RAFFLES INSTITUTION

YEAR 5 H2 ECONOMICS 2022

KEY ECONOMIC INDICATORS

ECONOMICS

CONTENTS:

TUTORIAL PACKAGE

RAFFLES INSTITUTION
YEAR 5 H2 ECONOMICS 2022

KEY ECONOMIC INDICATORS

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References

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Lecture Objectives:

After the series of lectures, students should be able to:

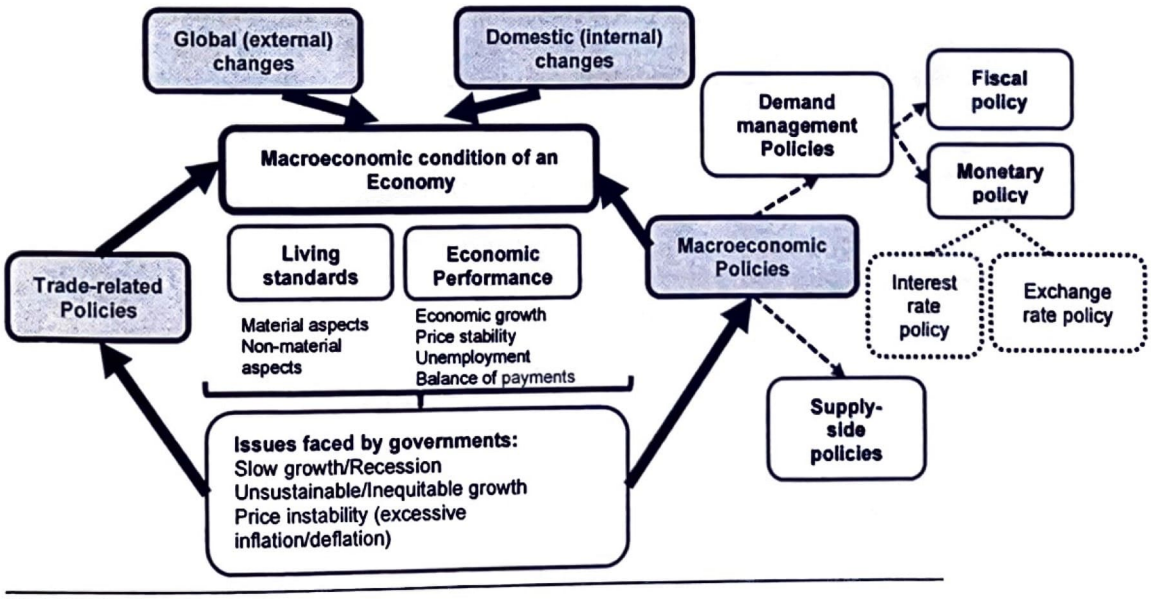
- Understand the meaning of:
    - economic growth in terms of actual and potential growth, sustainable growth, and inclusive growth
    - price stability, inflation and deflation
    - full employment, and unemployment rate
    - a favourable balance of payment, and explain how transactions in the capital account, the current/financial account and the official reserves are balanced in the balance of payment
- Explain the significance and limitations of each key economic indicator as measure of economic performance, including GDP/GNI, inflation rate, unemployment rate, balance of payment deficit/surplus.
- Understand the concept of standard of living and explain how the quantitative and qualitative aspects of standard of living may be measured
- Compare economic performance and living standards over time and over space (between countries)

1 INTRODUCTION TO MACROECONOMICS

Macroeconomics is the study of the economic performance of national economies and the policies that governments use to try to improve that performance. Macroeconomics concerns economic aggregates such as the overall level of output, prices and employment in the economy

Microeconomics	Macroeconomics
Focuses on: - Maximising society's welfare in terms of consumer & producer surplus - Efficiency & Equity	Focuses on: - Improving living standards - Economic performance: Achieving 4 macroeconomic aims
Focuses on consumption & production in individual/isolated markets	Focuses on the aggregation of prices and output levels of all goods and services produced in all markets in an economy.
Concerned with the price and quantity/output of goods & services in a given market/industry	Concerned with general price level (GPL) and Real National Income (RNY) / Total Production & Consumption of all goods and services
Decision-making by consumers, producers and governments and its effects on isolated markets	Decision-making by governments and its effects on the macroeconomy

The main macroeconomic aims of governments include sustained, sustainable and inclusive economic growth, price stability, full employment and a favourable balance of payments position. Achievement of these goals contribute eventually to improving the standard of living of an economy.



2 ECONOMIC PERFORMANCE AND ITS INDICATORS

This section will focus on the 4 macroeconomic goals and the key economic indicators (KEIs) that measures the economic performance of a country.

2.1 Economic Growth

Economic growth is defined as an increase in the real gross domestic product. In order to achieve sustained economic growth, both actual and potential growth are required. There are two main types of economic growth:

(a) Actual growth is the increase in national output actually produced for a given period of time, commonly measured by the percentage increase in real GDP.
(b) Potential growth is the increase in the productive capacity of the economy for a given period of time. An increase in quantity or quality of resources will contribute to potential economic growth.

Sustained economic growth can go towards the ultimate aim of raising consumption levels to improve living standards of society. However, increasing production levels may not help a society achieve better living standards, as it can result in unintended negative consequences on society.

Therefore, there is a need to also promote sustainability and inclusiveness of economic growth.

2.1.1 MEASURING ECONOMIC GROWTH: GDP & GNI

Measuring economic growth requires the value of the total production of all goods and services in an economy, also known as National Product.

The fundamental identity of national income accounting states that:

National Product ≡ National Income ≡ National Expenditure

Value of all goods and services produced in an economy	Total Income earned by Workers in an economy	Total Expenditure by Consumers in an economy

For a given level of economic activity:

The value of all goods and services produced in a given period is by definition equal to the amount that buyers must spend to purchase them, i.e.

National Product = National Expenditure

What the seller receives equals what the buyers spend. The seller's receipts in turn equal the total income generated by the economic activity and returns to factors of production, including the rent, wages, interest/dividend and profit. Thus total expenditure must equal total income generated, i.e.

National Income = National Expenditure

This gives economists alternative methods of measuring economic growth, by measuring either the national product, the national income, or the national expenditure.

Note:
The expenditure approach will be used for explanation of economic growth in subsequent topics.

[The equivalency of national product, national income and national expenditure can be better understood with reference to the circular flow of income model presented in Appendix A.]

(a) Gross Domestic Product

Gross Domestic Product (GDP) is the *value of all final goods and services produced within the geographical boundary of a country* over a given period of time.

You are required to know the definition of GDP.

Its unit of measurement is typically in terms of the currency of the country (e.g. SGD, USD). Its uses include:

- Measuring economic growth
- Indicating living standards
- Comparing between countries
- Reflecting the economic environment of a country

Refer to Section 3.1 & 4 for greater detail of application of GDP.

Besides looking at the level of GDP in a given year, economists tend to compare the changes in GDP across time (year-on-year) and look at economic growth rates (%), defined as the rate of change of GDP where:

$$\text{Economic growth rate}_{current\ year} =$$

$$\frac{real\ GDP_{current\ year} - real\ GDP_{previous\ year}}{real\ GDP_{previous\ year}} \times 100\%$$

OR

$$g_{Y_n} = \frac{real\ GDP - real\ GDP_{n-1}}{real\ GDP_{n-1}} \times 100\%$$

$$(where\ g_Y = growth\ rate\ and\ n = year)$$

It is important to note that typically real GDP values (as opposed to nominal GDP values) are used for economic growth rate calculations to ensure that values of GDP calculated are at constant prices (i.e. calculating changes in quantity of production while taking prices to be the same from year to year).

It is important to understand the difference between **Real GDP** and **Nominal GDP.**

Nominal GDP is the value of the final goods and services produced in a given year expressed in terms of the prices in that same year. To calculate Nominal GDP, we use current year prices and multiply them by current year quantities for all the goods and services produced in an economy.

$$\text{Nominal GDP} = P_{\text{current year}} \times Q_{\text{current year}}$$

Real GDP is the value of final goods and services produced in a given year expressed in terms of the prices in a base year. To calculate Real GDP, we use a fixed year (a.k.a. base year) prices and multiply them by current year quantities for all the goods and services produced in an economy.

$$\text{Real GDP} = P_{\text{base year}} \times Q_{\text{current year}}$$

Real GDP allows the quantities of production to be compared across time by holding prices constant.

The larger the real GDP value (S$m), the greater the level of production in an economy. By the same logic, the higher the economic growth rate (%), the faster the rate of increase in the level of production in the economy.

If growth rates are positive, real GDP is increasing. If growth rates are falling, real GDP is increasing at a slower rate. Negative growth rates indicate a fall in real GDP.

