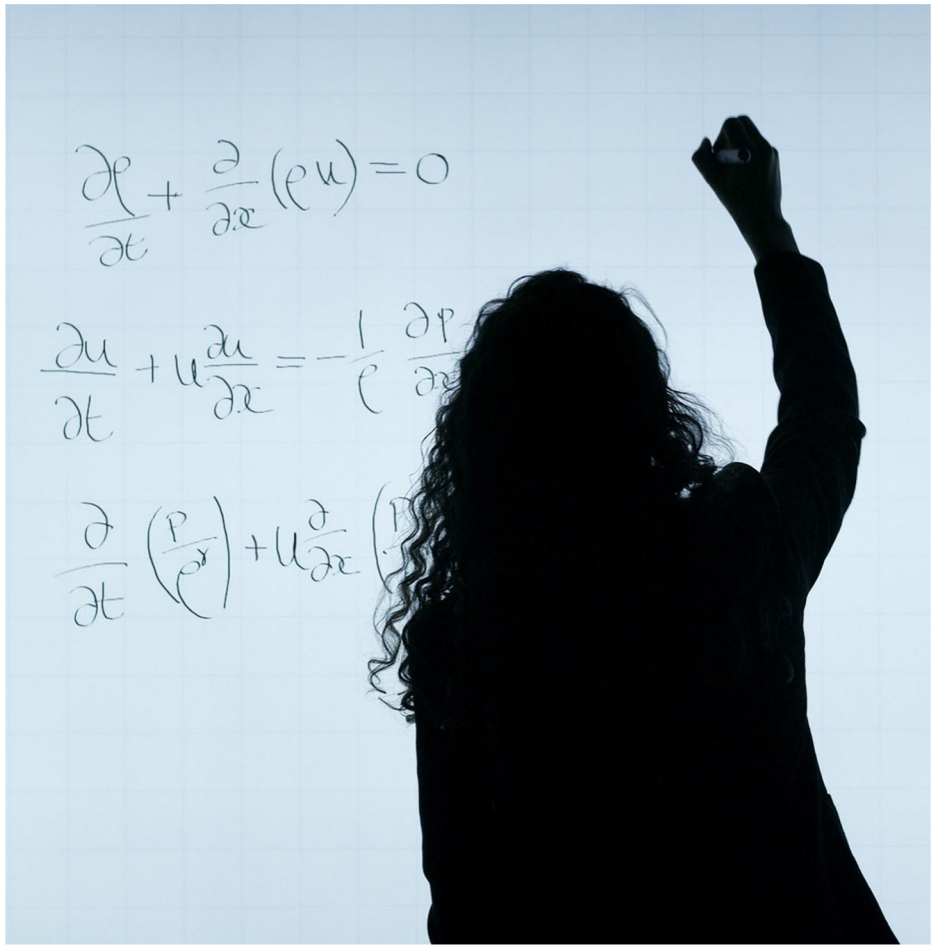
Expected years of schooling measures the years of formal education that one can expect to receive in their lifetime, and can be used as a predictor for the mean years of schooling.



Single Indicators – Health and education indicators

The **adult literacy rate** is a measure of the percentage of the population who are:

- Greater than 15 years of age
- able to read and write a short statement with basic understanding in *one or more languages.*



Single Indicators – Economic/social inequality indicators

Economic/social inequality indicators measure the differences in access to resources, services and institutions by demographic groups. This includes:

