

ST ANDREW'S JUNIOR COLLEGE JC2 H2 ECONOMICS 2023

Theme 3 provides students with an overview of the workings and linkages of the national and international economy. Students will use the concepts, theories and principles from Themes 1 and 2 to examine the problem of scarcity of resources and the concept of tradeoffs at the national level. In particular, students will examine how governments make policy choices at the national level to improve living standards. In doing so, students will discuss how governments consider competing needs, weigh costs and benefits, recognise tradeoffs and consequences to make policy decisions. Students will first gain an understanding of the circular flow of income model and concepts of AD-AS, before applying the concepts to analyse macroeconomic issues and government decisions at the national level.

Students will also examine domestic and external factors that influence economic growth, price stability, employment and balance of trade, with a focus on how these factors affect a country's standard of living. Additionally, students will also discuss the different policy choices available to governments and their effectiveness in achieving higher living standards.

Standard of Living and Macroeconomic Indicators

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Reading List and Reference

- Economics, John Sloman, 8th ed., pp 403-414, 426-432, 433-438, 446-4484, 457-461
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- Introduction to Economics, M. Lieberman & R. E. Hall, 2nd ed., pp 362-378, 385-388, 399-401
- For statistics on the Singapore economy, refer to www.singstat.gov.sg For global perspectives, refer to http://data.worldbank.org, http://www.imf.org, http://www.tradingeconomics.com
- Economic Review, Vol. 28 No. 2, 'The Standard of Living', pp30-33
- Economic Review Vol. 28 No. 4, 'Measuring Human Development', pp6-10
- Economic Review Vol. 28 No.3, 'GDP, Deficit and the Hidden Economy', pp 2-4
- Economic Review Vol. 31 No.1, 'The UK Economy. How do we Judge its Performance?', pp5-9
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Learning Objectives

At the end of this section on Key Economic Indicators, students should be able to:

- 1. explain the circular flow of national income involving households, firms, government and the foreign sector.
- 2. explain the significance of each of the key economic indicators as a measure of economic performance.
- 3. interpret statistical data for each key economic indicator.
- 4. use the key indicators to assess the economic performance of an economy and make international and inter-temporal comparisons.
- 5. analyse the limitations of using the indicators to measure economic performance as well as the standard of living of an economy across time and space.

1. INTRODUCTION TO MACROECONOMICS

1.1 Macroeconomics vs Microeconomics

Macroeconomics is a branch of economics that deals with the structure, behaviour and performance of a national or regional economy as a whole. In it, we analyse the national output or income of a country instead of examining the actions of individual firms and households in specific markets. In examining the behaviour of the economy as a whole, we use the aggregate levels of demand or supply of the entire economy.

Let us use the demand and supply framework as an illustration of the difference between Microeconomics and Macroeconomics.

In Microeconomics, we focus on individual markets. It studies the demand for and supply of a particular good to determine its equilibrium price and level of output in the market¹. Examples include the markets for cars, oil, tea, airline services, etc.

In Macroeconomics, however, we look at **aggregate demand** (i.e. the total value of goods and services demanded in an economy at each general price level) and **aggregate supply** (i.e. the total value of goods and services that producers are willing and able to supply in an economy at each general price level).

The **Aggregate Demand (AD)**, together with **Aggregate Supply (AS)** determines the *general price level* and the country's *national output*. This is illustrated in Figure 1 below. The equilibrium level of real national level of income (0Y) and general price level (GPL) facing an economy is where AD = AS.



Figure 1: AD/AS Model

An understanding of the workings of the macroeconomy allows us to better understand how the government formulates policies for the economy to achieve its macroeconomic objectives.

¹ Recall: Determination of equilibrium price and quantity of a good or service in Chapter on 'Demand, Supply and Price Determination'.

In this lecture series, we will study the significance and importance of the respective *macroeconomic goals* and the *various policies* that can be put in place by the government to achieve these goals. We will also examine the *issues and consequences* when these goals are not attained and the implication on the role of the government in managing the macro economy.

1.2 Economic Goals

Economists classify the goals of an economy under two categories: microeconomic goals and macroeconomic goals.

1) Microeconomic Goals

a) Efficiency in Resource Allocation

An economy seeks to attain economic efficiency, which comprises allocative efficiency and productive efficiency, in an attempt to deal with the problem of unlimited wants and limited resources.

b) Equitable Income Distribution

The Government also aims to achieve a more equitable income distribution as severe income inequality² would mean that a large segment of the population cannot afford basic needs of shelter, food, education and healthcare while a small segment is living in the lap of luxury.

2) Macroeconomic Goals

The key macroeconomic aims refer to the goals that a government hopes to achieve in the management of its macro economy.

- a) Sustainable and Inclusive Economic Growth,
- b) **Price Stability or Low Inflation Rate**
- c) Full Employment of Resources
- d) **Favourable Position of Balance of Trade**

An economy, with some government intervention, would want to achieve as many of the above macroeconomic goals to improve the standard of living of its people.

To begin, we shall now take a look at the four key macroeconomic aims / goals of an economy.

² Note: <u>Equitable</u> income distribution (equity) does not mean equal distribution (equality). It simply means <u>fair</u> distribution. Refer to Market Failure lecture notes for more details.

1.3 Standard of Living and Macroeconomic Goals

Definition: Standard of living refers to the well-being of an average person in the economy.

Standard of living includes the *material (quantitative)* and *non-material (qualitative)* aspects of welfare.

Material Standard of Living

Material SOL measures the quantity of final goods and services that is available to an average person in the country in a given time period. *Real GDP per capita* or *real GNI per capita* is often used as a proxy measure of the *material* standard of living in a country over time.

Thus the higher the real GDP per capita, the higher the material well-being of an average person in the country, ceteris paribus.

Non-material Standard of Living

On the other hand, the *non-material or qualitative* aspect of SOL examines the *quality* of life of an average person in the country. This includes, for example, leisure hours, quality of physical environment and life expectancy.

In order to achieve a high standard of living, governments strive to achieve the following four macroeconomic goals:

1. Goal: Sustainable and Inclusive Economic Growth

Definition: Economic growth can refer to *Actual Economic Growth* or *Potential Economic Growth*. Actual economic growth is an increase in the real output of a country. Potential economic growth is an increase in an economy's capacity to produce goods and services.

Economic growth comprises of actual and potential growth. Sustained (or maintained) economic growth can only be achieved with actual and potential growth.

Economic growth must also be **sustainable** in order to enable its residents to attain a continual improvement in the living standards over time, at least quantitatively or materially.

Definition: *Sustainable growth* seeks to achieve a rate of growth that can be sustained/maintained without resulting in significant environmental degradation or resource depletion.

(Note: Sustainable growth is different from sustained growth. Sustained growth refers to growth that is maintained over a period of time. Sustainable growth on

the other hand, suggests that the country has achieved growth that is capable of being sustained.)

For the case of Singapore, we also consider inclusive economic growth as a key economic goal.

Definition: *Inclusive Growth* is a rate of growth that is sustained/maintained over a period of time and focuses on productive employment opportunities for the majority of the country's population. In the case of Singapore, inclusive growth implies economic growth that takes income distribution into consideration and does not contribute to worsening income inequality.

Importance of attaining this goal/aim to an economy: Governments aim to achieve **sustainable** economic growth so as to avoid recession³ (negative growth) or excessive fluctuations in short-run growth, as well as to ensure that growth can continue for future generations.

Additionally, governments aim to achieve **inclusive** growth as it ensures that no one gets left behind as the country benefits from growth.

2. Goal: Price Stability or Low Inflation Rate

Definition: *Inflation* is a situation where there is a sustained increase in the general price level.

Importance of attaining this goal/aim to an economy:

A low and stable inflation is a macroeconomic goal that is generally seen as beneficial for its positive effects on economic growth and the standard of living. Stable prices can create a sound economic environment which facilitates the process of sound economic decision-making.

However, in practice, this goal of low and stable inflation is difficult to achieve. The costs of unbridled inflation can be especially high if it is also unanticipated. These costs can possibly include a lower growth that results from a loss of confidence in the economy.

3. Goal: Full Employment or Low Unemployment

Definition: Full employment is a situation where whoever is *willing* and *able* to work gets a job. In other words, there is no involuntary unemployment.

³Definition of recession: Operationally defined as a *fall in gross domestic product*. It is commonly measured using **real GDP**.

There is no universally-agreed definition of full-employment. Another definition of full employment is simply the absence of demand deficient unemployment. (You will learn more about demand deficient unemployment in a later topic.)

Realistically an economy's unemployment rate is never zero even when the economy is at its full-employment level. At any point in time, both *frictional* and *structural* unemployment would be present. The rate of unemployment that prevails when output and employment are at the full-employment level is called the *natural rate of unemployment*⁴.

Importance of attaining this goal/aim to an economy: Government aims to keep unemployment rate in the economy low in order to satisfy more of the people's unlimited wants as more of the limited resources (physical and human) are employed to produce goods and services and not left idle.

Low unemployment or full employment results in a higher level of production of goods and services, ceteris paribus. With the higher output of goods and services, more of the unlimited human wants can be satisfied and this can lead to a higher level of economic welfare.

4. Goal: Favourable Position of Balance of Trade

Balance of Trade

Definition: The balance of trade refers to the difference between a country's total international receipt from its exports and the total international payment for its imports.

Generally, when a country's total international receipt from exports to the rest of the world exceeds the total international payment for imports from the rest of the world, the economy is said to be in a **favourable** position of balance of trade. With globalisation, there are higher trade flows between economies, and a favourable balance of trade is a key economic aim for many governments to achieve. Countries tend to avoid large and persistent deficits and surpluses on the balance of trade.

The balance of trade is a component of the balance of payments.

Balance of Payments

Definition: The balance of payments is a record of an economy's international transactions between its residents and those of the rest of the world over a period of time.

⁴ The natural rate of unemployment is the level of unemployment at which the inflation rate in an economy stays stable and if the unemployment falls due to economic expansion, the inflation rate starts to accelerate. It is thus also known as the non-accelerating inflation rate of unemployment (NAIRU).

Importance of attaining this goal/aim to an economy:

A country with favourable balance of trade position in the long run is able to sustain an open economy without having to confront problems related to a large and persistent balance of trade deficit or surplus. (You will be learning more about these problems in the later topics.)

1.4 The Circular Flow of Income

The circular flow of income illustrates the flow of money as well as goods and services between producers and consumers in an economy. It is a very useful as a theoretical model for understanding the workings of an economy. It shows how different economic agents (households, firms, government and foreign sectors) are inter-related and how a country arrives at a certain level of national output, expenditure and income.

("Flow" refers to any activity that occurs over time. For example, income is a "flow" concept that occurs per week, per month or per year. Production and consumption too are "flow" concepts.)