Emerging economies tend to have lower real GDP values but higher growth rates compared to developed economies. This is because many of their resources are still unemployed/underemployed, therefore the actual production levels are low.

However, the availability of these idle resources allow emerging economies to increase production quickly when they experience rising aggregate demand. In developed economies, production levels are high but further growth in production is difficult due to the lack of spare capacity when its resources are almost fully utilised.

The claim that emerging countries have more unemployed/ underemployed resources is a generalisation that applies to FOPs (L,L,K).

However, it is not always true that emerging countries will have higher unemployment rates (i.e. utilisation of labour FOP) compared to developed countries.

(b) Gross National Income

Gross National Income (GNI) measures the *value of all final output of goods and services produced by nationally owned factors of production* during a given period of time, using the income approach[1].

Its unit of measurement is also in terms of the currency of the country.

Domestic production refers to production within a country's geographical boundaries regardless of the origin of the factors of production, while national production refers to production from factors of production owned by citizens of a country regardless of the country in which production occurs.

For instance, the value of the goods and services produced by foreign Multinational Companies (MNCs) located in Singapore will contribute to GDP, but not GNI. In contrast, the value of the goods and services produced by a Singaporean firm based abroad will contribute to GNI, but not GDP. For example, the monetary value of all final goods and services produced by foreign multinational companies (MNCs) such as Goldman Sachs or Pfizer located in Singapore will contribute to its GDP, but not its GNI. Meanwhile, the monetary value of all final goods and services produced by a Singaporean firm, for example, Awfully Chocolate or United Overseas Bank, located abroad will contribute to its GNI, but not to its GDP.

In theory, the relationship between GDP and GNI can be expressed as:

$$GNI = GDP + NFIA$$
$$(\textit{where } NFIA \textit{ refers to 'net factor income from abroad'})$$

[1] The measurement using the product approach is referred to as the Gross National Product (GNP), which equivalent to GNI.

Net factor income from abroad (NFIA) represents the difference between the income that locally owned residents or firms have received from abroad and the income claimed by non-residents based locally.

NFIA helps compare the GNP and GNI in order to indicate the extent to which a country's national income is derived from abroad. GNI will be less than GDP if much of the income from a country's production flows to foreign persons or firms, compared to incomes flowing in from domestic labour or capital based overseas – that is, if the NFIA < 0.

GNI is a more accurate reflection of the consumption levels within a country as incomes earned by local factors are more likely to be spent in the domestic economy. On the other hand, some of the incomes reflected in GDP are foreign-owned and are less likely to contribute to domestic consumption.

Nonetheless, GDP is reported more frequently as it better reflects the economic environment of a country. It can help investors decide on whether to invest in a country since it reflects the quantity and quality of resources physically available in the country, as well as the state of technology the country has achieved.

2.1.2 LIMITATIONS OF GDP / GNI

While these statistics are useful in determining the level of production and consumption in an economy, they can also potentially understate the level of national output as the production of some goods and services goes unrecorded.

(a) Presence of non-market activities

Non-market activities refer to production of goods and services that are not bought and sold in a market. Such production involves the use of society's resources for the production of goods and services to meet wants, but because they *do not occur in markets*, there are no transactions that record the price of the good that reflects the value of the production. E.g. service of housework done by homemakers - the same service provided by a paid home-cleaner would be recorded as a transaction in the market for home-cleaning services

The method of summing up receipts of expenditure/ the incomes of households to obtain the GDP / GNI inevitably excludes the value of such non-market activities.

In developed countries, most of the activities and production are marketed compared to that of developing countries[2]. For example, in rural villages of developing countries, people commonly trade services with each other or cooperate on various tasks without exchanging any money. Families in these communities also tend to be relatively self-sufficient through subsistence farming. Thus, the actual amount of goods produced and available for its people to consume in a developing country may be underestimated as many production activities are non-marketed.

[2]The US Department of Commerce Bureau of Economic Analysis estimated that the GDP level in 2010 would have risen by about 25% should non-market household production such as housework, cooking, odd jobs, gardening, shopping, childcare and domestic travel be included to the national income statistic. This figure is likely much higher in developing countries.

(b) Presence of the underground economy

The underground economy refers to unreported transactions, including both illegal activities (e.g. dealing of drugs) and legal activities (e.g. private home tuition).

Better communication technologies allow transactions to occur informally such that production is unrecorded. The internet revolutionised how buyers are matched with sellers, such that the sale of a product does not have to occur in a government licensed shop anymore. This makes it increasingly difficult to assess the total level of production in both the formal and underground economy.

These transactions are hidden from government record keepers and therefore are excluded in the GDP.

2.1.3 SUSTAINABLE GROWTH

Sustainable growth refers to a rate of economic growth that can be maintained without creating other significant economic problems, such as depleted resources and environmental problems, particularly for future generations. It implies a positive and stable growth rate over an extended period of time.

This will be covered in greater detail under 'Macroeconomic Aims, Issues and Policies'.

Sustainable development meets the needs of people today without compromising the ability of future generations to meet their own needs. It promotes consistently improving quality of life, and maintains intergenerational welfare over time.

An increase in production levels that constitutes a country's economic growth may be unsustainable if it is achieved rapidly through industrialisation, urbanisation and increasing exports of natural resources and/or agriculture.

However, this aspect of growth is normative in nature as it considers ecological, sociological, and moral aspects of economic growth. As many aspects need to be considered in assessing sustainability of growth, and many of these aspects are also qualitative (non-quantitative) in nature, there is *no single indicator of sustainable growth*.

Nonetheless, countries like China and India who are at the threat of unsustainable growth have adopted the use of the *green GDP*, an index of economic growth that factors in environmental consequences associated to the growth, to assess the sustainability of their economic activity.

2.1.4 INCLUSIVE GROWTH

Inclusive growth refers to a rate of growth that is sustained over a period of time, is broad-based across economic sectors, and creates productive employment opportunities for the majority of the country's population.

This will be covered in greater detail under Macroeconomic Aims, Issues and Policies.

To achieve this, **income distribution** has to be taken into account. It is important that growth must not worsen income inequality, often measured using the Gini Coefficient.

Refer to 'Microeconoimc Objectives and Policies ' for concept of Gini coefficient.

One common method of achieving inclusive growth is through broad-based productivity growth across many sectors of the economy. Productivity generally refers to the *output per unit of resource*. When the term is used, it usually refers to *labour productivity*, which is the amount of goods and services produced for each hour of a worker's time.

It is important to know the concept of labour productivity.

In reality though, this is hard to measure. Thus, most statisticians report the amount of output per labour instead of per unit of their time. Raising labour productivity helps to achieve sustained economic growth and is the strategy of many governments to achieve inclusive growth as well.

[Refer to Appendix C for additional reading on factors affecting sustainable and inclusive growth.]

Section Summary (Economic Growth):

1. There are 3 main types of economic growth economists consider:
    - Economic Growth: Actual & Potential Growth
    - Sustainable Growth
    - Inclusive Growth

2. The key economic indicators related to economic growth are:
    - GDP
    - GNI
    - Real GDP Growth Rates (%)
    - Labour Productivity
    - Green GDP
    - Gini Coefficient

2.2 Price Stability

Price stability results from a low and stable rate of inflation. This means that prices increase gradually and do not fluctuate in wild and unpredictable manners. Stable prices aid the process of economic decision making that facilitates economic growth and rising living standards.

- ✓ Inflation is a situation where there is a *sustained* increase in the general price level.

- ✓ Disinflation refers to a *substantial reduction* in the rate of inflation. Governments aim for disinflation when inflation rates are too high. Therefore, when there is disinflation, prices are still rising, but at a slower rate.

- ✓ Deflation, on the other hand, is a situation in which the prices of most goods and services are falling over time so that the *rate of inflation is negative*.

2.2.1 MEASURING PRICE STABILITY: CPI & INFLATION RATE

(a) Consumer Price Index

The Consumer Price Index (CPI) measures the price of a fixed basket of goods and services commonly purchased by a typical household.

It is a weighted price index, meaning each item in the basket of goods and services is given a weight according to its importance as measured by its share in total consumption expenditure of a typical household.

The types and specifications of the goods and services in the CPI basket as well as its weights are fixed at the base year and kept unchanged. This is so that when prices change in subsequent years, the price of the basket and therefore the CPI changes, while the makeup of the goods and services in the basket remains the same. This ensures that any changes in the index reflect solely price changes over time.