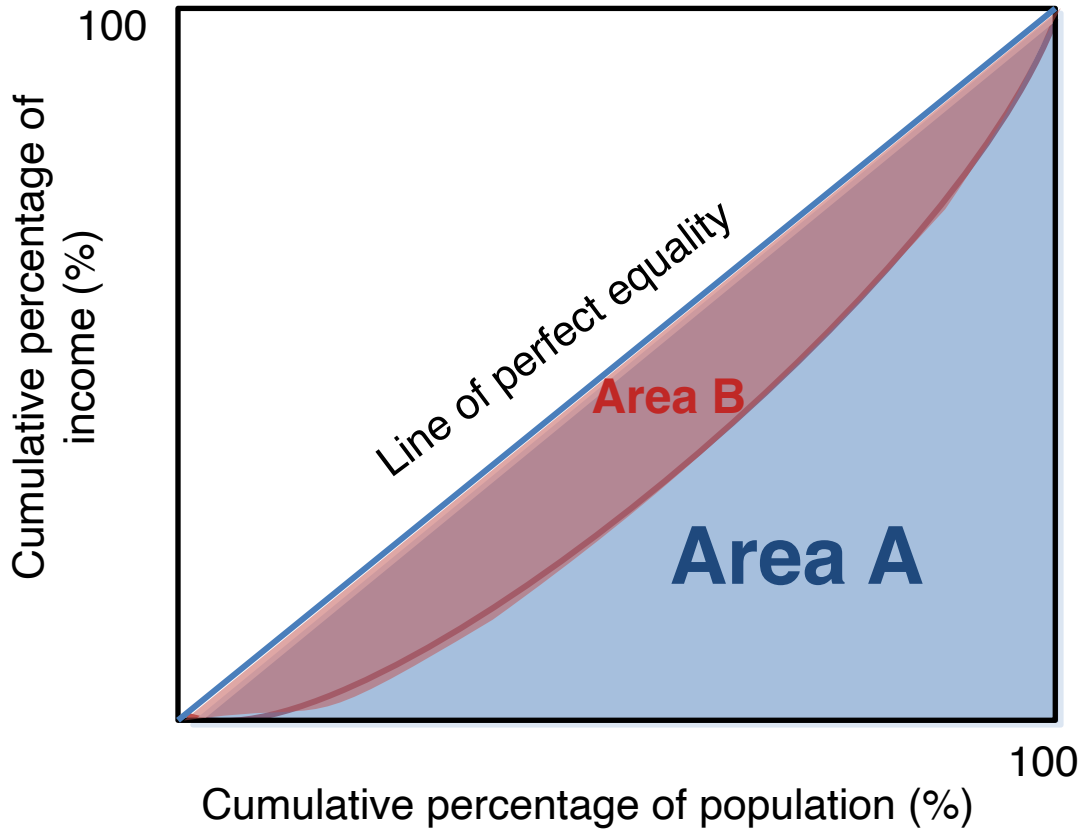
- Gini coefficient
- Gender pay gap

Single Indicators – Economic/social inequality indicators

The **Gini coefficient** is a tool that measures income inequality by calculating a numerical value using the Lorenz curve.

Gini coefficient = Area B / Area A + B

The value ranges from 0 to 1 where a larger value represents greater income inequality.



Single Indicators – Economic/social inequality indicators

The **gender pay gap** measures the percentage difference in income across genders.

The **adjusted gender pay gap** takes into account differences in experience, occupation, education, the terms of employment, family care burdens, and other factors.

Single Indicators – Energy indicators

Energy indicators measure economic development by using indicators that identify the factors needed to create affordable, reliable, sustainable, and modern energy for citizens.

They include:

- Access to electricity
- Energy consumption per capita
- Energy consumption by source
- Share of electricity production from renewables

Single Indicators – Energy indicators

Access to electricity measures the percentage of the population with access to functioning electricity.

Energy consumption per capita measures the average energy consumption of a person, often in kilowatt-hours.

Single Indicators – Energy indicators

Energy consumption by source compares the proportion of total energy generated by each source (oil, coal, natural gas, nuclear, renewables, etc.). It is often visualised as a **Sankey diagram** (see next slide).

Share of electricity production from renewables measures the percentage of electricity production generated from renewable energy sources (hydroelectricity, wind, solar, biofuels, etc.).

Real world example – energy consumption by source

A **Sankey diagram** can be used to illustrate the flows of energy from each source to its uses.

Analyse the diagram and answer the following questions.