The Circular Flow Model (2-Sector Closed Economy)

In its simplest form, the Circular Flow Model explains how income and payment flows between firms and households:

- Firms are producers of goods and services and also employers of factors of production.
- Households are consumers of goods and services and also suppliers of factors of production.



Figure 2: Inner Flow

The concept of a circular flow of income involves 2 principles, assuming that there is no withdrawal from or injection into the economy.

1) In every economic exchange, the seller receives exactly the same amount that the buyer spends. i.e. income = expenditure.

2) For every real flow of goods and services from firms to households or factor services (such as land, labour, capital and entrepreneurship) from households to firms, there is a corresponding money (payment) flow in the opposite direction. i.e. output = income = expenditure.

In summary, in return for the use of their resources such as labour services, land, capital and entrepreneurship ability, households would receive payments in the form of wages, rent, interests and profits respectively. The total payments to households in this economy are thus its *national income*.

The *national output* in this economy would be the total value of the goods produced by the firms.

Households use all the income they receive to consume the goods the firms produced. This amount of income spent on consumption would then be the *national expenditure* of the economy.

Therefore this model shows how the interaction of both product and factor markets generates a circular flow of expenditure and income. This is also known as the inner flow.

The Circular Flow Model (Open Economy)

The figure below shows an economy which consists of *Households*, *Firms*, *Government* as well as the *Foreign* sector. The circular flow of income below includes all withdrawals from and injections into the economy.



Figure 3: The Circular Flow of Income

- a) (1) in the diagram above shows the flow of national income (Y) from firms to households. This consists of payments (wages, rents, interest and profits) for use of factor services (labour, land, capital and entrepreneurship) that are owned by the households.
- b) This national income is then distributed by households into four flows. (2) shows the flow of consumption expenditure (C) on goods and services that goes back to the firms as a demand for their output. Thus the inner flow of the diagram depicts a process whereby firms produce output, which generates an equal amount of income to the household sector. When workers in the household sector earn income, this will in turn increase the demand for goods and services or output produced.

- c) However, not all national income returns directly to the domestic firms as a payment for goods and services. There are three other flows out of the household sector in addition to consumption expenditure to the firms. These are the savings (S) flow labelled as (3), the flow of tax (T) payments to the government (4) and the imports (M) flow to the foreign sector (5).
- d) If we regard the flow linking the households and the firms as the main income-generating and output-generating mechanism, the savings, tax and imports flows are withdrawals (W) from this inner flow.
- e) Moreover, not all expenditure to the domestic firms comes from the domestic consumers. Some are injected from outside the inner flow in the form of investments by firms (I), government expenditure (G) on goods and services and purchase of exports (X) by foreigners. I, G and X are called injections (J).
- f) Injections (J) refer to any income accruing to the domestic producers that do not arise from domestic households.
- g) Withdrawals (W) refer to any part of household income that is not spent on goods and services produced by the domestic firms. It is thus not returned to the circular flow. The three forms of withdrawals are savings (S), taxes (T) or import expenditure (M).
- h) It should be noted that at equilibrium level of income, the **sum** of injections should equal the **sum** of withdrawals. However, that does not mean that savings are equal to investments, taxes are equal to government expenditure, and import expenditure are equal to export earnings.

1.4.1 Withdrawals (W)

Withdrawals are any part of income of households and/or firms that are not passed on within the circular flow of income. They are leakages from the circular flow of income.

3 forms of withdrawals:

1) Savings (S)

- Savings is the part of income that households choose not to spend but to put aside for the future.
- This is normally deposited in financial institutions such as banks.
- Savings could also be a portion of profits that firms choose not to pay out as dividends⁵ to shareholders or not re-invested into the firm.

2) Taxes (T)

• There are two main types of taxes that are paid to the government and hence not used by households to pay for more goods and services.

Direct taxes are taxes imposed on income and profits (e.g. personal income tax and corporate income tax).

Indirect taxes are taxes imposed on goods and services (e.g. sales tax).

3) Import Expenditure (M)

- Households spend part of their income on foreign goods and services.
- Firms also spend on imported raw materials and machinery
- Import expenditure is a withdrawal from the circular flow of income since this amount is paid abroad for the purchase of goods and services produced by them.

Total Withdrawals (W) = S + T + M

1.4.2 Injections (J)

Injections are any additions to the circular flow of income which do not come from the expenditure of households [or factor payments of domestic firms.]

<u>3 forms of injections</u>:

1) Investment (I)

• Expenditure on production of goods not meant for current consumption.

⁵ A **dividend** is a distribution of a portion of a company's earnings to its shareholders, which can be issued as cash payments, as shares of stock, etc.

Investment expenditure includes:

i) *Fixed capital formation*

Expenditure on buildings, machinery and equipment.

ii) Additions to stocks and work in progress

- Considered as circulating capital which includes stocks of new materials for use in future production, stocks of semi-finished goods and stocks of unsold finished goods.

2) Government Expenditure (G)

• Governments spend on goods and services directly (e.g. building roads, hospitals).

3) Export Earnings (X)

• Foreigners purchase domestic goods and services which results in export earning by domestic producers.

Equilibrium in the Circular Flow of Income and the Four Macroeconomic Objectives

An economy is said to be in equilibrium only when total injections are equal to total withdrawals

i.e., I + G + X = S + T + M

What will happen if injections are not equal to withdrawals?

This disequilibrium will initiate a process to bring the economy back to a state of equilibrium where injections are equal to withdrawals.

Consider the case when injections exceed withdrawals, for instance, due to an increase in I, G or X or a decrease in S, T or M:

- Firms will demand more factors of production (FOPs) in order to meet the increase in demand for goods and services.
- Thus, firms will increase their factor payments to the FOPs in exchange for their services, and as a result, more factor income continues to flow into households.
- Households would not only consume more domestic goods and services, they will also save more, pay more taxes and buy more imports.
- Hence, withdrawals will start to rise⁶.

⁶ Withdrawals may require multiple rounds to increase to equal the injections

• When withdrawals have risen to match the injections, i.e. till injections equal to withdrawals, the equilibrium will be restored and national income and employment would have increased.

For an example of how to structure your answer for questions requires the use of the Circular Flow of Income model, refer to **<u>Appendix A</u>**.

So what is the effect on the four macroeconomic objectives?

- **Economic growth** will take place. National income or output will rise by a *multiplied* amount (i.e. an amount greater than the initial increase in aggregate demand). The greater the initial excess of injections over withdrawals, the bigger will be the rise in national income.
- **Unemployment** will tend to fall as firms take on more workers to increase production to meet the increased demand.
- **Inflation** tends to occur as firms find it increasingly difficult to increase production due to capacity constraint and stiffer competition for factors of production.
- Imports will tend to rise due to higher demand since domestic inflation makes exports less competitive and imports relatively cheaper compared to domestic goods. Imports will rise while exports will fall and this will result in a **worsening of the Balance of Trade** position.

Just like the AD/AS framework (which will be covered in the next topic), the circular flow of income framework is very useful as it shows how changes in the various flows can affect the four macroeconomic objectives.



THINK ABOUT IT

What happens when withdrawals exceed injections? This can happen due to a decrease in I, G or X or an increase in S, T or M:

- Firms will demand fewer factors of production (FOPs) as the demand for goods and services decreases.
- Thus, firms will decrease their factor payments to the FOPs in exchange for their services, and as a result, fewer factor income flows into households.
- Households consume fewer domestic goods and services, and they will also save less, pay less taxes and buy less imports.
- Hence, withdrawals will start to fall.
- When withdrawals have fallen to match the injections, i.e. till injections equal to withdrawals, the equilibrium will be restored and national income and employment would have decreased.

2. KEY MACROECONOMIC INDICATORS

Having examined the key macroeconomic goals of an economy, it is pertinent to find out whether or not these goals are achieved. The Key Economic Indicators are conventionally used to measure the health or the performance of the economy. These include the indicators for measuring economic growth rate, inflation rate and unemployment rate and balance of trade.

2.1 Key Macroeconomic Indicators and Macroeconomic Goals

Definition

An economic indicator reveals a facet of the health of an economy over a period of time. While there are many indicators that can summarise the economic health of a country, we shall focus only on the 4 key economic indicators which relate to the four macroeconomic goals of an economy as shown in the table below.

| | Macroeconomic Goals | Key Economic Indicators |
|---|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1 | Sustainable Economic Growth Additional Goal: For case of Singapore, Inclusive Economic Growth | Economic Growth Rate Additional Indicator to measure inclusive Economic Growth: Gini Coefficient |
| 2 | Price Stability | Inflation Rate (E.g. Consumer Price Index) |
| 3 | Low Unemployment | Unemployment Rate |
| 4 | Favourable Position of Balance of Trade | Balance of Trade position |

The above indicators 1 to 3 are applicable to the **internal** / domestic economy while indicator 4 refers to the country's **external** economy [i.e. its economic performance compared to those of its trading partners.]

The economic health / performance of an economy is very much related to the attainment of the 4 macroeconomic goals. Failure to achieve the above economic goals may result in the following macroeconomic problems:

- Negative Economic Growth (recession)
- High Unemployment
- High Inflation or Deflation
- Large and Persistent Balance Of Trade Deficit/Surplus

Health of an Economy

INTERNAL STABILITY Economic Growth – indicated by National Income Statistics: Gross Domestic Product (GDP) and 0 Gross National Income (GNI) → Positive growth (i.e. Increasing GDP/GNI) means the country is producing more output over a specific period of time. → Higher per capita earnings show an improvement in higher material standard of living. Low Unemployment - indicated by • Low unemployment rate **Price Stability** – indicated by • Low inflation rate, usually measured by Consumer Price Index (CPI). It shows small and acceptable rate of increase in the general price level.

EXTERNAL STABILITY

 A Favourable Balance of Trade Position
 Means avoidance of large or persistent balance of trade deficit or surplus.

Usefulness of the Key Economic Indicators to the:

a) Government

These 4 key economic indicators are useful to the government in making economic forecast. Based on the forecast, the government can put in place the necessary policies that can help the economy achieve its macroeconomic goals, which are factors that affect the standard of living of its people. The macroeconomic objectives and the possible government policies will be examined in greater detail under "Macroeconomic Aims and Policies".

b) Firms and Households

A key economic indicator such as low inflation rate can be useful to firms in making their production and investment decisions.

Similarly, consumer behavior with respect to their consumption or expenditure pattern is affected by their perception of how well the economy is performing. For example, with economic growth, consumers are more ready to spend on goods and services when they expect the growth to be sustainable.

3. INDICATOR OF ECONOMIC GROWTH

We will next look at how the various economic indicators can be used to measure the economic performance as well as compare the standard of living of an economy over time and over space.

3.1 National Income

National income is an indicator of economic growth and is useful for economic analysis and policy making at the national level to improve standard of living.

National Income measures the total market value of all final goods and services that are produced by a given country in a given period of time (usually a year).