The price of the basket in the base period is assigned a CPI value of 100. The prices in other periods are shown as percentages of the price in the base period. For example, if the base year is the year 2000 and the price of the basket had increased by 5% in 2001, then the CPI in 2001 would be 105.[3]

(b) Inflation Rate

The inflation rate measures the change in price level from year to year, and is measured in percentages (%). It is calculated as:

$$\text{Inflation rate}_{current\ year} = \frac{CPI_{current\ year} - CPI_{previous\ year}}{CPI_{previous\ year}} \times 100\%$$

OR

$$i_n = \frac{CPI_n - CPI_{n-1}}{CPI_{n-1}} \times 100\%\ (where\ i = inflation\ rate\ and\ n = year)$$

2.2.2 LIMITATIONS OF CPI

Though CPI rises and the price of the basket has risen, cost of living may not have necessarily risen to the same extent due to:

(a) Substitution bias

When the price of a good rises, consumers typically switch to consuming relatively less expensive alternatives of the good.

The measurement of CPI does not account for this substitution effect which makes the fixed basket of goods and services a less accurate reflection of changing consumption patterns. E.g. coffee and tea may both be included in the basket of goods and services used for the measurement of CPI. If price of coffee rises more than the rise in the price of tea, consumers would switch from consuming coffee to consuming tea in order to keep their cost of living lower. However, the weight given to coffee and to tea will not be adjusted when the fixed basket of goods and services are used to calculate the inflation rate.

[3] Another index used in the US is the Producer Price Index (PPI) or Wholesale Price Index (WPI). It is published monthly and measures average changes in prices received by a sampling of domestic producers for their output across the manufacturing, mining, and service industries.

Therefore, the CPI overstates the increase in the cost of living from one year to the next.

(b) Quality adjustment bias

The price of a good rises when its real value increases, such that a better quality version of a good is more expensive.

E.g. the price of surgical procedures may increase because the surgical methodology and success rate has increased. However, when surgical procedures are included in the reference basket of goods and services, the increase in price is captured nominally such that CPI rises, seeming to imply that cost of living has inflated.

Although efforts are continuously being made to distinguish between changes in the underlying price of goods and services and changes in quality, the distinction remains difficult to make.

To overcome these limitations, the composition and weighting pattern for the CPI basket is revised every five years to reflect changing consumption patterns in Singapore.

2.3 Full Employment

Full employment indicates a non-zero, low rate of unemployment that is compatible with price stability, when all those who are able and willing to work have gained employment. At full employment or the natural rate of unemployment level, structural and frictional unemployment can still occur.

2.3.1 MEASURING UNEMPLOYMENT

(a) Unemployment rate

Unemployment of labour refers to the situation where people who are willing and able to work and are actively seeking work but cannot find jobs.

$$Unemployment\ rate = \frac{No.of\ unemployed\ persons}{Labour\ force} \times 100\%$$

In Singapore, *unemployed* persons refer to persons aged 15 years and over who were without work during the survey reference period but were available for work and were actively looking for a job. Unemployed persons include persons who were not working but were either taking steps to start their own business, or are about to take up a new job offer after the reference period.

Conversely, *employed* persons refer to persons aged 15 years and over who worked for one hour or more either for pay, profit or family gains during the reference period. This includes people who have a job or own a business, but were temporarily absent. The labour force/economically active population refers to persons aged 15 years and over who were either employed or unemployed during the reference period.

Economically inactive persons refer to those who unwilling and/or unable to work, and were not looking for a job during the reference period. Full-time students, unpaid

homemakers, retirees, and people unable to work because of disabilities are examples of economically inactive people. These groups of people are not included in unemployment rate statistics as they are neither deemed unemployed nor part of the labour force.

(b) Non-accelerating inflation rate of unemployment

NAIRU is achieved when cyclical unemployment is zero and only structural and frictional unemployment prevails. This is also known as the natural rate of unemployment. These different types of unemployment will be further analysed in Theme 3.2 Macroeconomic Aims and Issues.

2.3.2 LIMITATIONS OF UNEMPLOYMENT RATE

Unemployment rates may not measure the utilization of our labour resources well because changes in this rate could result from changing size of the labour force.

For instance, unemployment rates decline when unemployed persons stop looking for jobs and leave the labour force, either to go for further education and training or to retire. They may also possibly be too discouraged[4] to continue to search for jobs. When that happens, both the numerator and denominator of the unemployment rate falls, but the numerator falls by a greater proportion, resulting in a fall in unemployment rate. However, this does not imply better utilization of resources.

Unemployment rates also rise when there is an increase in the size of the labour force because of new entrants or re-entrants to the labour market who are not immediately employed but will need to seek jobs first. When this happens, both the numerator and the denominator of the unemployment rate rises, but the numerator increases by a greater proportion. Therefore, this results in a rise in unemployment rate, but it should not be interpreted as poorer use of resources in an economy.

2.4 Favourable Balance of Trade Position

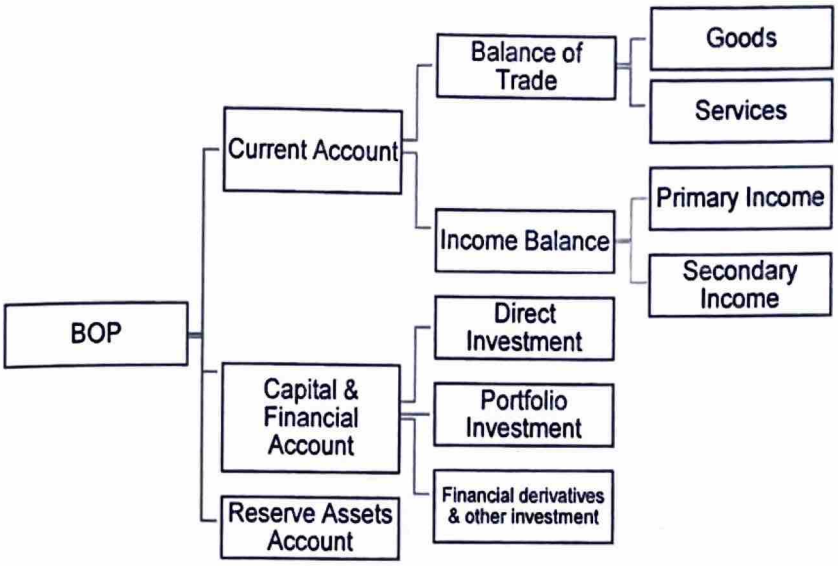
Countries trade with and have financial dealings with *the rest of the world. In other words, all countries are open economies.* The Balance of Payments *(BOP) is a record of a country's international transactions* which involve flows of money between residents of a country and the rest of the world.

The BOP can be in a deficit or surplus. A BOP deficit occurs when outflow of money is more than inflow of money whereas surplus occurs when inflow of money is more than outflow. Monetary inflows improve the BOP position while monetary outflows worsen the BOP position.

International money flows can occur for many reasons. Different international transactions are recorded in different accounts in the BOP.

There are 3 main accounts in the BOP – Current Account, Capital and Financial Account and Reserve Assets Account.

[4]This group of people are called the 'discouraged workers' and some studies of unemployment argue that discouraged workers should be included in the number of unemployed.



Overview of the Balance of Payments Structure

2.4.1 CURRENT ACCOUNT (CA)

The current account comprises trade balance and income balance.

Transactions in the current account which result in an inflow of money are recorded as credit items and those which result in an outflow of money are recorded as debit items. The current account balance is the overall position of trade and income balances. A current account surplus is where inflow of money from the trade and income balances exceed outflow. A current account deficit is where outflow exceeds inflow.

(a) Trade Balance

The trade balance refers to the value of the difference between export revenue and import expenditure. Trade can occur for exchange of goods or services.

- **Goods Balance**

This records exports and imports of physical goods. The sale of exports results in an inflow of money from overseas. This is recorded as a credit item. Payments for imports result in an outflow of money (and is recorded as a debit item).

- **Services Balance**

This records exports and imports of services (such as transportation, travel and insurance). The purchase of a foreign holiday results in an outflow of money. It is recorded as a debit item. On the other hand, the purchase by an overseas resident of a Singapore insurance policy results in an inflow of money (and is recorded as a credit item).

(b) Income Balance

Income Balance comprises Primary Income Balance and Secondary Income Balance.

- **Primary Income Balance**

This records wages, interest and profits flowing into and out of the country. For example, dividends earned by a foreigner from ownership of shares in a Singapore company results in an outflow of money and it is recorded as a debit item. A Singapore-owned firm in China earning profits results in an inflow of money (and is recorded as a credit item).