Real world example - data analysis

Source: http://energyliteracy.com/

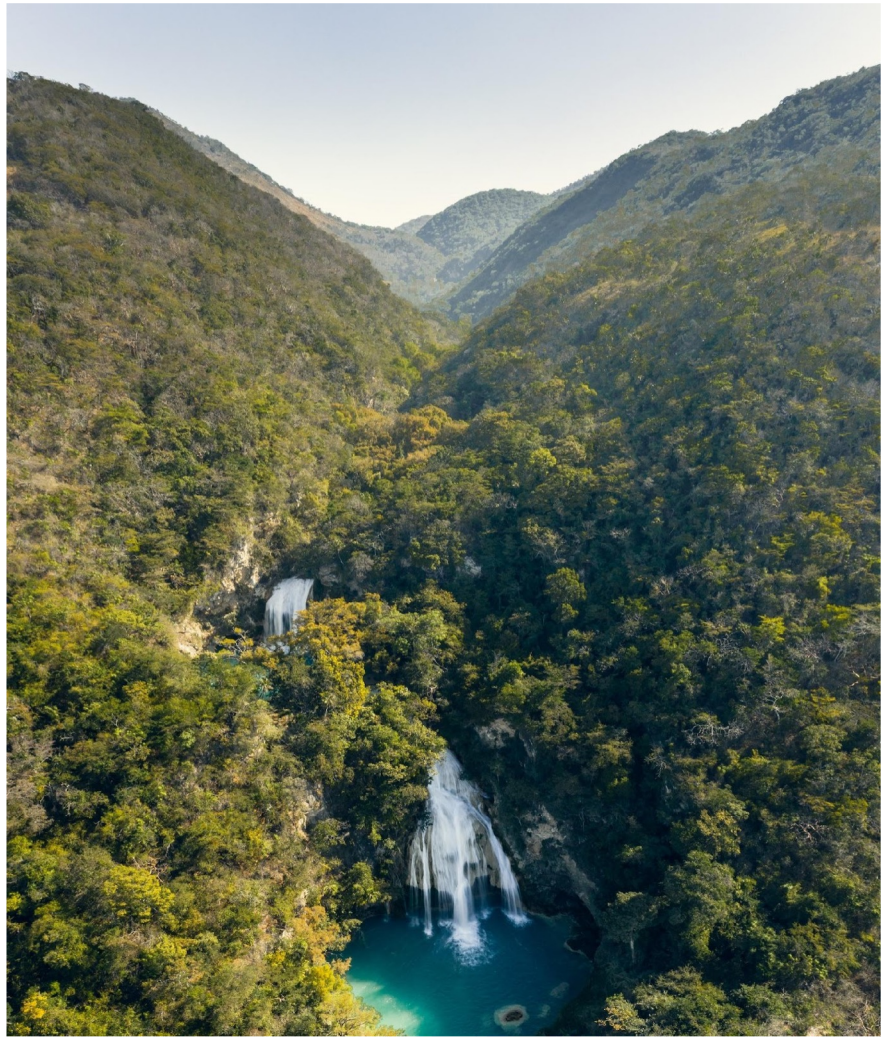
Data Analysis Questions

1. What do you notice from the data?
2. What questions do you wonder about the data?
3. Research information that may help you answer your questions from Q2.
4. What conclusions can you make from Q1, Q2, and Q3?

Single Indicators – Environmental indicators

Environmental indicators measure environmental or ecological issues that influence the standard of living and quality of life. This includes:

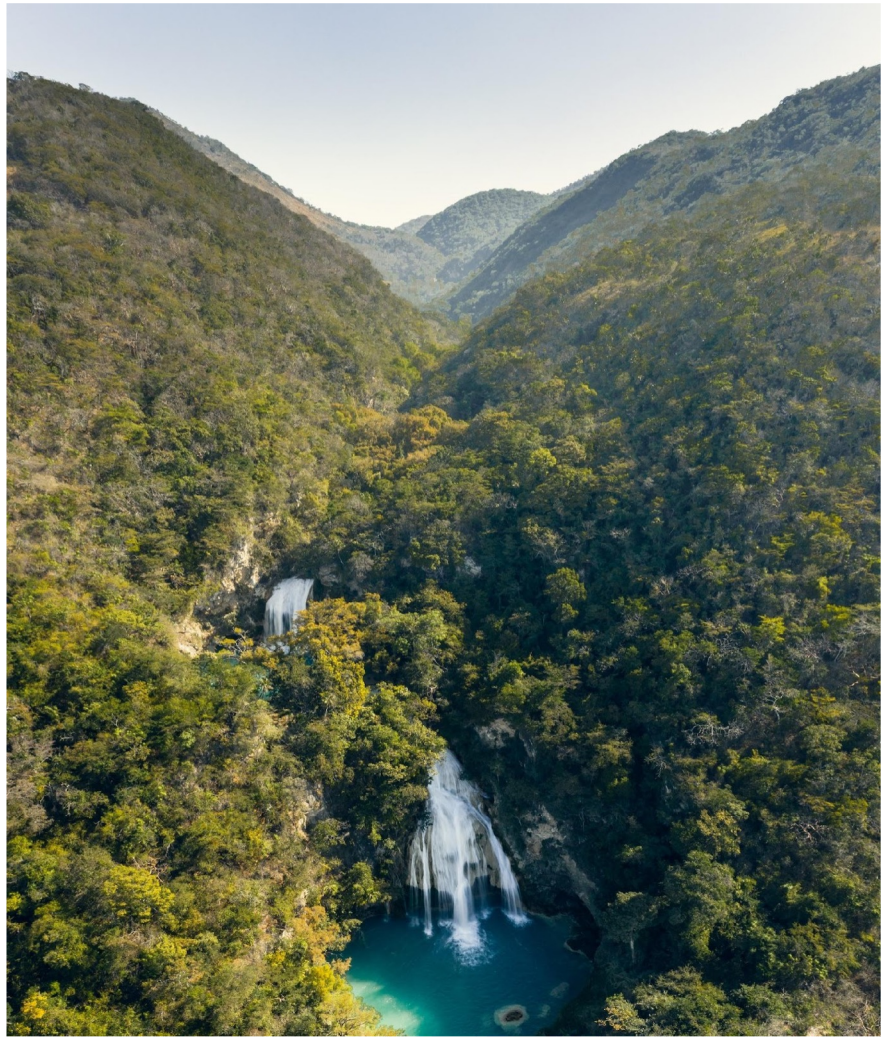
- CO_2 emissions per capita
- Ecological footprint



Single Indicators – Environmental indicators

CO2 emissions per capita measures the average carbon dioxide emissions produced by each citizen over a year, measured in tonnes.

Ecological footprint measure the demand of economic activity on natural resources i.e., the quantity of cropland, grazing land, fishing grounds, built-up land, forest area, and carbon demand it takes to support consumers and producers.



Real world example – calculate your carbon footprint

Using the carbon footprint calculator, calculate the impact of your consumption habits and waste output. Be prepared to share your results!

Composite Indicators

Composite indicators measure and combine multiple characteristics of development and are usually presented as an index number. They include the:

- Human Development Index (HDI)
- Inequality adjusted Human Development Index (IHDI)
- Gender Inequality Index (GII)
- Happy Planet Index (HPI)

Composite Indicators – Human Development Index (HDI)

The **Human Development Index (HDI)** is an index of healthcare, educational attainment and income, used as an alternative to real GDP or GNI per capita as a measure of economic development. This includes:

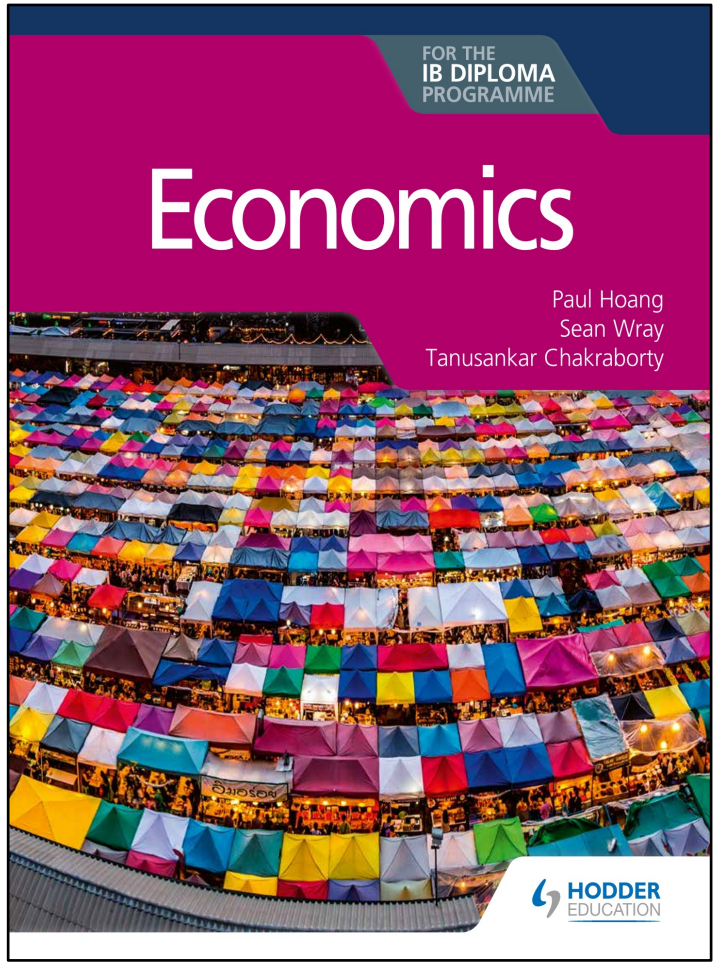
- Life expectancy at birth
- Mean years of schooling
- GNI per capita at PPP