There are three methods of calculating national income. They are 1) the *product or output* approach; 2) the *income* approach and 3) the *expenditure* approach. These three approaches should arrive at the same national income statistics, GDP or GNP, barring any statistical errors.

a) Methods of Calculating National Income

i) **Product or Output Approach:** The product or output approach to calculating national income involves adding up the value of all *final goods and services* that are produced in the country during the year e.g. the value of cars, lollipops, garments plus the provision of services such as haircuts, bus rides and insurance services, etc.

In short, national income can be calculated through the product approach by summing the value of all *final* output produced.

ii) Income Approach: The second method involves adding up all the *factor incomes* that are generated in the current production of goods and services. This is because firms must employ factors of production to produce goods and services and in so doing, incomes for households in the form of wages (W), rent (R), interest (I) and profits (P), are generated.

National Income = W + R + I + P

- iii) **Expenditure Approach:** The third method adds up all expenditure on final output of goods and services produced in the current period. This includes the following:
 - 1. **Consumption expenditure (C)**. This includes all expenditure on new final goods and services by households.
 - 2. **Investment (I) expenditure**. This includes investment in capital, such as buildings and machinery. It also includes the value of any increase or decrease in inventories of raw materials, semi-finished goods or unsold finished goods.

- 3. **Government expenditure (G)**. This includes government expenditure on final goods and services but excludes transfer payments, such as pensions and social security payments.
- 4. Net exports (X M). Which is import expenditure by foreign sector subtracted from the export revenue earned from the sales of goods and services to abroad.

Thus,

National Income = C + I + G + (X - M)

The national income of a country can be derived by using all three methods. Regardless of the method used,

$Output \equiv Income \equiv Expenditure$

b) National Income Statistics

National income statistics are national figures to measure the national income of a country. The above calculations using the 3 approaches would allow us to arrive at the following measurements of National Income.

i) Gross Domestic Product (GDP)

Definition: Gross Domestic Product (GDP) is the total *market / monetary* value of all *final* goods and services that are *produced within the geographical boundary of* a given country in a given period of time, usually one year.

Real GDP vs Nominal GDP

Nominal GDP or GDP at *current prices* measures GDP at the *market prices* prevailing in that time period.

For example, the nominal GDP in 2010 is the total value of all final goods and services produced in the country in 2010 valued at 2010 prices.

Real GDP or GDP at **constant prices** measures GDP which has been <u>adjusted</u> <u>for inflation</u>. This means that changes in the general price level over time (due to price movements) have been adjusted to eliminate an over-statement (or under-statement) of the actual value of the output produced in a given period due to inflation (or deflation). Without such adjustment, the value of the GDP is the nominal GDP.

To derive real GDP from nominal GDP, the following formula is applied.

Real GDP_{Yr 1} = Nominal GDP_{Yr 1} × $\frac{CPI_{Yr 0}}{CPI_{Yr 1}}$

| / | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Practice Exercise The base year index is used as the basis for comparison and is always equal to 100. Suppose the base year (Y ₀) is 2007 and average prices in 2014 are 15% higher than in 2007. The price index for 2014 is 115 when measured from Y ₀ . |
| | If the nominal GDP is \$150 billion in 2007 and \$300 billion in 2014, calculate the real GDP (i.e. GDP at constant 2007 prices) in 2014. |
| | Real GDP ₂₀₁₄ = Nominal GDP ₂₀₁₄ $\times \frac{\text{CPI}_{2007}}{\text{CPI}_{2014}}$ |
| | $=$ \$300m $\times \frac{100}{115}$ |
| | = \$260.87m |
| | Real income is lower than nominal income because of an increase in the general price level. |

To measure the economic growth of a country over time, the *real* GDP is used. This is because any increase in the real GDP must be due to an increase in output as changes in the general price level have already been eliminated.

ii) Gross National Income (GNI)

Definition: Gross National Income (GNI) of a country is the *total market / monetary value* of *income received* by the *nationals* of a country over a given period of time *regardless of where production takes place.*

The difference between GNP and GDP is the Net Property Income from abroad.

GNI = GDP + Net Property Income from abroad

Net Property income from abroad = Property income from abroad – Property income to abroad

 Property income from abroad represents the income accruing to locally-owned factors of production located abroad e.g. subsidiaries of Singapore firms abroad remit part of their incomes back to the parent company in Singapore. Property income to abroad is the income earned by foreign-owned productive factors located in the country e.g. Income earned by Indonesian domestic helpers which are remitted to Indonesia.

Comparing the value of GNI and GDP gives an indication of how much of a country's net national income comes from abroad.

For more information on measuring economic growth using GDP vs GNI, refer to Appendix A.



Which do you think is a better indicator of Singapore's economic position: GDP or GNI?

With the possible shifts in economic structure, there may be a need to reexamine how economic growth is measured in Singapore. The focus will gradually shift towards GNI from GDP. The conventional way of assessing economic growth in Singapore, as with most countries, is by measuring the change in the GDP. Historically, Singapore GNI has been lower than GDP. However, if the presence of MNCs in Singapore fades in the longerterm and if Singapore companies are successful in venturing overseas, then GDP could under-represent the true improvement in Singaporean income(s). Then, GNI could surpass GDP.

You can read the following article to gain a better insight into the important differences between GDP and GNI for some countries. "The Asian countries where GDP does not tell the full story"



Household Income Statistics

Average household income statistics are sometimes used as an indicator for the monetary well-being of a country's citizens. Household income is a measure of the combined incomes of all people sharing a particular household or place of residence.

John Maynard Keynes developed a theory of consumption that is primarily determined by the level of disposable income. Higher disposable income leads to higher consumer spending.

i) Personal Income

Personal Income refers to the total income that is received by an individual. For an individual who is involved in the current production of goods and services, the total income that he receives (as a factor owner) include wages, rental income, interest earned from his savings etc.

In the case of an unemployed individual, his personal income will comprise the unemployment benefits that he receives from the state. Likewise, a retiree's personal income can be the monthly pension that he receives from his ex-employer.

Unemployment benefits and pensions are known as transfer payments because they are received by the individuals who do not contribute to the current production of goods and services.

ii) Disposable Income

Disposable Income is the income that is available – to the households or individuals – for spending on goods and services (and saving).

It is the amount that remains *after deductions* for personal taxes (e.g. income tax, inheritance tax or property tax) from the personal incomes.

Sometimes referred to as post-tax income, disposable income is a measure that is useful for analysing consumer behaviour. It is the best measure to use if we want to see how changes in household income affect consumption.

3.2 Uses of National Income Statistics

Now that we are familiar with the various national income statistics, we can look at how they can be used.

a) Measures Economic Growth

As mentioned earlier, national income statistics measure the level of economic activity in a given period of time usually one year. By comparing the national incomes from year to year, we can determine a country's economic growth rate (i.e the rate of change in real GDP or GNI).

Economic growth rate can be measured using the year-on-year change in the real GDP (or GNI) as shown in the formula below.

| / | | | | |
|-----------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------|
| Econom | ic Growth I | $Rate_{Yrt} = \frac{Real GDP_{Y}}{Re}$ | $\frac{V_{rt} - Real GDP_{Yrt-1}}{al GDP_{Yrt-1}} \times 100\%$ | 6 |
| Practice Using the and 2013 | e Exercise e given val 3. | ues in Table 1, calc | ulate the growth rate fo | or 201 |
| Table 1 constant | shows the (2010) pri | GDP of Singapore ces and the annual annual and the and | at 2010 market prices growth rate. Market Prices | s or a |
| | (i. | e. prices are held consta | int at 2010 level) | |
| | Year | GDP (S\$m) | Growth rate (%) | |
| | 2008 | 281,427.4 | 1.8 | |
| | 2009 | 279,729.3 | -0.6 | |
| | 2010 | 322,361.1 | 15.2 | |
| | 2011 | 341,886.1 | 6.1 | |
| | 2012 | 350,446.0 | 2.5 | |
| | | | | |
| | 2013 | 363,941.9 | 3.9 | |

From the above practice exercise, it can be seen from Column 3 in Table 1 that between 2011 and 2012, the Singapore economy is growing (positive sign) but at a slower rate (decrease in numerical value) and the rate rises in 2013.

b) Measures the Standard of Living in a Country

One of the key uses of national income statistics is to measure and compare the standard living of a country across time and between countries. In general, the higher the real national income per capita, the higher the material standard of living, since there would be more goods and services available for consumption per person in the country.

For other uses of National Income Statistics, refer to Appendix B.

3.3 Limitations of National Income Statistics as an Indicator of Economic Welfare

Historically, the **material** well-being of the average person in the country is measured by the *real GDP per capita*.

However, the GDP is limited in its usefulness as a measure of welfare or the standard of living in a country for the following reasons:

1. <u>Difficulties in Valuation</u>

In measuring national output, the main problem is that the output of some goods and services goes unrecorded. Thus GDP figures can understate the total value of output in the country. There are two categories of items that are not included in the calculation of GDP.

i) Non-Inclusion of Non-Market Activities

Unpaid services, output consumed by the producers themselves, voluntary services are not included in national income. Some examples include housekeeping and child-rearing activities, painting one's own house, volunteering services as well as payments-in-kind. Though these activities do contribute to one's welfare, they are simply ignored in the calculation of GDP. Thus the real level of production in the economy is understated.

ii) Non-Inclusion of the Underground Economy

Closely related to non-market activities is the so-called underground economy which includes both 1) illegal activities such as drug-dealing and prostitution, illegal money-lending and smuggling and 2) legal activities that are not declared to evade payment of taxes or compliance with regulations.

For example, teachers may provide paid private tuition outside their schools to supplement their income. However, to avoid paying higher income taxes, this additional income may not be declared. Another example is that of a selfemployed man who can under-declare his income for the same purpose.

2. <u>Limitation in Comparison Over Time</u>

The use of **GDP** as a measure of *material* welfare over time is limited for the following reasons:

a) Changes in General Price Level

If GDP of a country increases by 10% and the general price level increases by 15%, the amount of goods and services available to the population is actually lower. As such, using GDP measured at current prices (or in nominal values) may not reflect the actual changes in material welfare over time. When comparing changes in the material welfare (quantitative measure), *real GDP figures are more accurate as they have been adjusted for inflation*.

So when real GDP increases over time, ceteris paribus, it would mean that the material welfare of the economy has improved due to an increase in the quantity of goods and services produced and not due to the increase in the general price level.

In dealing with **real GDP growth rates**, a basic formula would be:

| Real GDP growth rate = | Nominal GDP growth rate | Inflation Rate |
|------------------------|-------------------------|------------------------------------|
| (Measured in %) | (Measured in %) | (Measured in %) |

For example, if the nominal GDP figure has risen by 8% but inflation has been 5%, the real GDP has only increased by 3%.

b) Population Growth

If the real GDP of a country increases by 5% for the year but its population size increases by 10%, then the amount of goods and services available to the average person in country may actually be lower. Although the economic pie is now larger, each individual gets a smaller portion of this pie as they have to share this pie with many more people. This leads to a fall in the material standard of living for the average citizen rather than an increase as would be indicated by the increase in GDP.