- **Secondary Income Balance**

This records government contributions to and receipts from international organisations, and international transfers of money by private individuals. Transfers are transactions where the originator does not receive something in return. For example, monetary aid sent from Singapore to the IMF to help vulnerable low-income countries cope with the economic impact of Covid-19 pandemic results in an outflow of money (and is recorded as a debit item).

2.4.2 CAPITAL & FINANCIAL ACCOUNT (KA)[5]

The capital and financial account in general records changes in ownership of assets. The capital and financial account comprises direct investment, portfolio investment, financial derivatives and other investments flows.[6]

Transactions in the capital and financial account are recorded according to the *asset-liability principle*. The acquisition of overseas assets by locals results in an outflow of money. On the other hand, the acquisition of local assets by foreigners results in an inflow of money.

(a) Direct Investment

Direct investment is also known as "long term capital flows". It can refer to foreign direct investment (FDI) inflows or outlows. FDI inflow occurs when a foreign company invests money from abroad in one of its branches or associated companies in Singapore. FDI outflow refers to the fixed capital expenditure of Singapore companies abroad.

For example, when Singapore businesses build factories overseas, there is an outflow of funds from Singapore to purchase capital goods overseas. (This is recorded with as a credit item in the Singapore's capital and financial account since Singapore now has an increase in claim on the assets located overseas.) By the same logic, money can flow into Singapore for the purpose of a foreign firm's purchase of a factory located in Singapore. (This is recorded in the capital and financial account as a debit item because this inflow of funds results in an increase in foreign claim on assets located in Singapore, which represents an increase in liabilities to foreigners).

[5] Different countries categorize their BOP differently. Some countries may separate the Capital Account from the Financial Account.
[6] Note that financial derivatives and other investment will not be focused as they are not essential to the H2 Economics syllabus.

(b) Portfolio Investment

Portfolio investment refers to transactions involving the purchase and sale of financial assets, such as equities, bonds as well as bank deposits and withdrawals. It can include "short term capital" or "hot money". Hot money flows are common between international financial centres to take advantage of differences in countries' interest rates and exchange rates.

For example, when a Singapore resident buys shares of an overseas company, there is an outflow of money to purchase these shares. As this purchase results in an increase in Singapore's claim on foreign assets and is recorded as a credit item.

2.4.3 RESERVE ASSETS ACCOUNT

The reserve assets account records international transactions made by the monetary authorities specifically for the *purpose of financing the overall BOP position*. (Please see 2.4.4 for "overall BOP position") The *official foreign reserves* is the amount of foreign currencies held by the central bank.

It is important to know the difference between Reserve Assets Account and Official Foreign Reserves.

Note: An increase in official foreign reserves is recorded as a credit item in the reserves assets account, and a decrease in official foreign reserves is recorded as a debit item.

2.4.4 OVERALL BOP POSITION

The overall BOP position comprises of the sum of current account, capital and financial account and net errors and omissions account[7].

[Net errors and omissions account is not important in the learning and conceptual understanding of BOP.]

BOP deficit refers to a net outflow of money as a result of transactions recorded in the current account, capital and financial account and net errors and omissions account. BOP surplus refers to a net inflow of money from these accounts. All transactions in the current and capital and financial account are called *autonomous* transactions.

BOP deficit: CA - KFA + Net Errors & Omissions	**< 0**
BOP surplus: CA - KFA + Net Errors & Omissions	**> 0**

Due to the double-entry bookkeeping principle adopted in constructing BOP,

CA – KFA + Net Errors & Omissions (i.e. Overall BOP Position) – RAA = 0

Transactions in the reserve assets account are called *accommodating* transactions. Transactions in the reserve asset account arise from the overall BOP position. Essentially, a BOP deficit must be financed by drawing on the Reserve Assets Account, resulting in a decrease in official foreign reserves. On the other hand, a BOP surplus allows an accumulation of official foreign reserves, resulting in an increase in Reserve Assets Account.

[7] Net errors and omissions reflect the statistical discrepancies resulting from imperfections in source data and compilation of the balance of payments accounts.

Hence,

BOP deficit: **CA - KFA + Net Errors & Omissions < 0.** **This implies RAA < 0.**
BOP surplus: **CA - KFA + Net Errors & Omissions > 0.** **This implies RAA > 0.**

Below is Singapore's BOP for 2019. Interpret Singapore's BOP by answering the following questions.

- Is the current account in surplus or deficit?
- Is there net inflow or outflow of money in capital and financial account?
- Is the capital and financial account in surplus of deficit?
- Overall, is there a net inflow or outflow of money?
- Is Singapore's BOP in surplus of deficit?
- As a result, will Singapore's official foreign reserves increase or decrease?

D Overall Balance (A-B+C)	**-11,442.8**
A Current Account Balance	**86,131.8**
Goods Balance	133,678.2
Services Balance	7,862.9
Primary Income Balance	-46,843
Secondary Income Balance	-8,566.3
B Capital & Financial Account Balance	**95,000.6**
Direct Investment	-98,468
Portfolio Investment	137,751.3
Financial Derivatives	14,104.7
Other Investment	41,612.6
C Net Errors & Omissions	**-2,574**
E Reserve Assets Accounts	**-11,442.8**

Figure: Singapore's BOP for 2019, in million dollars (Singapore Department of Statistics)

3 LIVING STANDARDS AND ITS INDICATORS

The ultimate goal of all economies is to raise living standards, including both the quantitative (material) and qualitative (non-material) standard of living.

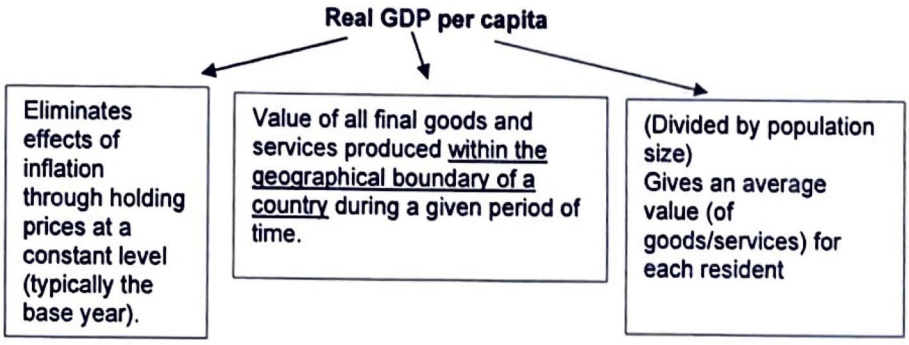
Note:
It is important to know how to compare SOL over time and between countries.

3.1 Material Standard of Living

Material standard of living (SOL) can be indicated by the *quantity of goods and services consumed* by the *average* person in a country in a given time period.

3.1.1 Real GDP per Capita

Material SOL is typically measured using:



Why Real GDP? Nominal values are monetary values measured at current prices, while *real* values are monetary values corrected to *eliminate the effects of inflation* by using base year prices.

For instance, if the price of a lunch pack is $5 today, the nominal expenditure on 10 packs of rice is $50. If the price of a lunch pack is $2 in the base year, for instance in 2005, then the real expenditure on 10 packs of rice is $20.

To obtain real values of GDP, the nominal GDP is divided by the current prices and multiplied by the base year prices. This is given as:

$$Real\ GDP = \frac{Nominal\ GDP}{CPI_{current\ year}} \times CPI_{base\ year}$$

Changes in nominal GDP reflect changes in both the price and volume of output produced, while changes in real GDP eliminate the effects of inflation and reflect changes in the volume of output produced only.

A change in price that occurs without any change in production could increase GDP and is not indicative of an increase in production. Therefore, nominal GDP cannot be used to compare production level over time – real GDP should be used instead

Why must population growth be considered? A growth in GDP attributed to increasing population does not translate to **increasing material welfare for the average person in the economy**.

If production levels rise with a larger rise in population, the share of goods and services available for consumption for an average person is actually lower.
Real GDP per capita is measured in $/capita, and is simply:

$$Real\ GDP\ per\ capita_{current\ year} = \frac{Real\ GDP_{current\ year}}{Population\ size_{current\ year}}$$

If real GDP of a country increases by 5% but its population increases by 10% for the year, then real GDP per capita decreases, since the numerator rises slower than the denominator. The standard of living of an average person in the country can be said to have fallen.

Hence, a rise in real GDP per capita reflects an increase in the amount of goods/services available for consumption for an average person in the economy. Material living standards have risen.

3.1.2 LIMITATIONS OF USING REAL GDP PER CAPITA

(a) Income distribution

GDP measures the total quantity of goods and services produced in an economy within the geographical boundary of a country, but it conveys no information about **who gets to enjoy** those goods and services.