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 555
- Paper 2 and 3 Exam Practice Question 34.3
- [2 + 4 marks]



Composite Indicators – Inequality adjusted Human Development Index

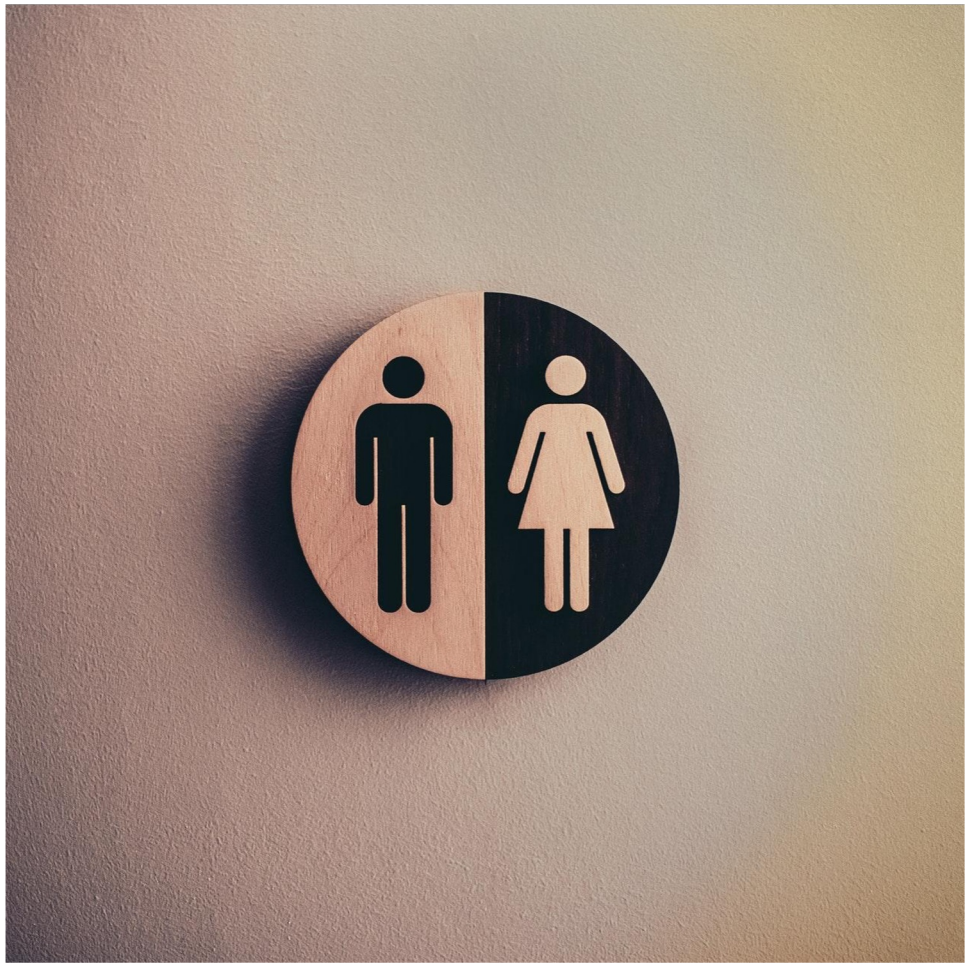
The Inequality adjusted Human Development Index accounts for inequalities in the distribution of healthcare, education, and income in an economy.