Because of this, the *real GDP per capita* is a preferred indicator for measuring the material well-being of the average person as it also takes into account changes in the population size. Hence, it can reflect the material standard of living more accurately than the GDP.

c) Unequal Income Distribution

GDP measures the total value of all final goods and services produced in an economy in a given year but it conveys no information about *who* gets to enjoy these goods and services. Hence, an increase in the GDP does not necessarily result in a higher standard of living for the *average* citizen if the increase in the GDP does not benefit everyone in the country.

A typical feature of many rapidly growing emerging economies is that some people become wealthier while others are left behind. The result is a growing income inequity. Consequently, although real GDP per capita may have increased, the general welfare of the majority may have fallen. Therefore, real GDP per capita fails to be an accurate reflection of material well-being in the economy.

To overcome this limitation, the <u>Gini coefficient is used together with real</u> <u>GDP per capita</u> for a more accurate conclusion about the *material* well-being of the average person in the country.

The Gini coefficient measures the degree of inequality in distribution of income in a country. It varies from 0 to 1 (0% to 100%). A Gini coefficient of 0 represents perfect equality. In contrast, a Gini coefficient of 1 implies perfect inequality i.e. 1 person in the country gets all the income.

Singapore's Gini Coefficient was 0.473 in 2011, 0.478 in 2012 and 0.463 in 2013 7 . There was a drop in the coefficient which reflects the positive redistributive effects of government transfers.



⁷ Source: <u>http://www.singstat.gov.sg</u>

d) Production DOES NOT equal Consumption

If GDP rises as a result of a rise in investment in capital goods, this will not lead to an improvement in the *current* living standards though it could lead to higher *future* consumption.

By the same token, if the government increases its expenditure on defence, it is unlikely to produce any tangible improvements in material well-being of the people even though the rise in GDP is contributed by a larger government expenditure on defence.

e) Environmental Degradation and Resource Depletion

The rapid economic growth in emerging economies like China and India is reflected in their GDP statistics. What the statistics do not record is the negative impact the production of goods and services can have on the environment. Some examples of the negative environmental impact include water, air and noise pollution, loss of bio-diversity, ozone depletion and the problem of global warming. If these negative impacts are taken into account, the well-being of the average person may not be as high as the GDP data suggests.

The exploitation of finite natural resources also tends to be overlooked in GDP. When an oil company extracts and sells a barrel of oil, GDP increases by the value of the oil, but the fact that there is one less barrel of oil in the ground, waiting to be extracted sometime in the future, is not reflected in GDP.

f) Use of Non-Material Standard of Living Indicators

Welfare or the standard of living in a country comprises both material and nonmaterial aspects of life. Besides GDP, there are other factors to consider so as to better reflect the non-material aspect of life.

i) Leisure Time

Over time, the GDP of a country may increase because the people work longer hours. If this is the case, then the people in the country may not be better off. This is because the number of leisure hours, which can be used to pursue activities that can raise a person's welfare, is reduced. The value of leisure forgone is not priced in markets and therefore not reflected in GDP.

ii) Life Expectancy at Birth

Life expectancy at birth is defined as the average number of years that a newborn is expected to live if he or she were to pass through life⁸. The average life expectancy at birth for Singapore has increased from 67.1 years in 1965 to 83.1 years in 2017⁹. This implies that the quality of life in terms of child and maternal health has improved.

⁸ Source: *http://www.un.org*

⁹ Source: *http://www.singstat.gov.sg*

iii) Infant Mortality Rate

The infant mortality rate is the number of deaths under 1 year of age occurring among per 1000 of live births during a given year. The infant mortality rate in Singapore has dropped from 2.7 per 1000 live birth to 2.2 in 2018¹⁰. This is an indication of an improvement in the quality of life in terms of better healthcare services.

iv) Literacy Rate

Adult literacy rate is defined as the percentage of persons aged 15 and over who can read and write¹¹. Increase in literacy rates shows that more people are able to access information for a better quality of life. Singapore's literacy rate has increased from 82.9% in 1990 to 97.2% in 2017¹².

The above limitations when using GDP in comparison over time can also be considered as limitations in making *comparison between countries* (over **space**). In addition to these limitations, the comparison over space is made more complicated when comparison is made between developed countries and developing / less developed countries.

¹⁰ Source: *http://www.un.org*

¹¹ Source : *http://www.unicef.org*

¹² Source: *http://www.singstat.gov.sg*

3. <u>Limitation in Comparison Over Space</u>

The use of GDP as an indicator to compare material living standards between countries is not accurate since it has not been adjusted for the difference in population sizes. It only compares how large the total national income of a country in nominal value is but does not reflect the actual amount of goods and services available to an average person in the country. Therefore *GDP per capita* is a preferred indicator for comparing the material well-being of the average person living in the respective country. An average person living in a country with a higher GDP per capita would mean he has a higher material standard of living.

However, GDP per capita may still not be the most accurate indicator to compare living standards between countries. The following limitations are applicable to the use of GDP per capita when comparison is made between developed countries and developing / less developed countries.

a) Limitations in the Use of Market Exchange Rates

There is a big problem with comparing GDP figures of different countries because the GDP is measured in the currency of the respective countries.

To enable comparison to be made, these figures have to be converted into a common currency, e.g. US\$ or £, at the *current* exchange rate. But the exchange rate may be a poor indicator of the purchasing power of the currency at home. For example, US\$1 may exchange for, say, 6.4 Yuan. But will US\$1 in the US buy the same amount of goods as 6.4 Yuan in China? The answer is almost certainly no.

To solve this problem, GDP can be converted into a common currency at the *purchasing power parity (PPP)* exchange rate. This is a rate of exchange that allows a given amount of money in one country to buy the same amount of goods in another country after exchanging it into the currency of the other country. **GDP per capita at PPP exchange rate is a more accurate indicator to compare standard of living across space.**

Using the Big Mac Index as an example, the Big Mac costs US\$5 in the US and 20 Yuan in China. This gives an exchange rate of US\$1 to 4 Yuan in PPP terms. This means that US\$1 spent in US will get you the same amount of goods and services as 4 Yuan in China. **The use of PPP exchange rate thus removes any differences in cost of living between the 2 countries.**

If using the actual exchange rate, 20 Yuan = US\$3.13

If using Big Mac exchange rate (as a proxy for PPP exchange rate), 20 Yuan = US\$5

Since a person can buy more goods and services in USD when using the PPP exchange rate, it would suggest that China has a lower cost of living than USA.



Read the article on the Big Mac Index to understand more. https://www.economist.com/news/2020/07/15/the-big-mac-index





b) Distribution of Income not reflected in GDP Figures

A higher GDP per capita does not mean that the average individual in the developed country is better off than one in a less developed country. Just like comparison of living standards over time, GDP is also limited in its use as a tool for making a comparison of living standards over space because it does not consider the income distribution in the country.

c) Size of the Underground Economy

The underground economy exists in every country in varying degrees. For example, Sweden's underground economy has been estimated to be 13% of its GDP while that of UK is 6 to 8%. If UK's official national income figures are higher than Sweden's, we cannot say for sure that the Swedes are worse off.

d) Different Sources of Statistical Data

Statistical services are better developed and records better kept in the developed countries given its higher literacy rate and its infrastructure. Thus their GDP figures are more complete and reliable compared to those from the less developed countries.

e) Differences in the Components of GDP

Some countries spend huge sums of money on defence and less on consumption. Thus welfare may not be higher for this country even though its GDP may be higher than another country that does not spend as much on defence.

f) Difference in Accounting Procedures and Items Included

In developed countries, most of the activities and production go through the market and are hence included in the computation of the GDP.

On the other hand, in less developed countries, people commonly trade services with each other or co-operate on various tasks without making any payment to each other.

- Families in these communities also tend to be relatively self-sufficient growing their own food crops and doing many DIY projects.
- Thus, the actual amount of goods and services available to the people in a less developed country may be underestimated as many of these transactions do not go through the market and are thus not included in the calculation of GDP.
- As a result, differences in GDP figures of a developed country and that of a less developed country may exaggerate the differences in economic output, reducing the usefulness of making comparisons between these two groups of countries.

g) Other Indicators of the Standard of Living not Reflected in GDP Figures



<u>Think about it</u>

Consider how the non-material standard of living indicators, e.g. life expectancy at birth, infant mortality rates and literacy rates affect the accuracy of using GDP per capita to compare the standard of living across countries.

To conclude, GDP data, as a measure of welfare, should in fact be taken only as rough estimate. As a gauge of a country's standard of living, it is flawed as it only captures the material aspect of welfare. Non-material aspect of living standards is largely ignored. Nevertheless, it provides insight into how the country fares compared to the others or compared to the past.

To supplement the GDP as a measure of well-being, other factors that are useful for assessing qualitative aspects of standard of living must be considered. These include

- Leisure time
- Availability of medical and/or educational facilities per head
- Nature and quality of welfare services

For a more holistic analysis of standard of living and to overcome the limitations of GDP as a measure of welfare, economists have come up with alternative indicators to be used with GDP statistics.

So, does GDP measure welfare or does it not?

When Senator Robert Kennedy was running for president in 1968, he gave a critique of the GDP, 'It does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our courage, nor our wisdom, nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile, and it can tell us everything about America except why we are proud that we are Americans.'

Much of what Robert Kennedy said is true but a large GDP does in fact help us to lead a better life. GDP does not measure the health of our children, but nations with larger GDP can afford better health care for their children. GDP does not measure the quality of their education, but nations with larger GDP can afford better educational systems. GDP does not measure the beauty of our poetry, but nations with larger GDP can afford to teach more of their citizens to read and to enjoy poetry. GDP does not take account of our intelligence, integrity, courage, wisdom, or devotion to country, but all of these laudable attributes are easier to foster when people are less concerned about being able to afford the material necessities of life.

N.Gregory Mankiw

In short, although GDP does not measure economic well-being, it is positively associated with many things that people value, including a higher material standard of living, better health, longer life expectancies, and high rates of literacy and educational attainment. This relationship between GDP and economic well-being has led many people to emigrate from poor nations in search of a better life and has motivated policymakers in developing countries to try to increase their nations' rates of economic growth.

3.4 Alternative Measures of Welfare / Standard of Living

Given the limitations in using GDP to measure economic welfare and standard of living, the following alternative indicators can be used. These indicators take into account other factors to give a more complete picture of the standard of living.

a) Human Development Index (HDI)

The most widely used alternative measure of welfare is the Human Development Index (HDI) that measures progress in these three basic dimensions:

1) Health (measured by life expectancy at birth)

2) Knowledge (measured by combining expected years of schooling for schoolage children with the mean years of prior schooling for adults aged 25 years and older)

3) Income (GNI per capita at PPP exchange rates)

(Recall that GNI includes remittances, allowing for a more accurate economic picture of many developing countries, compared to the use of GDP.)