Growth propagates the inequality in income distribution within a country. Economic growth and the traditional metrics used to assess it—GDP paramount among these—are necessary but not reliable and sufficient to guarantee inclusive growth in the global economy. For example, if economic growth in a country is driven by exports, workers in the export-oriented industries will see an increase in their wages due to a higher derived demand for labour in these industries which may include banking or tourism industries.

Therefore, a rapid growth in certain industries or sectors of the economy that produce higher value-added goods/services will cause widening income disparities within the country as it tends to provide more opportunities for those that are skilled and talented than those who are low skilled.

As such, the use of average values like the real GDP per capita becomes a weak measure of the actual amount of goods and services consumed by an average individual. Therefore, the higher the Gini coefficient[8], the more inequitable the distribution of goods and services become. Consequently, suggesting that the real GDP per capita as a measurement of material standard of living/material welfare of an average individual becomes less reliable.

(b) Composition of GDP

GDP does not account for the composition of an economy's output as **production does not always equal consumption**. Recall that GDP measured by the expenditure method includes consumption, investment, government spending and net exports. If

[8]Gini coefficient: a measure of income inequality that condenses the entire income distribution for a country into a single number between 0 and 1: the higher the number, the greater the degree of income inequality.

GDP rises because of investments, government spending or net exports, such a rise may not be *directly* related with an increase in consumers' consumption levels in the current period.

Rising investment occurs when more factories and plants are produced. However, this does not raise consumers' material standard of living in the current period as it does not necessarily imply that there are more goods and services available for consumption currently.

Nonetheless, higher investments contribute to higher future material standard of living as it contributes to potential growth. Therefore, an average individual will be able to consume more goods and services in the future due to the higher levels of real GDP per capita as a result of higher investments in the current period.

Meanwhile, whether a higher government expenditure in the current period contributes to higher material standard of living is largely dependent on the type of expenditure incurred by the government. If the expenditure is on provision of public goods such as public libraries and merit goods such as healthcare services, it would be related to improving material welfare. However, if it is spent on defence goods such as a fifth-generation fighter jet, it is unlikely to produce much tangible improvements in living standards or material well-being of its people.

Refer to Section 2.1.2 Limitations of GDP / GNI for other limitations of using GDP figures to indicate material SOL.

3.2 NON-MATERIAL STANDARD OF LIVING

Non-material standard of living refers to the **qualitative** aspects of life. It is a broad-based measure of welfare and can be in terms of access to good quality healthcare, education, safety, freedom, little interference or tolerable and sustainable level of stress, displacement, depletion of non-renewable resources and pollution, among many other aspects.

3.2.1. REAL GDP PER CAPITA

Real GDP per capita may function as an indirect *proxy* for non-material welfare, as a rise in average income levels allow consumers to enjoy more and better quality goods and services that enhance their non-material welfare.

For instance, higher incomes allow consumers to access quality healthcare and education, or to enjoy more leisure activities. Production of goods often can result in environmental pollution which then conflicts with the health of citizens.There are also possible sources of tension between GDP growth and non-material welfare.

If real GDP growth comes at the expense of working longer hours, less leisure time is available for family or for cultural and educational pursuits. This compromises non-material welfare.

3.2.2 OTHER WELFARE INDICATORS

Other measures are used to directly measure aspects of non-material welfare as they serve as a proxy for the same non-tangible aspect of welfare. The list is not exhaustive, but common aspects of welfare measured include:

(a) Healthcare

Common measures of healthcare include life expectancy rates as well as infant mortality rates. These can indicate the quality of healthcare available in the country. The ratio of the number of doctors, dentists and nurses to the population may indicate the quantity of healthcare available too.

(b) Education

Literacy rates, mean years of schooling and the highest qualification attained by the population can also be measured to indicate the quantity and quality of education.

(c) Pollution

Different countries have different air quality index since their air may be polluted by different types of pollutants. In Singapore, the traditional pollution standard index (PSI) is used. During the haze period, the $PM_{2.5}$ concentration is also used as it better indicates the extent of the haze.

(d) Stress Level

Data on the number of hours worked per week or annually can be measured to proxy stress levels, although it is clear also that working longer hours may not necessarily mean greater stress levels. Alternatively, job satisfaction surveys can be used to qualify the level of stress.

(e) Security

Crime rates may give an indication on the physical safety felt by citizens of a country. The corruption perception index can be used to indicate the confidence citizens have in their governments.

3.2.3 LIMITATIONS OF WELFARE INDICATORS

The relationship between real GDP per capita and non-material welfare is unclear because real GDP per capita may be positively related with certain aspects of non-material welfare, but negatively related with other aspects.

Qualitative or welfare indicators are highly subjective because fundamentally ***welfare cannot be quantified***. Proxies are highly limited as collection of such data is costly and may not be accurate. For instance, it is almost impossible to measure security and happiness and measuring the number of doctors implies nothing about the quality of healthcare, or how accessible it is to those who need it.

Therefore, welfare indicators need to be constantly reviewed and refined in order to isolate the effect they mean to measure. Using various indicators to measure an aspect could also provide a better picture. If all indicators of healthcare suggest improvements, it is likely that the country is indeed experiencing better healthcare.

3.3 Composite Indicators

Given that both real GDP per capita and individual welfare indicators are limited in their ability to assess standard of living, composite indicators that combine material and non-

material measures were developed to give a more complete picture of the level of human well-being.

(a) Human Development Index

The Human Development Index (HDI) is the most widely used indicator and it measures the average attainment of a long and healthy life, knowledge and a decent material standard of living. It includes measurements of life expectancy at birth, mean number of years of schooling for adults and expected years of schooling for students, and also the PPP-adjusted real GNI per capita.

An understanding of HDI as a composite indicator of standard of living is important.

(b) Measure of Economic Welfare

The Measure of Economic Welfare (MEW) adjusts measures of total national output such as GDP or GNI by adding the value of leisure and of transactions in the underground economy. It also deducts the cost of environmental damage. It involves the difficult task of assigning monetary values to non-marketed goods.

(c) Index of Sustainable Economic Welfare

The Index of Sustainable Economic Welfare (ISEW) balances the GDP with income distribution, costs related to pollution, environmental damage and resource depletion. It was developed with the intention to replace GDP in order to measure sustainable economic growth. It later developed into the Genuine Progress Indicator, which is increasingly accepted as a measure of sustainability.

(d) OECD Your Better Life Index

The Organization for Economic Cooperation and Development (OECD) has developed the 'Your Better Life' index which attempts to measure welfare based on what people perceived to be important to them. It measures the following 11 aspects: income, employment, housing, health, social relationships, education, environment, the administration of institutions, security, general satisfaction and work-life balance. The interactive website allows the indicator to be easily adjusted to reflect changes in the relative importance of these different aspects. This is to account for the different perspectives of what constitutes welfare.

3.3.1 LIMITATIONS OF Composite Indicators

The subjectivity of what aspects determine overall welfare limits reliability of composite indicators. While these indicators take into account both material and non-material aspects of standard of living, they may also be limited because of difficulties in determining the weightage of each aspect. For instance, a country may rank lowly using the OECD Your Better Life Index because of a lack of social relationships. However, the residents in the country may not value social relationships as much as another country, and may enjoy more happiness if they had more privacy instead.

Similarly, the Human Development Index does not take into account of qualitative factors, such as cultural identity and political freedoms (human security, gender opportunities and human rights for example), biodiversity, gender inequality. Also, the HDI figure does not consider income distribution. Therefore, if income is unevenly distributed, human development is also inequitable. Therefore, the subjectivity of what

aspects determine overall welfare limits the usefulness of composite indicators in measuring living standards.

It is also important to note that economic growth and economic development are not the same economic concept. Economic growth does not necessarily translate into economic development which is more inclusive in nature as it is a much broader concept than economic growth since it takes into account social and political conditions of a country. Hence, economic development considers both the qualitative as well as quantitative aspect of life of an average citizen.

4 COMPARISONS OF LIVING STANDARDS

Comparisons of living standards are often made across time and across geographic regions to take stock of the progress made. However, there are also some limitations when doing so.

4.1 Comparisons over Time

Real GDP per capita is often used to compare material standard of living of a country across time.

Define GDP	Gross Domestic Product (GDP) is the value of all final goods and services produced within the geographical boundary of a country during a given period of time.
Explain why it's important to consider 'real GDP'	Nominal values are monetary values measured at current prices, while real values are monetary values corrected to eliminate the effects of inflation by using base year prices. Typically, if GDP grows over time, it means that production levels are increasing. However, because of the way GDP is measured, changes in price that occur without any change in production could increase GDP as well. Therefore, nominal GDP cannot be used to compare production level over time as changes in nominal GDP reflect changes in both the price and volume of output produced, while changes in real GDP eliminate the effects of inflation and reflect changes in the volume of output produced only. $$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{CPI}_{\text{current year}}} \times \text{CPI}_{\text{base year}}$$ Real GDP eliminate increases in nominal GDP that were merely due to an increase in prices. By removing the effect of inflation the real GDP tries to *measure the actual increase in goods and services produced.* Thus, changes in real GDP is used to gauge the standard of living over a period of time rather than nominal GDP.