IHDI = percentage loss due to inequalities × HDI

Composite Indicators – Gender Inequality Index

The **Gender Inequality Index** calculates gender disparities between *sexes* from reproductive health, empowerment, and labour market participation as a measure of development. This includes:

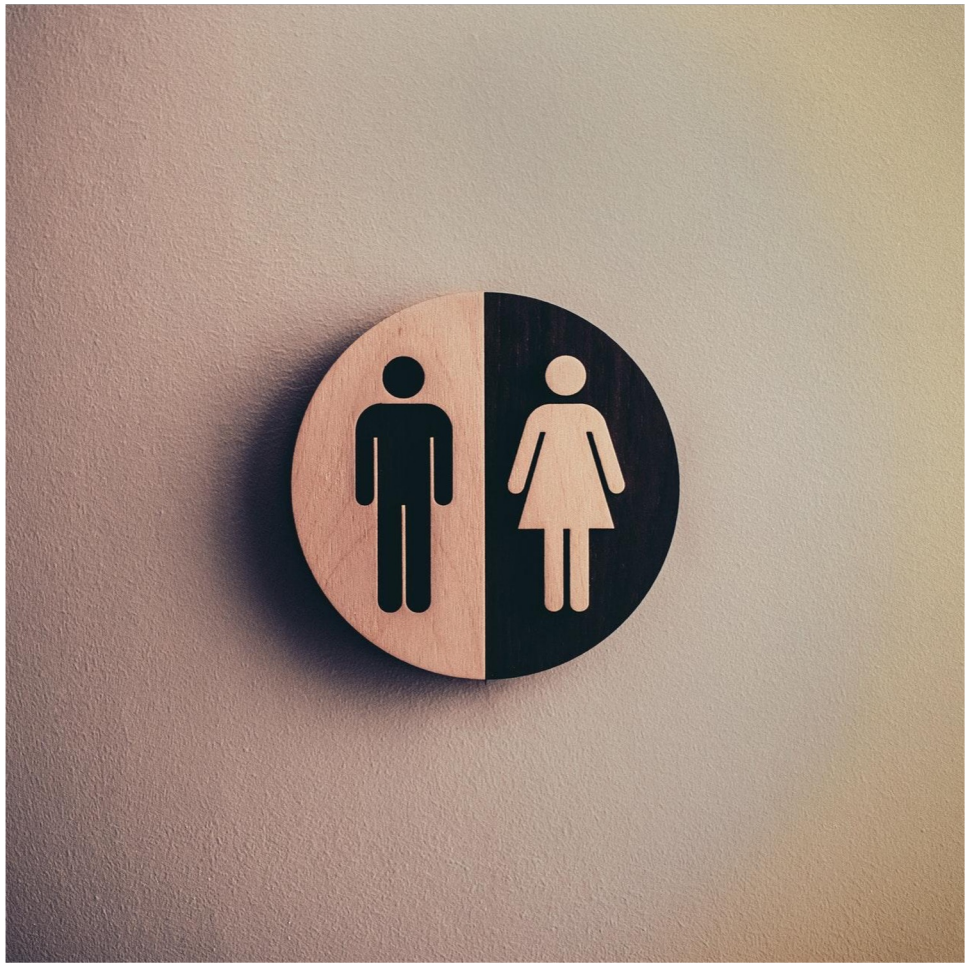
- Maternal mortality ratio
- Adolescent fertility rate
- Share of parliamentary seats held by each sex
- Attainment at secondary and higher education
- Labour market participation rate.



Composite Indicators – Gender Inequality Index (GII)

The **Maternal mortality ratio** measures the deaths of mothers per 100,000 live births

Adolescent fertility rate measures the number of births from mothers between the ages of 15 and 19, per 1,000 live births.