The HDI Index is based on the premise that the most basic capabilities for human development are to lead long and healthy lives, to be knowledgeable, to have access to the resources needed for a decent standard of living and to be able to participate in the life of the community. Without these, many choices are simply not available and many opportunities in life remain inaccessible.

HDI attempts to rank all countries on a scale of 0 to 1 based on the three abovementioned criteria. However, one limitation is that it measures relative but not absolute levels.

b) Measure of Economic Welfare (MEW)

MEW adjusts GDP and other measures of national income by adding the value of leisure, non-marketed activities such as unpaid housework, and the value of services given by consumer durables over the year. Deductions are made for expenditures on commuting to work, defence, the police and externalities.

The use of MEW is not without its problems because it involves the difficult task of assigning reliable monetary values to non-marketed goods.

c) Index of Sustainable Economic Welfare (ISEW)

Popular among environmental groups, ISEW starts with consumption, as measured in GDP, and then makes various adjustments to account for factors that GDP ignores like income inequality, household production, environmental costs, resource depletion and damage.



<u>Think about it</u>

What other indices have been used to measure standard of living?

The World Happiness Report 2018, ranks 156 countries by their happiness levels. In 2018, Finland was ranked first and Singapore was ranked 34th. Overall rankings of country happiness are based on the pooled results from Gallup World Poll surveys from 2015-2017. All the top countries tend to have high values for all six of the key variables that have been found to support well-being: income, healthy life expectancy, social support, freedom, trust and generosity.

Summary: National Income and Standard of Living 3.5 Product/ Output/ Expenditure **Income Approach** Value-Added Approach Approach **Gross Domestic Gross National** Product Uses Income (commonly used) 1. Measure economic growth Limitations Measure the material SOL of 2. an economy 1. in measuring production (e.g. housewife's services, underground economy) 2. in measuring welfare or standard of living 3. in comparisons over time and space Other measures of living standards HDI • MEW . ISEW Others •

For more information on different measures of standard of living, refer to Appendix C.

4. INDICATOR OF PRICE STABILITY

Stable prices of goods and services and factors of production are necessary for business confidence. The lower degree of uncertainty due to price stability encourages economic agents such as firms to undertake more investment projects. In doing so, the economy can achieve a higher level of economic activity.

4.1 Inflation Rate

Definition: Inflation is characterised by a *sustained / persistent increase* in the *general price level* over time.

The inflation rate is the percentage change in the general price level from year to year. *Changes* in the general price level can be measured by the **Consumer Price Index (CPI)**.

The CPI is used to measure the change in price of a fixed basket of goods and services commonly purchased by households over a specified time period.

Higher inflation rates means there is a faster increase in the general price level and an erosion of purchasing power of money in the economy. This means that the same amount of money can buy fewer goods and services and can destabilise the economy.

1) Measuring the Inflation Rate

Inflation rate is usually measured using the Consumer Price Index (CPI) as shown in the formula below.

Inflation rate_t = $\frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \times 100\%$ (where t denotes the time period)

| | ibumer | I HICC I | mach (| | 100 jui | ia iiiia | cion nu | | |
|--------|--------|----------|--------|------|---------|----------|---------|------|------|
| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| СРІ | 96.2 | 98.5 | 99.5 | 99.0 | 98.4 | 99.0 | 99.4 | 100 | 99.8 |
| Annual | 4.6 | 2.4 | 1 | -0.5 | -0.5 | 0.6 | 0.4 | 0.6 | -0.2 |

Table 2: Consumer Price Index (2019 = 100) and Inflation Rate

(Source: www.singstat.gov.sg)

To calculate the inflation rate for 2018, we apply the above formula where t = 2018

Inflation rate₂₀₁₈ = $\frac{99.44 - 99}{99} \times 100\% = 0.4\%$

An inflation rate of 0.4% means that prices have increased by an average of 0.4% in 2018.

A rise in the inflation rate means that there is a faster increase in the general price level while a fall in the inflation rate means there is a slower increase in the general price level.

A negative inflation rate means a fall in the general price level which is also known as deflation.

From Table 2, it can be seen that the *consumer price index* in Singapore has been increasing from 2012-2014 and 2017-2019, though the *rate of increase* differs from year to year. In 2015, 2016 and 2020, the *consumer price index* fell.

Rates of inflation may vary dramatically both over time and over space, from 1 or 2 percent per year in low-inflation countries (such as Germany, 1.5% in 2013^{13}) to 1000% per year or more in high-inflation countries (such as Zimbabwe, 1000% in 2006¹²). When the latter happens, we say that the country, e.g. Zimbabwe, is experiencing hyperinflation.

Measuring the inflation rate over time gives the policy makers an indication of the effectiveness of their anti-inflationary policies. If the inflation rate did not fall as projected, the government can deduce that effectiveness of its current anti-inflationary policies was limited and can thus work on alternative policies to solve the problem.

¹³ Source: data.worldbank.org

4.2 The Consumer Price Index (CPI)

1) Calculation

As mentioned, the CPI measures the change in the prices of a fixed basket of goods and services commonly purchased by households in a specified time period. The types and specifications of the goods and services in the CPI basket as well as their quantities are kept constant in the base period. This ensures that any changes in the index reflect solely the price changes over time. The CPI of the basket of goods and services in the base period is assigned a value of 100. The CPI value in the current year is expressed as a percentage of the base year value.

For example, in Table 2, the base period is 2019 (CPI is 100). Since the CPI between 2012-2018 and in 2020 was less than 100, this means that prices were highest in 2019.

Weights are assigned to the various goods and services in the basket based on the consumption pattern of households.



Source: Singstat.gov.sg

By assigning weights based on the consumption pattern of households, the CPI can more accurately reflect the price changes of individual items and their impact on inflation. For example, if there is a 10% price increase for both food and healthcare, the price increase in food would have a greater impact on the overall CPI than the price increase in healthcare.

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// Important Note

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- We **CANNOT** compare different types of sub-indices to draw conclusions about *absolute* price levels.
- Take for example that under the index heading "Cooked Food", the sub-indices are cooked food at hawker centre and cooked food from restaurant.
- If the index for cooked food at hawker centres is 110 in a given period and that for restaurant food is 105, it does not mean that cooked food at hawker centres is more expensive than restaurant food!
- What it means is that the price of cooked food at hawker centres has increased by 10% since the base year period, and that of restaurant food, 5%. In other words, the price of hawker food at hawker centres has increased twice as much as that of restaurant food since the base period.

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In measuring the change in general price level, the price index measures the change in value of money as well. *Higher prices of goods and services result in a fall in the internal value of money* i.e. one can now buy less goods and services with a given amount of money in the country. To put it simply, the *purchasing power* of money in the country falls.

2) Uses of CPI

The CPI is closely monitored by businessmen, economists and government officials. Analysis of movements of the CPI and comparisons with other major cities and countries are carried out for economic and business planning.

The CPI is often used in the formulation of policies and to identify the sources of inflation. For example, the Singapore government makes regular adjustments to various economic and social schemes after taking into consideration the inflation rate as indicated by the CPI. These include the minimum sum that individuals have to put aside in their Central Provident Fund (CPF) at age 55 and the amount of public assistance to be given to the needy as prices rise.

The CPI is also a key indicator used by the National Wages Council (NWC) in Singapore in its deliberations and recommendations on wages each year and by trade unions in their wage negotiations with the employers. Changes in wages have implications on the costs of production facing the firms and hence their profitability.

As mentioned in the earlier segment of this theme, we use the CPI as a price deflator in the calculation of *real* economic statistics and indicators such as the GDP at constant prices which is the value of real GDP.



<u>Think about it</u>

How does inflation affect the cost of living? How then would it affect the standard of living?

If general price levels rise, the cost of living would rise. The cost of living is the cost of maintaining a certain standard of living. It is a measure of changes in the average cost for a household of buying a basket of different goods and services.

If the cost of living rises faster than wages, then the quantity of final goods and services that can be enjoyed by an average person would fall, affecting material SOL. However if the real incomes continues to rise, then despite the higher cost of living, the material SOL might still increase.

5. INDICATOR OF UNEMPLOYMENT

Definition: Unemployment refers to a situation where there are people who are *willing* and *able* to work *but cannot find jobs*.

5.1 Unemployment Rate

The unemployment rate is calculated as the percentage of unemployed persons to the labour force.

Unemployment Rate = $\frac{\text{No. of unemployed in the labour force}}{\text{Labour force}} \times 100\%$

In Singapore, the labour force refers to persons aged 15 years and above who are either employed or unemployed (but are willing to work) during the reference period. This group is also known as the economically active population.

Note: Labour force ≠ Population!

Economically inactive persons refer to those who are not working, do not have a job to return to and are not looking for a job during the reference period. Full-time students, unpaid home-makers, retirees, and people unable to work because of disabilities are examples of economically inactive people and are *not* part of the labour force.

The unemployed persons refer to individuals aged 15 years and above who are without work during the reference period but are available for work and were actively looking for a job. They include persons who were not working but are taking steps to start their own business or taking up a new job after the reference period.

The higher the unemployment rate, the harder it is for each individual who wants a job to find work. In general, a high rate of unemployment indicates that the economy is performing poorly.

This is because the unemployment rate indicates the amount of unemployed human resources in the economy. The existence of unemployed resources involves an opportunity cost and has an impact on the income / growth prospects of the economy.

| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------|---------|---------|---------|---------|---------|-------|---------|---------|
| Labour force | | | | | | | | |
| ('000) | 3,361.8 | 3,443.7 | 3,530.8 | 3,610.6 | 3,672.8 | 3,657 | 3,675.6 | 3,740.8 |
| UnN rate (%) | 1.9 | 2 | 1.9 | 2 | 2.1 | 2.2 | 2.1 | 2.2 |

Table 3: Labour Force and Unemployment Rate, Singapore

Source: Singapore Department of Statistics



THINK ABOUT IT

How does unemployment affect standard of living?

Unemployment rates could impact material SOL to some extent. Rising unemployment rates would usually be accompanied by falling national income. If unemployment rates have been rising, this could mean that the average person, could not enjoy as much goods and services as before due to the loss of income.

There could also be exceptions where the rise in national income did not result in the creation of more jobs. Hence, it might be useful to also look at unemployment figures when assessing SOL.

Unemployment rates could also affect non-material SOL. If high unemployment rates bring about high levels of anxiety, this would affect non-material aspect of SOL. On the other hand, if unemployment rates rise but consequently working hours fall, then the non-material aspect of SOL may actually improve.

6. BALANCE OF TRADE

The balance of trade refers to the difference between a country's total international receipt from its exports and the total international payment for its imports.