Explain why it's important to consider per capita	Rising population is a growth factor, and increases in population naturally lead to greater production as more labour resources are available. Therefore, there is no need to eliminate the effects of population growth when we use GDP to assess aggregate economic performance over time. However, growth in GDP attributed to increasing population does not translate to increasing material welfare for the *average person* in the economy. If production levels rise with a larger rise in population, the share of goods and services available for consumption for an average person is actually lower. This is why per capita values are used in the measurement of material standard of living. $$\text{Real GDP per capita}_{\text{current year}} = \frac{\text{Real GDP}_{\text{current year}}}{\text{Population size}_{\text{current year}}}$$ If real GDP of a country increases by 5% but its population increases by 10% for the year, then real GDP per capita decreases, since the numerator rises slower than the denominator. This indicates a fall in the standard of living of an average person in the country. It would be incorrect to say that the 5% economic growth resulted in greater welfare. Therefore, in comparing how material welfare changes over time, we must account for population changes as well.

4.2 Comparisons BETWEEN COUNTRIES

4.2.1 DIFFERENCES IN REAL GDP GROWTH RATES

It is important to note that a higher real GDP per capita growth rate may not necessarily imply a high level of real GDP per capita and hence a higher material standard of living when making comparison over space. A higher real GDP growth rate may only suggest that real GDP is increasing at a faster rate since the economy has spare capacity (resources are relatively unemployed/underutilized which include labor, land, and other natural resources). Therefore, the economy is able to expand production at a faster rate compared to another economy with a lower real GDP growth rate (likely to be operating close to full capacity).

For example, a developing country like Bangladesh that is growing at 7.1% year-on-year basis tends to have **lower real GDP values, but higher real GDP growth rates** compared to developed economies such as Germany which is growing at 1.9% year-on year basis. Therefore, it is more likely that a German enjoys a higher material and non-material standard of living by proxy compared to a Bangladeshi because of the higher real GDP per capita in levels.

4.2.2 STANDARDISING CURRENCY USED & PPP ADJUSTMENTS

For the purpose of comparison across different countries, GDPs of these different countries are usually converted to a common currency – which is normally the US dollar. However, problems may arise:

(a) Exchange rates can be volatile from month to month and from year to year. For example, a large depreciation in the value of the Argentinean peso against the US dollar might imply that Argentinean living standards have fallen even though their economy might actually be growing quite quickly.

(b) Exchange rates are more relevant to products that are traded between countries rather than non-traded products. Traded goods tend to sell for similar prices in most parts of the world. This is because international competition tends to reduce the differentials in prices for similar products. Non-traded services such as domestic cleaners, hairstylists and academic tutors however tend to have bigger differences in prices across countries.

Since market exchange rates are usually influenced by the forces of supply and demand in the foreign exchange market, changes in demand and supply for a currency can cause the appreciation or depreciation. However, such changes in the exchange rates, brought about by changes in the exchange rate market, may not be accurate in demonstrating the purchasing power of peoples' income in different countries. Thus, purchasing power parity exchange rates should be used instead.

PURCHASING POWER PARITY

Purchasing power parity (PPP) is a theory of exchange rates whereby a unit of any given currency should be able to buy the same quantity of goods in all countries.

Key Point:
In the comparison of SOL between countries, use GDP/capita (PPP ER).

Purchasing power parity will need to take into account the prevailing exchange rate (or the *nominal exchange rate*), and *adjust them for differences in cost of living.*

To understand PPP exchange rate, let's take a commonly used example, the price of a hamburger. If a hamburger is selling in London for £2 and in New York for $4, this would imply a PPP exchange rate of £1 to $2. By applying PPP exchange rate, £2 can be exchanged for $4. This allows for the same hamburger to be bought in the US.

This type of cross-country comparison is the basis for the well-known "Big Mac" index, which is published by the Economist magazine and calculates PPP exchange rates based on the McDonald's sandwich that sells in nearly identical form in many countries around the world.

In the real world, this PPP exchange rate may well be different from the market exchange rate that is prevailing in the foreign exchange market. For example, the market exchange rate could be £1 to $1.50. In such an instance, a person with £2 will only be able to exchange for $3, and not be able to afford to buy the same hamburger in the US.

WHY PPP?

The rationale for using PPP-adjusted exchange rates to convert GDP figures lies in the need to account for differences in cost of living when comparing material welfare between countries.

As a hypothetical example, the real GDP per capita in Switzerland is higher than that of Singapore's, an average individual in Switzerland may earn a higher income but may not necessarily have a better standard of living compared to an average individual in Singapore. This is because he may not be able to afford as many things despite a higher income since cost of living is also higher in Switzerland.

Therefore, welfare measurements concerning the purchasing power of incomes made by individuals require the use of PPP-adjustment to eliminate differences in cost of living between countries.

When PPP-adjusted real GDP per capita is used, the differences in material standard of living between developed and developing economies tend to seem less stark since cost of living in developing countries is much lower.

4.2.3 ACCOUNTING FOR DIFFERENCES IN POPULATION

In making comparisons over space, differences in population must be accounted for. A country with a smaller population naturally has lower production levels. This does not mean that they enjoy less material welfare. The reasons are similar to why we take population changes into account when making comparisons over time.

4.2.4 LIMITATIONS OF PPP-ADJUSTED REAL GDP/CAPITA

(a) Difficulties in determining the basket of goods

The use of PPP-adjusted real GDP per capita in making comparisons about material welfare across space is limited because of the way it is derived. The idea is to compare the prices of the same basket of goods and services in two different countries, and use the ratio of the prices as the exchange rate.

However, no two countries can produce the exact same basket, which affects the accuracy of the comparisons. For example, if 1SGD allows individuals in Singapore to pay for a bus ride either in Singapore or in Malaysia, we cannot say that 1SGD brings to consumers the same level of welfare regardless of country because the quality of the bus ride in Singapore and in Malaysia would be different. Having parity of purchasing power is largely a theoretical ideal.
Furthermore, it is also difficult to determine the composition of the basket, since the basket should reflect consumption patterns of consumers. Yet, the consumption patterns are different across countries.

(b) Difference in consumption patterns based on context of countries

Goods consumed in any two countries may not be identical due to contextual differences, including climate. For instance, in temperate countries such as Germany, consumers spend more on woollen clothing and on heating during winters compared to consumers in tropical climates where consumers spend less on cheaper linen and

cotton clothing, and do not experience winters. Therefore, Germany's greater expenditure will be reflected in its higher GDP. However, this does not imply that individuals in Germany are better off compared to individuals residing in tropical countries. In practice, it is almost impossible to adjust national income figures for these sorts of differences.

(c) Difference in accounting procedures

There is no internationally agreed method of measuring national income so not every country uses the same basis for their figures. Accuracy in data collection also varies. Thus, not the same variables are measured from country to country, and even the same variables may be measured to different degrees of accuracy. Data collection and accuracy may also limit the efficacy of national income statistics such as inflation, unemployment and economic growth. Hence, the assessment of SOL of a country

For example, in a developed country, the problem of data collection is less severe due to the availability of better technology/surveys to capture and transform statistics, thereby increasing the accuracy and hence the reliability of the national income statistics. Meanwhile, in a developing country, data collection may prove to be rather arduous. As such, the available data will either underestimate or overestimate the material standard of living depending on the economy. The government could also manipulate data to highlight the economic performance under its administration to gain international reputation and win votes in future elections.

(d) Omission of non-marketed transactions

Countries at various stages of development will have different needs which may not be captured in the GDP. For many developing nations, a large proportion of economic activity takes place outside the market due to lack of effective mechanism to capture transactions across the country. Hence, GDP figures tend to be underestimated compared to that of a developed nation where virtually every activity has been commercialized. In Less Developed Countries (LDC) where a larger share of the total production takes place at home, such as food preparation, tailoring own clothing, handicrafts, are productive labor services that are not marketed and hence are excluded from calculation of GDP figures. As such, the GDP per capita calculations may also be inaccurate/understated. As a result, material standard of living be underestimated and could actually be higher than that reflected by the GDP per capita values.

Section Summary (Standard of living):

Standard of living comprises of both material and non-material standard of living.

