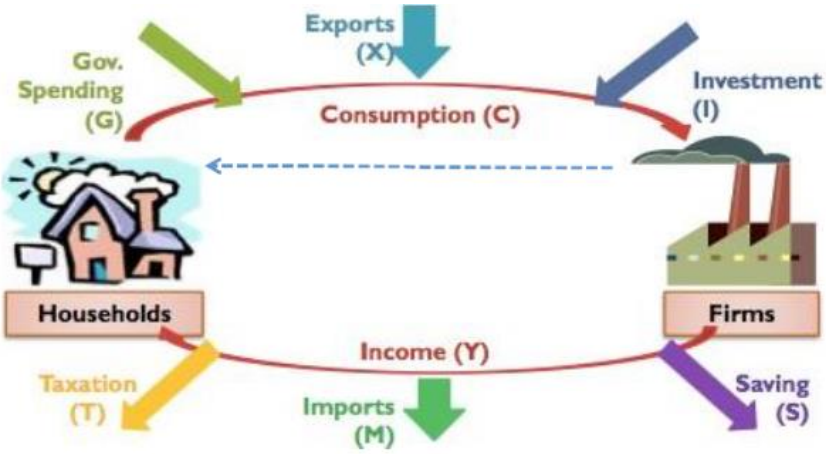
Topic 5 – National Income



I can use my understanding of national income data to evaluate and to predict changes in economic performance.

Section A – The Circular Flow of Income

Learning Outcomes:

1. Explain how income flows between households and firms within a closed economy and the concept of injections (J) and withdrawals (W). the circular flow of income
2. Show that in an open economy there are three injections (Investment, Government expenditure and Exports or I, G, X) and three withdrawals (Saving, Taxation and Imports or S, T, M) and that a state of equilibrium is achieved when I+G+X=S+T+M.
3. Evaluate the implications of imbalances between injections and withdrawals, with reference to the multiplier effect, which may result in economic growth or economic recession.

National Income is the flow of all goods and services produced in a country over a year.

The Circular Flow of Income is a means of showing how the national income is created, and how it can be measured.

A Closed Economy

The simple model of the circular flow of income is made up of only two groups of people called households and firms. The circular flow of a closed economy would look as follows:

A simple circular flow of income is one where:

1. There is no government.
2. There is no trade with other countries.
3. Households spend all their income buying goods – no s_____ or paying t_____
4. Firms use all the money earned from selling goods to pay the factors of production.

If all income is spent on consumption, then it is clear that:

National Income = National Expenditure = National Output

In the real economy this is true, but things are rather more complicated.

An Open Economy

The real world does not include just households and firms. The diagram below shows a circular flow that is much more realistic as it shows that:

a. **Households** do not spend their income on buying goods made in the country but also on imported goods. Moreover, they also save money and pay taxes.
b. **Firms** use some of their income for investment (retained profits), they pay taxes, and they buy imports from abroad.
c. **The Government** is involved in the economy by spending and collecting taxes.
d. **Foreign countries' citizens** buy goods and services from the country (e_____) and sell goods and services to the country (i_____).

Therefore, the National Income in an economy is distributed among consumption expenditure, investment, government spending, and net exports, which includes the value of what we produce and sell abroad minus what we spend on imports.

National Income = Final Consumption Expenditure + Investment + Exports - Imports

FCE (Final Consumption Expenditure) is the sum of the consumption of Households (H), Non-Profit Institutions Serving Households (NPISH) and Government (G) or FCE = $C_H+C_{NPISH}+C_G$.

Withdrawals and Injections

Withdrawals/Leakages - _____

_____

Up till now, we have assumed that all money earned (income) will be spent. However, in reality not of all it is spend on local products as some is:

- Spent in taxes,
- Saved, and
- Spent on imports.

Injections - _____

_____

In reality, it is not only local consumers that spend money in the economy as some is:

- Spent by the government,
- Invested in the economy by enterprises, and
- Spent in the economy through exports.