6.1 Inflows and Outflows

Transactions which lead to *receipts* of money from abroad for export of goods and services are regarded as *inflows*.

Transactions which give rise to *payments* of money from the country for imports of goods and services are regarded as *outflows*.

6.2 Structure of the Balance of Trade

The balance of trade is known as the sum of the goods and services balances (a + b).

a) Goods Balance (Visible trade balance)

This records the value of imports and exports of physical goods / merchandise. *Exports* result in an *inflow* of money and *imports* result in an *outflow* of money.

There is a surplus on the goods balance when total value of exports exceeds total value of imports and a deficit when total value of import exceeds total value of exports.

b) Services Balance (Invisible trade balance)

This records imports and exports of services such as civil aviation, banking, transportation, tourism and insurance. The purchase of a foreign holiday represents an outflow of money whereas the purchase of a Singapore insurance policy by a foreigner is an inflow.

Table 4 shows the goods and services balances in the balance of payments. *(We will study more about the balance of payments later on.)*

If the country has a trade deficit, it is not earning enough from exports to pay for its imports. As such, part of the import spending will have to be financed either from the use of foreign currency reserves, borrowing from overseas or selling of assets to foreigners. In the future, the country will be poorer as it will have less foreign currency reserves, pay interest to overseas creditors or repatriate profits and rentals from the assets owned by foreigners. The country is therefore sacrificing its future living standards to finance current living standards.

| | | In million S\$ | |
|----------------------------------------------|--------------------------|-----------------|---------------------------|
| | 2015 | 2016 | 2017 |
| A Current Account Balance | <u>77,66</u> 7. <u>7</u> | <u>81,296.6</u> | <u>84,</u> 2 <u>20</u> .6 |
| Goods Balance (Visible trade balance) | 123,482.6 | 118,092.3 | 116,966.3 |
| Services Balance (Invisible trade balance) | -15,889.2 | -6,281.2 | -8,445.1 |
| Primary Income Balance | -15,776.9 | -22,102.3 | -15,907 |
| Current Transfers (Secondary Income Balance) | -14,148.8 | -8,412.2 | -8,393.6 |
| B Capital & Financial Account Balance | 73,991.1 | 83,693.7 | 46,499.8 |
| Direct Investment | -54,268 | -64,007.8 | -53,789.6 |
| Portfolio Investment | 81,532.1 | 37,428.1 | 47,356 |
| Financial Derivatives | -8,201.4 | 18,564.7 | -18,692.8 |
| Other Investment | 54,928.4 | 91,708.7 | 71,626.2 |
| C Net Errors & Omissions | -2,175.9 | -58.2 | 120.4 |
| D Overall Balance (A-B+C) | 1,500.7 | -2,455.3 | 37,841.2 |
| E Reserve Assets | -1,500.7 | 2,455.3 | -37,841.2 |

Table 4: A Summary of Singapore's Balance of Payments, selected years

Source: Yearbook of Statistics Singapore,

6.4 Balance of Trade as a Key Indicator

- 1) The main purpose of the balance of trade is to inform the government of the international position of the country vis-a-vis the rest of the world. This is useful as a basis for policy consideration.
- 2) There is a direct relationship between the balance of trade and exchange rates. Knowledge of how the exchange rates respond to balance of trade disequilibrium enables firms to plan and act accordingly.

The implications of having balance of trade disequilibrium will be further examined in the later topic of "Macroeconomic Aims & Policies".



THINK ABOUT IT

How does a change in BOT affect standard of living?

A change in BOT position could affect national income if for example, rise in import expenditure exceeds fall in export revenue. Ceteris paribus, this might cause a fall in national income, which would then affect material SOL.

More details on how information on BOT could give us insights into a country's SOL will be covered in later chapters.

7. CONCLUSION

Economists spend a lot of time analysing key economic indicators because they offer a snapshot about the general economic health and success of a country.

For example, because of the Covid-19 situation, Singapore experienced a severe recession in the second quarter of 2020. Economic growth rate was a negative $13.2\%^{14}$ while Unemployment rate was at 2.9% in in the second quarter of 2020 ¹⁵.

You can understand the situation better by learning how economists calculate national income statistics and how governments use them to implement policies to deal with the situation. It is from these indicators that we can conclude whether Singapore is doing well, and whether Singapore has been able to achieve her macroeconomic goals or not.

Check-out

Now that you have reached the end of this section, you should be able to:

- Explain the circular flow of income involving households, firms, government and the foreign sector
- Explain the significance of each of the key economic indicators as a measure of economic performance
- Interpret statistical data for each key economic indicator
- Use the key indicators to assess the economic performance of an economy as well as make international comparisons
- Analyse the limitations of using the indicators to measure economic performance as well as the standard of living of an economy across time and space .

¹⁴ https://www.straitstimes.com/business/economy/singapore-lowers-2020-gdp-forecast-to-between-5-and-7-as-economy-plunges-worse-than

¹⁵ https://www.channelnewsasia.com/news/singapore/covid-19-singapore-unemployment-highest-retrenchment-doubles-12971904

Past Year 'A' Level Questions

Note to students: Questions on Key Economic Indicators are often asked together with other macroeconomic topics. The following questions show how they were asked in the past years. One can only fully answer the 'A' level examination questions on Key Economic Indicators well after the completion of the Economic syllabus. Nevertheless, part (a) can be a question on the concept of Key Economic Indicators and their applications.

1. [H2 2017 Q5]

Singapore is considered to have a high standard of living, a high cost of living and a strong overall macroeconomic performance.

- (a) Explain the link between the standard of living, the cost of living and the macroeconomic performance of a country. [10]
- (b) Discuss the economic policies which might have resulted in Singapore arriving at this position. [15]

2. [H2 2014 Q3]

In 2011 Singapore's GDP at 2005 prices grew by 4.9%, the total population grew by 2.5%, inflation (as measured by the CPI) was 5.2% and overall unemployment stood at 1.9%.

Discuss the limitations of these statistics in both assessing the change in the standard of living in the Singapore economy in 2011 and comparing it with that of other economies. [25]

3. [H2 2014 Q4]

The following data relate to the Singapore economy in 2011.

| | \$ billion |
|------------------------------------|------------|
| Private Consumption Expenditure | 129 |
| Gross Fixed Capital Formation | 77 |
| Government Consumption Expenditure | 34 |
| Exports of goods and services | 531 |
| Imports of goods and services | 444 |
| GDP | 327 |

Source: http://www.singstat.gov.sg/stats/latestdata.html, accessed 30 January 2013

(a) Economies consist of several key sectors such as households, firms, government and the rest of the world.

Explain the relative importance of these key sectors of the circular flow of income in determining the national income in Singapore. [10]

(b) Discuss the likely effects on Singapore's national income and its components when its exchange rate appreciates. [15]

8. APPENDICES

Appendix A: Answering Circular Flow of Income Questions

Using the circular flow of income, explain the effects on national income when a country implements expansionary fiscal policy. [10]

Introduction: Key details about the Circular Flow of Income

The circular flow of income illustrates the flow of money as well as goods and services between producers and consumers in an economy. For an open economy, the Circular Flow Model comprises of **households**, firms, government and the foreign sector.



As seen in Figure 1, investments by firms (I), government expenditure (G) on goods and services and export revenue (X) from foreigners are **injections (J)** into the circular flow. Savings (S), tax payments (T) to the government and import expenditure (M) to the foreign sector are **withdrawals (W)** from the circular flow of income. An economy is said to be in **equilibrium** only when total injections are equal to total withdrawals.

There are several **assumptions** regarding the circular flow of income. The general price level is constant, the economy is operating at spare capacity, and the marginal propensity to import, save, tax, and consume are constant.

Body: Explain how expansionary fiscal policy affects J/W

Governments often use expansionary fiscal policy to boost an economy by **lowering** taxes and/or increasing government expenditure.

A lowering of taxes such as direct taxes will result in a fall in T and a **decrease in withdrawals** in the circular flow of income model. Assuming that the fall in taxes is \$100 million, there would be a fall in withdrawals by \$100 million. Since J>W, the economy is said to be in disequilibrium.

<u>Or</u>

Increasing government expenditure will result in an increase in G and an **increase in injections** in the circular flow of income model. Assuming that the increase in government expenditure is \$100 million, there would be an increase in injections by \$100 million. Since J>W, the economy is said to be in disequilibrium.

Body: Re-establishing equilibrium in the Circular Flow of Income

The disequilibrium will initiate a process to bring the economy back to a state of equilibrium where J=W.

In order to meet the increase in demand for goods and services, firms would demand more factors of production (FOPs) such as labour and other resources from households. Firms would thus increase factor payment to the owners of these FOPs. Hence, households experience an increase in income by the amount of \$100 million. With increased income, households tend to consume more domestic goods and services, save more, pay more taxes to the government, and purchase more imports. These lead to a **rise in withdrawals** in the circular flow of income model.

Assuming that the sum of MPS, MPT, MPM is 0.5, households would also purchase more goods and services from firms due to the rise in income of \$100 million. This is due to the rise in **induced consumption** which refers to consumption induced or generated by changes in income. In turn, this would increase induced consumption by \$50 million. The increased expenditure by households increases the demand for goods and services. To produce more goods, firms would increase their factor payments to the owners of FOPs by the amount of \$50 million. Hence, the households experience another wave of rising income of \$50 million. As before, with increased income, households tend to consume more domestic goods and services, save more, pay more taxes to the government, and purchase more imports. Given that MPS, MPT and MPM are constant, this would increase the withdrawals from the circular flow by the amount of \$25 million. Similarly, the rising income would reduce households' expenditure on goods from firms by the amount of \$25 million. The cycle then repeats multiple rounds.

This would result in a **multiplied increase in equilibrium level of national income** by \$200 million since the multiplier value, in this instance, would be 2 (i.e., k =1 $\frac{1}{MPS+MPT+MPM}$).

Conclusion: Summarise key points and state the effect on national income

When withdrawals have risen to match the injections (J=W), the equilibrium will be restored. Therefore, when a country implements expansionary fiscal policy, national income would have increased by a multiplied amount.

Appendix B: Measuring Economic Growth : GDP vs GNP



Which is the wealthiest nation in the world? Which nations are currently experiencing high levels of economic growth? Are all nations within the Eurozone currently in the same part of the economic cycle?

There are many questions that economists are asked and in order to answer them, there needs to be some mechanism of measuring the level of economic activity within an economy. There are also broader questions, such as are living standards in South Sudan, now the world's newest independent country, higher than in the neighbouring north? Or, which is the least developed nation on the planet? This notion of development is a far wider ranging concept and one which we will return to in a later edition of *Economics Today*.

In order to answer these questions, economists have devised a set of national accounts. These are published each year in the 'Blue Book' and they can be downloaded from the national statistics website.