1. Material standard of living refers to the quantity of goods and services consumed by an average person in an economy, and can be measured using real GDP per capita.
2. However, the use of real GDP per capita is limited due to its failure to account for income inequality and other aspects.
3. Non-material standard of living refers to the qualitative aspects of welfare. Real GDP per capita is not a good measure of non-material standard of living. Thus, other indicators that can proxy welfare are used. These include life expectancy, literacy rates and air quality index.
4. Composite indicators such as the HDI allow standard of living to be measured more holistically and comprehensively and are good supplements to national income statistics.

5. When making comparisons over time, it is important to use real values of GDP in order to eliminate the effects of inflation.
6. When making comparisons regarding welfare between countries, the GDP should be adjusted with the PPP-adjusted exchange rate in order to account for differences in costs of living.

APPENDIX A: NATIONAL INCOME ACCOUNTING – CIRCULAR FLOW OF INCOME MODEL

The national income identity holds because of the circular flow of income in the economy. This gives rise to three ways of measurement: product approach, income approach and expenditure approach.

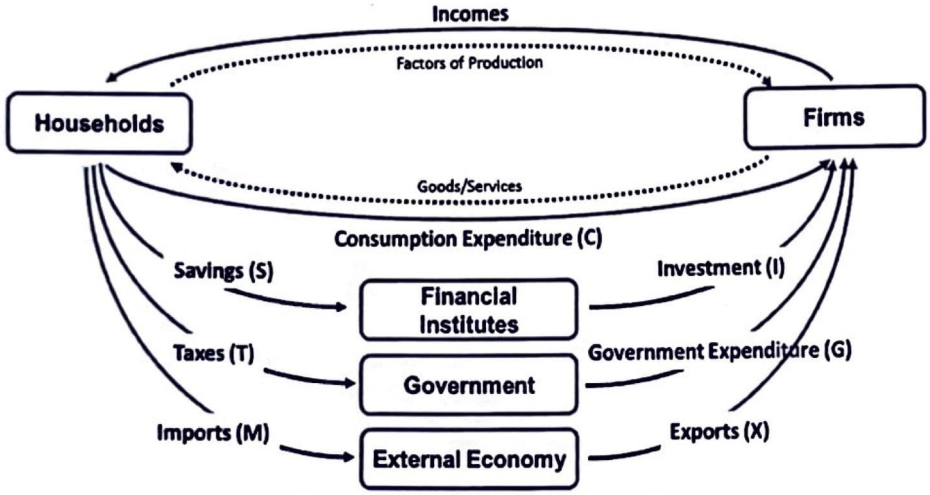


Figure 1: Circular flow of income in the open economy

The product approach involves adding up the final value of all the goods and services produced by in an economy. When we add up the value of the output of all firms, we must be careful to avoid *double counting*. For example, if a manufacturer sells a television to a retailer for $200 and the retailer sells it to the consumer for $300, this television would have only contributed $300 to the GDP, not $500. In other words, GDP can be calculated through the product approach by either summing the value of all final output produced or by summing the value-added at each stage of production.

The production of goods and services generates incomes for households in the form of wages for labour, interest for capital, rent for land, and profits for entrepreneurship. This gives rise to the income approach. This is the method of adding up all these incomes. The value of all the products earned by firms will be returned back to households in either of these four forms of income. This is why product is equal to income.

The expenditure approach adds up all expenditure on final output. This includes consumer expenditure (C) which is all expenditure on goods and services by households and by non-profit institutions serving households; investments (I) which all expenditure on capital, such as buildings and machinery, including inventories of raw materials, semi-finished goods or finished goods; government expenditure (G) which is all government expenditure on final goods and services[9], but excludes transfer payments, such as pensions and social security payments; and net exports (X-M)

[9] This includes government expenditure on non-marketed services. For instance, Singapore's education is largely not marketed as the exchange of the service is not directly between private firms and consumers. Rather, most schools are government-owned. Thus, price and quantity is not determined by market forces. Such expenditure is also included in this component.

which is the net expenditure by foreign countries on the exports of goods and services and imports have to be subtracted.
Since the sum of all expenditures can give us the national production or national income, we can write: **GDP = Y = C + I + G + (X – M)**.

Different uses of different approaches

Product approach helps to determine contribution from various industries. This approach uses data from the census of production to derive production figures of the various industries. This reveals the relative importance of the different sectors and industries of the economy by showing their respective contributions to national income and the percent of the total labour force employed by them. The relative contribution of the different sectors is 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.

Income approach shows distribution between wage, interest, rent and profit. This method indicates the distribution of national income among different income groups such as workers, capitalists, landlords and entrepreneurs 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. That is, the extent to which income is unequally distributed between the working class (wage earners) and the asset owners (rent, interest and profit earners).

Expenditure approach identifies sources of economic growth. This approach is most commonly used in studying macroeconomics. The relative contribution of consumption, investment, government expenditure and net exports determines the dependence of economic growth on consumer demand, demand for capital, government injection or on the external economy. A country with a large domestic demand indicated by a large significance of the consumption component would be less vulnerable to external changes.

APPENDIX B: DIFFERENCES RELATED TO NATIONAL INCOME ACCOUNTING

1. GROSS vs NET

National income can be calculated at gross or net value. The difference between them is the depreciation of capital stock which occurs through wear and tear or obsolescence. "Gross" indicates that the value lost through the wear and tear of capital used in production has not been deducted. If this depreciation were deducted from the GDP, we would have a measure called net domestic product (NDP)[10].

In short, GDP – depreciation = NDP

Theoretically, NDP gives a truer picture of a nation's income than GDP. However, economists tend to use the gross figures because depreciation is hard to estimate accurately.

2. GDP AT MARKET PRICES vs GDP AT FACTOR COST

Much of what we spend our money on is subject to indirect taxes or indirect subsidies. For example, if a store sells a product for $1.00 and GST is 7%, the total bill is $1.07. However, only $1.00 of that purchase goes to the store owners. The remainder $0.07 goes to the government. Therefore, consumer expenditure paid out is not exactly equal to incomes paid out for wages, interest, rent and profits. Such adjustments for net indirect taxes will result in GDP at factor cost, which is equal to expenditure. In other words,

$$\begin{aligned} GDP\ at\ factor\ cost &= GDP\ at\ market\ prices - net\ \boldsymbol{indirect}\ taxes \\ &= GDP\ at\ market\ prices - (taxes - subsidies) \\ &= GDP\ at\ market\ prices - taxes + subsidies \end{aligned}$$

Economists usually distinguish between GDP at market prices and GDP at factor cost, and will use GDP at factor cost for analyses. Nonetheless, the two measures will not show much variation when it comes to assessing impact economic growth unless there are big changes in indirect taxation/subsidies.

3. GROSS NATIONAL PRODUCT vs GROSS NATIONAL INCOME

Gross national product (GNP) refers to the value of the final output of goods and services produced from a country's resources in a year. It refers to calculations done through product or expenditure approach.

Gross national income (GNI) refers also to the value of the final output of goods and services produced from a country's resources in a year, but is calculated using the income approach. For instance, the World Bank defines GNI as 'the sum of value added by all resident producers plus any product taxes (minus subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad'.

[10] Similarly, if we deducted the depreciation from GNP or GNI, we would get the corresponding NNP or NNI.

Therefore, both GNP and GNI are equivalent in value, only different in method of measurement. Both of them are also different from GDP by the net income from abroad (NFIA).

4. INCOME vs DISPOSABLE INCOME vs DISCRETIONARY INCOME

Income refers to all the returns to factors made by household in the form of wages, interest, rent and profits. However, a household cannot choose to spend of all the incomes they make, as they have to pay direct taxes to the government. Taxes on wages, interests and rent are called personal income tax, while taxes on profits are called corporate taxes. Thus, the income they is at the disposable of the household is only the post-tax income, also known as the disposable income. It measures the income that people have available for spending or saving: i.e. after any deductions for income tax, CPF, etc. and additions from transfer payments such as pensions or child benefit, etc. have been made.

$$\begin{aligned} Disposable\ income, Y_d &= Income - net\ \boldsymbol{direct}\ taxes \\ &= income - (taxes - subsidies) \\ &= Income - taxes + subsidies \end{aligned}$$

Disposable income will be channelled to either of the following three components: Consumer expenditure, savings or imports.

On the other hand, discretionary income refers to income left at the discretion of households after direct taxes have been paid and after spending on necessary consumption has been deducted. In other words, discretionary income is disposable income less spending on basic necessities. Discretionary income is typically used in analyses of social welfare, rather than for the purpose of macroeconomic analyses.