Aggregate Demand represents the total planned demand for goods and services in an economy. It includes:

- Consumer expenditure on goods and services.
- Investment expenditure by firms on new equipment.
- Government spending on goods and services.
- Spending by foreigners on exports of goods and services.

An Economy in Equilibrium

An economy is said to be in equilibrium when it is in a state of balance. So, an economy is said to be in equilibrium when:

Withdrawals = Injections

- If Injections > Withdrawals – AD is too high.
- If Injections < Withdrawals, AD falls and stocks would accumulate.

Effects of Imbalances in Withdrawals or Injections on Output, Employment, and National Income

- **Economic Growth:** When injections exceed withdrawals, more money circulates in the economy, leading to increased demand, production, and potentially higher employment. This can result in economic growth.
- **Economic Recession:** When withdrawals exceed injections, less money circulates, reducing demand, production, and employment. This can lead to economic recession.

Withdrawals > Injections	Withdrawals < Injections

The multiplier effect amplifies the impact of changes in injections or withdrawals. For example, an increase in government spending can lead to a more significant overall increase in economic activity, while a reduction in spending can have a compounded negative effect, exacerbating recession. The multiplier effect explains how a small change in spending can lead to a bigger overall impact on the economy.

Imagine the government spends money on building a new road. The workers and companies that get paid for this project will have more money to spend on things like groceries, clothes, or entertainment. The businesses they spend their money at will then have more money to pay their own employees and suppliers. These people, in turn, spend their money on other goods and services. This process continues, with the initial spending creating more and more economic activity.

So, even a small increase in spending can lead to a much larger increase in total economic activity, helping the economy grow. Conversely, if spending decreases, the opposite happens, and the economy can shrink more than expected. This chain reaction is the essence of the multiplier effect.

Section B – Measures of Actual Income

Learning Outcomes:

1. Calculate the nominal GDP from national income data, using the formula for the Expenditure approach.
2. Distinguish between nominal GDP and real GDP.
3. Evaluate the performance of economies across time and countries, by way of the measure of per capita real GDP.
4. Calculate real GDP and/or per capita real GDP.
5. Discuss the limitations of the use of per capita real GDP in judging the performance of economies.

The Gross Domestic Product shows the value of final goods and services produced by the factors of production in a country. So, it refers to the total output produced each year by factors of production located in a particular country.

GDP is commonly used to gauge the economic performance of a country:

- **Economic Growth** - Changes in GDP over time indicate the growth rate of the economy. A rising GDP signifies economic growth, while a declining GDP indicates economic recession.
- **Standard of Living** – GDP per capita (GDP divided by the population) is used to comparing living standards across different countries.
- **Policy-Making** – Governments and Monetary Authorities use GDP figures to set the appropriate fiscal or monetary policies.

Adjustments to GDP figures

1. Nominal GDP vs Real GDP

Nominal GDP is the total value of all goods and services produced in a country's economy at current market prices within a specific period (usually a year), without adjusting for inflation.

Real GDP, or Real Gross Domestic Product, measures the total economic output of a country adjusted for price changes (inflation or deflation). This metric calculates the value of all goods and services produced within a country in a specific year, using the prices of a selected base year. By using constant prices, Real GDP provides a more accurate reflection of an economy's size and how much it has grown in volume.

Real GDP is calculated by using the formula:

The GDP deflator is calculated by dividing the Nominal GDP by the Real GDP and then multiplying the result by 100. This calculation provides an index number (expressed as a percentage) that reflects the level of price inflation or deflation between the base year and the year being measured. The formula is as follows:

Difficulties with GDP figures

a. Difficulties in measuring GDP
    I. Double Counting
        - Important to measure the value added at each stage of production.
        - If one counts the intermediate product with the final there would be double counting.
    II. Level of undeclared economic activity
        - Goods and services produced and sold in an economy but not part of the official National Figures
b. Difficulties in Interpreting GDP – important to take the following into consideration
    I. Money GDP vs Real GDP
        - When prices increase, the value of output in a country over a year increase. But, people are not better off as they are not consuming more goods and services.
        - So, it is important to measure GDP at real prices – adjusted to take into consideration inflation.