The circular flow of income shows the amount of money flowing around the UK economy. There are three ways that one can calculate the value of the UK. Each has a different method, but they all arrive at the same answer. The first is the Income Approach; adding up all of the income by the various different economic agents within the economy. The second is the Output Approach, adding up the total value of goods and services within the economy, and finally the Expenditure Approach. Let us look at the last one in more detail. Within an economy consumers spend money (Consumer Spending C), Firms spend money (Investment I), Governments spend money (Government Spending G) and then foreigners spend money on buying our products (Exports X). To avoid double counting, we must take away our nations spending on foreign produced goods (Imports M).

We can show this sum in the following formula: C + I + G + (X - M)

The numerical answer to this formula is known as a nation's Gross Domestic Product (GDP). GDP is measured in money. In order to produce some meaningful comparison, it is useful to convert all nation's GDP to the same currency, generally the \$US and calculate the GDP per head of the population. In addition to this, when comparing growth rates in GDP, it is also necessary to discount the figure for inflation, in order to see if the economy has grown or whether the increase in GDP is simply due to price rises. The resultant measure is therefore Real GDP per Capita (per head) measured in \$US. See the IMF website (www.imf.org) which shows the GDP per capita for nations around the world and therefore allows easy comparison to be made. It makes clear that the G20 nations in the more developed world have high levels of GDP per capita, whilst nations in central Africa and generally across the equator, tend to have low levels of GDP per capita.

Why two measurements - GDP and GNP?

Having explored the concept of GDP, let us turn to Gross National Product – or GNP. Why do we need two variables? The difference between the two relates to two things – **Location** and **ownership**.

GDP measures all economic activity which is located within a nation's boundaries. Therefore, all production and economic activity which is based within the UK will be counted in the UK's GDP. This includes all output from the Nissan factory based in the North East and the Toyota factory based in Derby, despite the fact that they are not owned by UK enterprises.

On the other hand, Gross National Product considers ownership. In the case of GNP, what is important is whether the output is owned by UK firms. Therefore, GNP will not include output from factories such as Nissan and Toyota and Panasonic as these are foreign-owned organisations which are based in the United Kingdom. On the other hand, it will include the output of UK-owned organisations which have bases overseas. For example, British Petroleum has bases all around the world which make profits that are repatriated back to the UK. Likewise, in the service sector, Tesco has expanded into America – Fresh and Easy and also into China. These overseas sections of the business will be included in the UK's GNP, but not its GDP – indeed, they will contribute to the GDP of the nation that they are based in.

The statistical difference between GDP and GNP is called Net Property Income from Abroad or NPIA. NPIA is made up of profits, interest and dividends coming into the UK from the assets that UK enterprises own abroad. GNP = GDP + NPIA (where NPIA can be positive or negative).

Table 1 shows that in the case of Ireland its GDP is significantly higher than its GNP. But in the 1970's this was not the case when its GDP and GNP were similar. However, throughout the 1990's and into the new century, Ireland attracted many multinational organisations who have located in the country. This has led to a significant *outflow* from Ireland as profits are repatriated back to the various home nations. In 2010, the Irish Government announced that GNP was a better measurement for the nation, as it more accurately reflects the actual state of the nation: in its 2010-2014 Recovery Plan it expects GNP to fall to only 73% of GDP. Therefore, using GDP as an official measure, would significantly overvalue the level of economic activity.

| GDP and GNP | 2009 | 2010 | % Change |
|-------------------------------|-----------|-----------|----------|
| GDP at Current Prices | €160,596m | €155,992m | -2.9% |
| GDP at Constant (2009) Prices | €160,596m | €159,906m | -0.4% |
| GNP at Current Prices | €132,233m | €128,207m | -3.0% |
| GNP at Constant (2009) Prices | €132,233m | €132,584m | +0.3% |

For the UK, the opposite is the case in the sense that GNP is higher than GDP. In 2009, the GNP for the UK totalled £1,423,136,000, whereas GDP totalled £1,392,705,000. This shows that there is a slight positive 'net' inflow of income from assets abroad, and more significantly, the economy is far more balanced than its Irish neighbour in terms of income arising from both home and overseas assets.



Figure 1: Circular flow of income – developing gross domestic product

Source: Economics Today Vol 19 Issue 1

Appendix C: Other Uses of National Income Statistics

In addition to measuring economic growth and standard of living, national income statistics can also be used for the following purposes:

a) Determines Contribution from Various Sectors of Economy

The output approach of calculating national income shows the relative percentage contribution of each sector in the economy. This shows the relative importance of the different sectors and industries in the economy in terms of their respective contributions to national income and the percent of the total labour force employed by these sectors.

The relative contribution of the different sectors can be used as a reflection of the stage of development of a country with the primary sector being a major contributor in a developing country and the secondary sector being the main contributor in an industrialised country.

Comparison of the national income statistics over time therefore reveals the trend of growth of various sectors.

From the comparison, we will know whether a sector of the economy is growing or declining. Such figures reflect 1) the engine of growth in the economy and 2) the effectiveness of government policies at restructuring the economy.

b) Shows Distribution of National Income among the Different Factors of Production

The income method of calculating the national income indicates the distribution of income among different income groups such as workers, landlords and capital owners since it shows the national income share of each group. The distribution of the national income between wage, rent, interest and profit is significant in determining whether a country's income is fairly distributed or the extent to which income is unequally distributed between the working class (wage earners) and the asset owners (rent, interest and profit earners).

c) Serves as a Guide for Formulating Policies and Strategies

i) To the Government

National income statistics provide information on the *state of the economy* and it serves as a guide to the government in formulating economic policies. For instance, it is crucial for the government to know the current value of output and the patterns of expenditure when it formulates policies to combat unemployment, inflation and balance of payments disequilibrium.

Knowing the patterns of expenditure in the economy will also enable the government to know if too much money is being spent on consumption at the expense of investment. If there is too little investment, the government will have to think of ways to encourage investment and build up its capital stock. It can do so through giving incentives such as subsidies, lower taxes and higher (capital) depreciation allowances.

The government can thus use national income statistics for economic planning as well as to evaluate policies and to regulate the economy.

ii) To the Firms

National income data can also guide firms in assessing the economic climate (interpret economic trends) because the data could show the probable direction in which the economy is heading. Producers can use national income statistics to make forecast and plan their investment or output accordingly. This helps firms to formulate their business strategies as the national income statistics enable them to know the expenditure pattern of the economy.

d) Gauges the Economic Strength of Different Countries

The comparison of GDP or GNP data of different countries makes it possible to gauge the *relative* economic strengths of different economies. It can be used to identify those countries in need of assistance. The United Nations categorises countries into developed or under-developed based on their respective GDP per capita.

Real GDP per capita = Real GDP ÷ Total Population

GDP data is also used as a basis for calculating a country's contribution (often as a percentage of its GDP) to international agencies such as the World Bank and the International Monetary Fund (IMF).

Appendix D: Growth, Development, Misery, Happiness



Evidence A: GDP - Gross Domestic Product

This is the main measure of economic activity, normally counted per year. The focus is on goods and services produced, bought and sold. Positive changes in GDP show economic growth and negative changes for two or more quarters indicate recession. In essence, we add together all purchases for the expenditure approach; though adding incomes or output should give the same total. The formula C + I + G + X - M shows the components: consumption, investment, government spending and exports, minus imports which are products of another economy.

There are some complications. For example, government services are often provided free or heavily subsidised, so there is no payment or at least not one reflecting the cost and value of the service. GDP includes such services as the cost of providing them. Owneroccupiers of homes don't pay themselves rent; an estimate for the value of this is added. Underground (or hidden) activity is ignored, so are most activities for which no payment is made.

Evidence B: HDI – Human Development Index

The HDI gets beyond expenditure to a wider view of economic development. It does this by combining data on GDP per capita, life expectation and education. Raw GDP figures are adjusted to purchasing power parity and converted to US dollars for comparisons. The United Nations Development Programme (UNDP) modified the educational data in 2010, removing adult literacy to focus on average and expected years of schooling.

Norway topped the HDI rankings in 2013, ahead of some countries with a higher GDP per capita but less years of education or life expectation. During the last 20 years, many Asian economies have seen rapid development as measured by the HDI. Sub-Saharan Africa made slower progress until recently and includes some countries which still do relatively badly on all three HDI components.

This index is relatively straightforward, with the relevant data available for most countries. Its focus on three variables still takes a fairly narrow view of development and it relies on averages so gives no indication of inequality. An inequality-adjusted version is also published by the UNDP.

Evidence C: Misery Index

A web search for misery index can lead in two ways. A USA music group called Misery Index specialises in 'death metal' but tells us little about economics. Also originally in the USA, but with more relevance, economists have created an index based on the two variables most linked to unhappiness: unemployment and inflation. Simply adding together percentage data on unemployment and inflation creates one indicator of how badly an economy is doing. Going back 60 years is necessary to find a lowest US figure of 2.97 in July 1953. Their worst total since then was 21.98 in June 1980. The current UK figure will be around 10.4, using CPI inflation data and the ILO survey for unemployment.

The strength of this index is its simplicity. It also ignores preoccupation with income, growth or economic development, as well as other objectives on the environment and on trade. It has no weighting, so gives equal importance to its two variables. If we look a little closer, we see that both variables can be estimated in different ways. Is it appropriate to use CPI rather than RPI? Is the ILO survey data our best measure of unemployment? Can we trust unemployment data when some people hide 'underground' covert employment and others are excluded as they work part-time, even if they want full-time work?

Evidence D: HPI - Happy Planet Index

This indicator measures the efficiency of countries at providing long and happy lives. Life expectation is measured using the UN Human Development Report. A Gallup 'ladder of life' world poll is used to measure happiness. People are asked to rate their lives from 0 (worst possible) to 10 (best possible life). Efficiency is measured by how many hectares of land are needed to support average consumption, which is termed the 'ecological footprint'. This measure was introduced by The World Wildlife Fund and developed by the Global Footprint Network. The final index is calculated as:

Life expectation x experienced well-being

Ecological footprint

The results of this calculation are thought provoking. Costa Rica currently tops the rankings with life expectation of 73.1 years, well-being at 6.9 and an ecological footprint of 2.5. Bangladesh is relatively poor, yet is highly ranked as its ecological footprint is just 0.7. The U.S.A. has life expectation of 73.4 years and well-being of 6.7 which are comparable with Costa Rica, but an ecological footprint of 7.2 pulls the country ranking down to 104th. Costa Rica's ranking is based on relative happiness and longevity achieved with less resource use. More information and data is available at happyplanetindex.org.