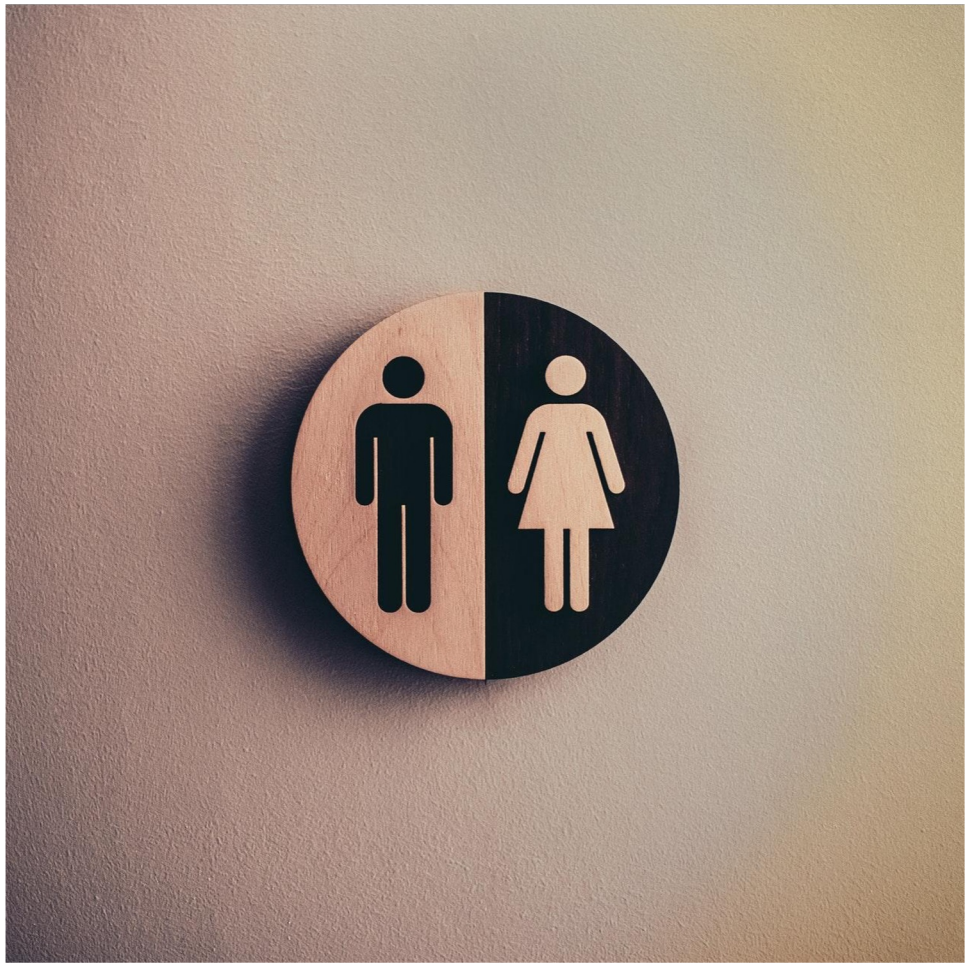


Composite Indicators – Gender Inequality Index (GII)

The **share of parliamentary seats held by each sex** is expressed as a percentage for each sex. The sum of both percentages is 100%.

Attainment at secondary and higher education is the percentage of citizens receiving a high-school or tertiary diploma for each sex

Labour market participation rate measures the percentage of citizens between 15 and 64 years of age who are in the labour force.



Composite Indicators – Happy Planet Index (HPI)

The Happy Planet Index measures how individuals and countries are able to achieve long, happy and sustainable lives in terms of wellbeing, health, inequality, and the environment. This includes:

- Subjective wellbeing (scale from 1 to 10)
- Life expectancy at birth
- Ecological footprint
- Inequality-adjusted life expectancy
- Inequality-adjusted experienced wellbeing.

Composite Indicators – Happy Planet Index (HPI)

Inequality-adjusted life expectancy is the mean life expectancy of residents of a country, adjusted to reflect inequalities in the distribution of lifetimes.

Inequality-adjusted experienced wellbeing is the average experienced wellbeing of residents of a country, adjusted to reflect inequalities in the distribution of experienced wellbeing.

Test your knowledge on this unit: Kahoot!