II. GDP and population
    - If GDP increases because of an increase in population, the standard of living might fall.
    - So, it is important to consider GDP per person.

III. Type of goods produced
    - If GDP increases because of increase in production of military goods, people are not better off.

IV. GDP and economic welfare
    - A country could be facing a situation in which National Income increases but general welfare falls.
    - For example – pollution.

c. Difficulties in Comparing GDP – comparisons can be misleading due to:

I. Level of accuracy in measurement may differ between countries.

II. Discrepancy in distribution of income in different countries (standards of living may differ)

III. Exchange rate might be unrealistic and not representing a good indication of the relative domestic purchasing power of the two countries.

Exercises

Exercise 1

The following information relates to the GDP figures of Country X in 2022:

- Consumption by Households (C_H): €500 million
- Consumption by Non-Profit Institutions Serving Households (C_{NPISH}): €50 million
- Government Consumption (C_G): €200 million
- Investment (I): €150 million
- Exports (X): €120 million
- Imports (M): €100 million

Calculate:

a. Final Consumption Expenditure (FCE)

_____

_____

b. GDP

_____

_____

Exercise 2

The following information relates to the GDP figures of Country Y in 2022:

- Consumption by Households (C_H): 600 million
- Consumption by Non-Profit Institutions Serving Households (C_{NPISH}): 70 million
- Government Consumption (C_G): €250 million
- Investment (I): €180 million
- Exports (X): €130 million
- Imports (M): €150 million

Calculate:

a. Final Consumption Expenditure (FCE)

_____

_____

b. GDP

_____

_____

Exercise 3

During an economic recession in 2023, household consumption decreased while government spending increased as a tool of fiscal policy. The data is as follows:

Description	**Year 2022 (€ millions)**	**Year 2023 (€ millions)**
Consumption by Households (CH)	800	750
Consumption by Non-Profit Institutions (CNPISH)	90	75
Government Consumption (CG)	300	450
Gross Investment (I)	200	160
Exports (X)	140	150
Imports (M)	130	160

Calculate for both years:

a. Final Consumption Expenditure (FCE)

_____

_____

_____

_____

b. GDP

c. Analyse the impact of the economic recession and government response on GDP.

Exercise 4

You are provided with the nominal GDP and the GDP deflator for three years. Calculate the Real GDP for all years:

Year	Nominal GDP (€ millions)	GDP Deflator (Index)
2020	2,000	100
2021	2,100	102
2022	2,220	104

Exercise 5

Calculate the per capita real GDP for each year listed in the table:

Year	Real GDP (in millions of €)	Population (in millions)
2017	2,000	40
2018	2,059	41
2019	2,135	42

Exercise 6

Calculate real GDP and per capita real GDP for each year.

Year	Nominal GDP (in millions of €)	GDP Deflator	Population (in millions)
2010	2,000	100	40
2011	2,100	105	41
2012	2,300	108	43