Questions

- 1. (a) What is meant by economic development (Evidence B)?(2 marks)(b) What is meant by sustainable (Evidence D)?(2 marks)
- 2. Explain three types of reason why changes in GDP (Evidence A) might not reflect changes in the material standard of living. (9 marks)
- 3. Analyse the impact of inequality on the value of indices such as the HDI (Evidence D). (10 marks)
- 4. Assess the case for adding weightings to the misery index (Evidence C). (12 marks)
- 5. "Many of the things you can count, don't count. Many of the things you can't count, really count" Albert Einstein. To what extent can happiness and sustainability be counted? (15 marks)

Suggested Approach to the Questions

1. (a) What is meant by economic development (Evidence B)? (2 marks)

Economic development means change in the economic situation, taking a wider view than just material well-being as measured by GDP. It is concerned with the quality of life an economy provides for its citizens. The inclusion of life expectation and years of education in the Human Development Index illustrates two aspects of development. Broad trends in economic development are positive, but negative developments which reduce the quality of life, such as extra pollution, are also possible.

1. (b) What is meant by sustainable (Evidence D)? (2 marks)

Something which is sustainable can be continued indefinitely. Our resource use is unsustainable if we use stocks faster than they can be replenished. For example, catching fish at sustainable rates would mean limiting catches rather than depleting fish stocks by over-fishing so that less (or nothing) is available in future. The Happy Planet Index uses the ecological footprint to highlight the fact that rates of consumption in many developed countries are not necessarily sustainable. Climate change poses a long term challenge, raising major questions about what is sustainable on this planet.

2. Explain three types of reason why changes in GDP (Evidence A) might not reflect changes in the material standard of living. (9 marks)

If we simply look at GDP at current prices, we ignore other variables which are relevant to the material standard of living. Population and inflation are clearly relevant. If the population increases by 4% whilst GDP rises just 2%, average living standards will have fallen. Similarly, if inflation is at 10% and GDP at current prices rises by 5%, real GDP will have fallen. Looking at real GDP per capita gives a better reflection of changes to the material standard of living. These adjustments give a better measure of material living standards than just current price GDP data.

Some issues in the method by which GDP is counted are less easy to compensate for. First, we focus on paid transactions and so ignore much unpaid activity. For example, if I buy 'Microsoft Word' from a UK retailer to produce documents with, that transaction is counted in GDP. But if I download 'Open Office' instead, there is no charge for that so no recorded transaction. Thus a similar item is not counted in GDP. If I grow or buy the raw ingredients and cook a meal, my expenditure will be less than if I have a takeaway meal or go to a restaurant. The food might be similar but the contribution to GDP is not.

Where we add estimates for items too big to ignore, those estimates might not reflect the real value to consumers. Government expenditure is included at cost. If a government cuts back its workforce and wage bill that will reduce GDP, even if some services are largely unaffected. There will be some people who value the security offered by £billions spent on Trident missiles at more than the cost; others will disagree and feel that this spending makes little contribution to their standard of living or their sense of wellbeing. These estimated amounts added to GDP are unlikely to accurately reflect living standards.

The figures collected as the basis for GDP estimates are also unreliable and incomplete. This is demonstrated by the revisions made as more data become available. For example, in March 2012 the estimate for 2011 quarter 1 UK exports was raised by £2,276m and the estimate for imports by £1,476m. There is no reliable way of collecting all the relevant information. We know that there is some undercover activity which is hidden to avoid tax or sometimes to support benefit claims, but we can't know how much. Thus, some records of transactions are based on deliberate distortion.

For all of the reasons listed above, GDP is an unreliable indicator of the standard of living. Despite this, it is the main available indicator of the level of activity. As the current real value of GDP is lower than the 2008 estimate, we can be reasonably confident that there has not been net growth in the UK economy over the last five years. Such broad trend observations are safer than precise comparisons.

3. Analyse the impact of inequality on the value of indices such as the HDI (Evidence D). (10 marks)

Any total that adds together different figures and divides by the number of items gives an average. Changes in inequality might make figures for HDI (or GDP or HPI) misleading. If the incomes of a minority of people increase, this could lead to an increase in total income and so GDP per capita. However, the majority might have seen no improvement in their incomes. Though they are less obvious, there are also variations in life expectation. The most recent estimates for England give an average expectation of 83 years of life in East Dorset whereas the figure for Blackpool is 73.8. People in some counties around London average significantly more years in education than most northern counties. HDI figures might not reflect what is typical, or the 'mode', in the population.

The extent to which averages are misleading is greater if a minority moves further away from the norm or 'mode'. If, for example, a tiny minority of very high incomes receives the bulk of any income increases, this will shift the average further away from the real experience of most people. At the opposite extreme, in a society with high infant mortality amongst a minority living in poverty, it is possible that infant deaths could reduce average life expectation below the length of life that is a reasonable expectation for most people. Inequality makes averages unreliable indicators.

The trend in many developed economies has been for inequality to increase over the last 30 years. This increases the probability that averages fail to reflect the circumstances of many individuals. During the financial crisis and recession which started 5 years ago, average incomes fell. Despite that, some people saw no fall in their own incomes and some even had increases. HDI figures based on averages seem likely to underestimate the impact of poverty on low income groups when inequality increases.

In their book The Spirit Level, Wilkinson and Pickett argue that greater inequality has negative impacts on wider society, not just on the disadvantaged. Their research includes evidence that both life expectation and educational performance tend to be poorer in countries with more inequality. As HDI includes life expectation and years in education, it could capture some of the consequences of increased inequality in the long run.

The United Nations Development Programme takes the impact of inequality seriously and also publishes inequality-adjusted HDI data. This index attempts to capture the impact of inequality on development, but in the process loses some of the simplicity of the original HDI. Increasing the complexity and sophistication of statistical techniques can give extra insights, but can also reduce the clarity shown by simpler data.

4. Assess the case for adding weightings to the misery index (Evidence C) (12 marks)

Weightings in an inflation index (for example) can capture the relative importance of different items in expenditure in a useful and 'positive' way based on recorded data. By contrast, the case for weightings in the misery index is more 'normative', based on a judgement that one of the variables is more significant than the other.

It can be argued that unemployment is more significant than inflation because of the major impact it can have on incomes and living standards. Besides the direct impact on those who lose jobs, unemployment also has an impact on the confidence, expectations and behaviour of the wider community. One of the problems of recession is that rising unemployment causes uncertainty over future incomes and so can lead people to consume less, at a time when aggregate demand is already low.

The direct impact of inflation can be felt by everyone, whereas unemployment has a direct impact on a small minority. When, for example, unemployment is 8%, less than one person in twelve is looking for a job. When fuel prices rise, everyone feels the consequences of that so inflation has a broader direct impact. Like unemployment, inflation can also influence household confidence and behaviour. This suggests that a lower weighting for inflation might not be justified.

However, price rises don't just increase payments for buyers; they also increase the receipts of sellers. Therefore at least some incomes will rise when prices rise. This should reduce the impact of inflation on real incomes. There are two situations in which price increases might not lead to corresponding increases in household incomes. If prices increases are a result of indirect tax increases (e.g. VAT is increased), the government is withdrawing more from the circular flow of income. This will not bring a rise in household incomes if the government (say) is seeking to reduce its borrowing. Where inflation is due to rising prices of imports or depreciation of the currency, the extra flow of payments goes out of the country rather than to households within the economy. The impact of inflation will normally be felt unevenly, just as the impact of unemployment is. Besides some people gaining from higher receipts when prices rise, there will be groups who are in a stronger position than others to defend their real incomes at times of inflation. The current UK public sector pay freeze means that millions of households have seen their real incomes fall due to inflation, yet other groups have seen their real incomes rise. In 2010, for example, average total earnings for FTSE company directors rose by 49% (Incomes Data Services, October 2011).

Both unemployment and inflation have a direct impact on some households, and both also have a wider impact on confidence and behaviour. Unless there is hyperinflation, the impact of unemployment is likely to be the greater of the two. This impact can also spread beyond material goods to have a major effect on the quality of life. For example, some of the 900,000+ people under 25 who are unemployed in the UK have never had a job since leaving school. At present, they have relatively little to look forward to in life. This supports the view that unemployment causes more misery than inflation, so perhaps it should have greater weighting in the misery index. However, there is no simple system for deciding weights, judgements will differ. There is also the issue that this is a simple index which is easy to understand. Even with greater complexity from weighting, it will still only cover two of the things which can make people miserable and so give only limited insight.

5. "Many of the things you can count, don't count. Many of the things you can't count, really count" – Albert Einstein. To what extent can happiness and sustainability be counted? (15 marks)

Many definitions of happiness centre on well-being and contentment. These are subjective and normative concepts which cannot be measured objectively. There are physical effects of pleasure on the brain that can be measured, but these are often short-term and there are variations between individual reactions which scientists don't yet understand. Most attempts to measure happiness depend on collecting subjective views, either with a simple single question or with more complex questionnaires attempting to delve into people's states of mind. Do people know how happy they are? Will they answer questions on happiness honestly or hide their true feelings?

Positive economists might object to such subjectivity. Some, from a strongly classical perspective, might claim that scarcity and choice mean material standards of living are more important than personal feelings. Such people might regard a higher well-being rating for Costa Rica (6.9, Evidence D) than the USA (6.7) as impossible. However, there are quantifiable indicators on which developed nations such as the USA fare badly, such as the amount of personal debt and the extent of inequality. Such problems will have an impact on happiness. Most people see happiness as involving more than high consumption.

Classical economics uses simplifying assumptions which should not be confused with reality. Someone who is subjectively happy clearly has an advantage over people who feel unhappy. Bhutan's concept of 'Gross National Happiness' goes further than many people are comfortable with, but there is useful meaning in even simple measures of happiness such as Gallup's 'ladder of life' poll.

Whilst both The World Wildlife Fund and The Global Footprint Network (Evidence D) are reputable organisations, they see the world from the perspective of concern about human impact on our planet's resources and ecological systems. There is widespread agreement that some resources (such as oil) are being used at unsustainable rates and that human activity is responsible for global warming. It is possible that vested interests are responsible for some opposition to recognising this. Both the approach to sustainability and the conclusions reached are likely to be influenced by the perspectives of researchers.

As shown in Question 2, GDP calculations might not accurately reflect the standard of living. When this is true of measuring production, the complex calculations to underpin measurement of sustainability are unlikely to be more reliable. Even the most objective of scientists will have to make major assumptions and generalisations before arriving at a measure of 'footprint' or sustainability.

There is an additional problem that changes in technology can change the efficiency of production and so rates of resource use. In his Essay on Population, Thomas Malthus in 1798 suggested that population growth could outstrip food supplies; he predicted famine, misery and catastrophe. In the event, trade and technology, plus slowing of population growth in many countries, have averted a global catastrophe of Malthusian scale. Sustainability calculations are based on current technology so the situation could change. However, attempts to replace fossil fuels have so far had limited success and the planet is already damaged to an extent.

To make informed decisions we want the best available data. To simply ignore the impact of human activity on the planet could lead to irreparable harm. We therefore need to collect the best available information, even though it is imperfect. To ignore the evidence and neglect sustainability leaves us living in the dark, possibly ultimately in more than one sense.

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