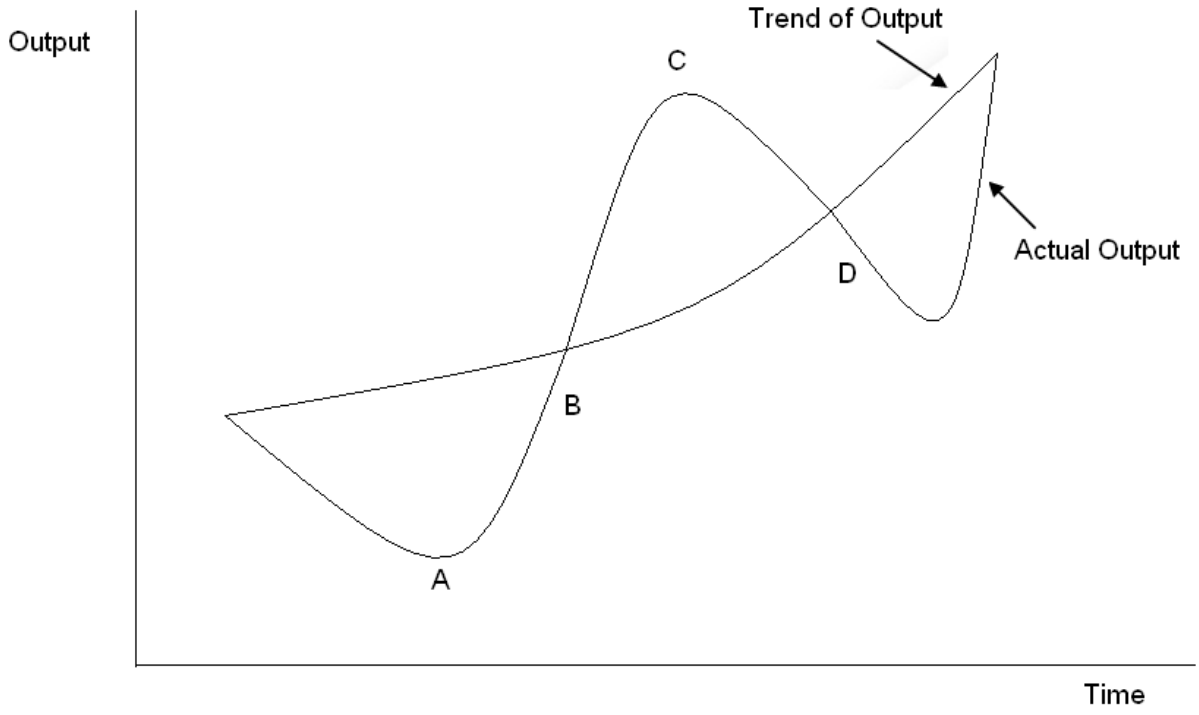
Section C – The Economic Cycle

Learning Outcomes:

1. Identify the four phases of the economic cycle (Boom, Recession, Slump, Recovery) through changes in real GDP.
2. Relate each of the four phases of the economic cycle to consumption, investment, unemployment, the balance of trade, government tax revenues and inflationary pressures.
3. Distinguish between the four phases of the economic cycle.

Growth does not happen in a regular fashion. There are periods of rapid growth followed by periods of less rapid growth. In some circumstances, growth can fall to zero. In the worst case, growth can be negative causing the economy of the country to shrink.

In the modern world we have become used to seeing steady growth punctuated by short periods of zero or negative growth. A business cycle can be defined as a short-term fluctuation of output around a long-term trend



The economic cycle consists of four distinct phases characterised by changes in real GDP. These phases are:

A. Slump

This is the lowest point in the business cycle where growth is at its lowest level. This point is also known as the floor of the business cycle. At this point:

- **Consumption:** At its lowest.
- **Investment:** At its lowest.
- **Unemployment:** At its highest, reflecting the high number of job losses.
- **Balance of Trade:** Varied, can improve if imports remain low compared to exports.
- **Government Tax Revenues:** Remain low due to decreased economic activity.
- **Inflationary Pressures:** At its lowest.

B. Recovery

This phase follows a slump, with the economy beginning to rebound. There is a gradual increase in real GDP as businesses start to grow again, employment improves, and consumer spending increases.

C. Boom

This is the highest point or ceiling of the business cycle. This is the point where the economy overstretches itself. This phase is marked by an increase in economic activity. Real GDP rises, reflecting growth in sectors such as manufacturing, services, and retail. Economic confidence is high, leading to increased spending and investment. At this point:

- **Consumption:** High, as confidence leads to greater consumer spending.
- **Investment:** Businesses invest more in capital and expand their means of production.
- **Unemployment:** Low, as companies hire more workers to meet demand.
- **Balance of Trade:** May deteriorate if imports increase faster than exports due to high domestic demand.
- **Government Tax Revenues:** Increase due to higher earnings and consumption.
- **Inflationary Pressures:** Rise as demand outstrips supply, leading to higher prices.

D. Recession

The pace of growth slows as the economy moves towards a slump. During a recession, the economy contracts, leading to a decrease in real GDP. This phase follows a boom and is characterised by a slowdown in economic activity. Consumer spending and business investment decrease, and economic uncertainty generally increases. The cycle then continues again.