APPENDIX C: FACTORS AFFECTING SUSTAINABLE AND INCLUSIVE GROWTH

Factors affecting Sustainable Growth

Sustained economic growth achieved by actual and potential economic growth may not be sustainable if it is at the expense of the environment. These sources of repaid economic growth are unlikely sustainable:

1. Industrialisation

Industrialisation is the reorganisation of a country's production processes that involve the application of technology and mechanical and electrical power to supplement and replace human labour. Industrialisation results in the establishment of the manufacturing industry, also known as the 'secondary industry'11. Industrialisation helps a country to grow by the augmenting the productivity of its resources with technology, and is usually related with inflow of foreign direct investment that further increases economic activity in an economy.

However, when more machinery is used, fuel usage in the production of manufactured goods results in the negative production externalities of air pollution that reduces the quality of air for all of society. Polluted air that is not cleaned up will continue to affect future generations. Furthermore, the production of electricity using fuels gives rise to greenhouse gases that result in global warming. Changing global climates will affect the success of agricultural activities in the future, and the livelihood of future generations.

In many emerging countries experiencing high growth rates, industrialization occurs in the form of large-scale capital-intensive enterprises instead of small-scale rural industries. Many of these large-scale industrial activities occur in the heavy and chemical sectors, which causes greater environmental damage. For instance, South Korea's rapid growth between the 1960s and 1980s is attributed to its booming heavy industries such as shipbuilding, automobile and construction industries. Presently, China is also threatened by severe pollution, and a large part of this is attributed to the rapid growth of its steel, chemical and industries.

In addition, conversion of forestland for industrial use compounds the problem of industrialisation. This is because deforestation activities reduce the air quality and produce large amounts of carbon dioxide greenhouse gas as well.

2. Urbanisation

Urbanisation is the increasing proportion of the population living in urban areas within a country. This occurs because of better job opportunities in urban cities, attracting labour both from rural areas and from less developed foreign countries. Rural-urban migration helps overcome the problem of geographical immobility such that more labour can be employed in industries located in urban cities in order to raise production

[11] As opposed to the agricultural activities known as the 'primary industry', or the service sector known as the 'tertiary industry'.

levels. Foreign immigration also increases labour supply in an economy, which promotes both potential and actual economic growth.

However, urban population growth also means greater consumption levels in urban cities, which could result in negative consumption externalities. Urban lifestyles (e.g. air conditioners, use of computers) depend on greatly on the use of electricity generated by fuels that contributes to pollution and greenhouse gases. High levels of non-biodegradable waste (e.g. plastic, rubber tyres) are also generated by urban consumption habits, giving rise to problems related to waste management. Increasing levels of waste will reduce living standards of future generations.

Furthermore, there would also be an increasing rate of resource depletion. The economic growth resulting from urbanisation results in higher incomes that further encourages greater consumption. The resources of an economy might be depleted quickly to meet the rapidly rising demand. If the rate of resource depletion is faster than the rate of natural regeneration of resources, there would be decreasing amounts of resources left, exacerbating the problem of scarcity for future generations.

3. Exports of natural resources and/or agriculture

Countries may experience growth in production and incomes by exporting their natural resources and agricultural products. This becomes a problem when the exports reach exploitative levels, depleting resources and degrading environments such that renewal of resources and farmland becomes unlikely.

Many developing countries depend on exports of raw materials and agriculture to raise national income. For instance, production of oil for exports takes up 30-50% of Arab countries' economic production. Africa also depends on its mining activities to export minerals to the world. Brazil's agricultural exports includes coffee, soybeans and sugarcane and contributes close to 6% of its GDP. Such exports of natural resource and agriculture significantly explain the rising levels of production and economic growth in these countries.

However, the pursuit of rapid economic growth could lead to over-drilling of oil, over-mining of minerals, and over-farming. This may occur when governments prioritize economic growth as they believe that accumulation of national income would subsequently help them manage the consequences of resource depletion. Instead, their countries experience soil erosion and desertification of arid land that results from drilling and mining activities, as well as over-farming that are unsustainable. The shock on eco-biological system also affects food chains and food production for future generations.

Factors affecting inclusive growth

Empirically, income inequality emerges as countries enter later stages of development. There seems to be a positive relationship between further economic growth and increasingly unequal income distribution over the long term. This may result from the following sources:

1. Restructuring of the economy

In the pursuit of economic growth, governments can restructure its economy by shifting the production processes from low value-added production to high-value added production so that the value of their production increases, raising their GDP. However, this often involves replacing labour with machinery. Capital-intensive industrialisation will decrease the demand for low-skill labour and increase the demand for high-skill labour as operators of machinery. These changes in the labour markets will result in wage differentials that cause income inequality. Furthermore, capital owners will also experience increase in interest as the demand for capital increases. Therefore, restructuring the economic to become capital-intensive might foster economic growth at the expense of income inequality.

2. Opening up of the economy to globalisation

Globalisation refers to the growing economic interdependence of countries resulting from increasing cross-border transactions in the exchange of goods and services, flows of capital, spread of technology and migration of labour. Trade will result in an expansion of the export industry, and a contraction of the industry that produces goods that will be replaced by imports, which becomes a sunset industry. The change in these product markets will increase the demand for labour with the skills to produce exports, and decrease the demand for labour in sunset industries. These labour market changes result in wage differentials. While greater flow of trade is related with greater economic growth, it also results in inequality.

Furthermore, migration of labour also affects supply of labour and wages. A developed country will experience an inflow of foreign low-skill labour seeking better wages. This increases the supply of low-skill labour, driving down wages for domestic low-skill labour who compete with foreign labour. As for developing countries, brain drain occurs where high-skilled labour leave in search for better opportunities, causing a fall in supply of high-skilled labour and putting a upward pressure on wages of increasingly scarce high-skilled labour. Thus, while opening up of the economy to globalisation allows countries to reap the benefits of greater trade, the changes in the supply of labour will causes wages to diverge.

Some measures to achieve inclusive economic growth

1. **Skills upgrading** – according to the labor market theory, there is a positive correlation between productivity and wages (will be covered in Macroeconomic Policies: Supply-side policies)

2. **Transfer payments to the lower-income groups**

3. **Progressive taxation**

4. **Microcredit lending – developed by Nobel Prize winning Economist Dr. Yunus**

   This is the dispersion of small collateral-free loans to jointly liable borrowers in groups in order to foster income generation through enhancing self-employment. Microfinance/credit provides adequate financial tools in the form of short-term loans for the low income/low-skilled individuals who have limited access to conventional methods of borrowing through commercial banks and

financial institutions due to the lack of collateral. Microfinance institutions also encourage the low-income groups to save, positively affect their future material standard of living as the savings can continue to grow in the presence of such financial institutions. Individuals can use these savings for investments in the future (examples: set up a tea stall, buy a sewing machine, set up a small grocery shop) to generate higher income through more production. Raising the income of the lower-income earners can reduce the income gap between the rich and poor, thereby also increasing the reliability of the per capita GDP figures used in measuring the material SOL of an average citizen in a country.

APPENDIX D: OVERVIEW OF THE SINGAPORE ECONOMY

Singapore is among the 'Four Asian Tigers' praised for its rapid economic growth and improvements in standard of living. Most studies attribute this to the **industrialisation** from the 1960s to 1980s, and the restructuring of the economy to focus on **human capital and value-added sectors** from the 1990s onwards. While economic progress is evident, new issues surrounding **sustainability**, **inclusiveness**, and **welfare** have arisen too. It is difficult to make a general statement about how our standard of living changed. Thus, attempts to analyse Singapore's economy must be comprehensive.

1. Singapore's Key Economic Performance

Key Economic Indicators	2016	2017	2018	2019
Real GDP, $million (chained 2015 dollars)	437,178	456,137	471,819	475,279
GDP growth, % (year-on-year)	3.2	4.2	3.4	0.7
CPI (2019 Base year)	98.4	99.0	99.4	100.0
Inflation rate %	-0.5	0.6	0.4	0.6
Unemployment rate, % (average)	2.1	2.2	2.1	2.3

(Source: Ministry of Trade and Industry Singapore)

In 2019, production and income levels increased from the previous year by about 0.7% year-on-year basis, suggesting an expansion of the economy but at a slower rate than 2018. The higher GDP is likely to result in a lower unemployment rate but in 2019, Singapore experienced a higher unemployment rate of 2.3% which inched up from 2018. This was likely driven by mismatch between available jobs and skills possessed by the workers rather than due to lack of demand for labour. However, the absolute unemployment levels are not reflected in these indicators. Meanwhile, inflation picked up marginally, suggesting that general price levels rose 0.6%.

2. Singapore's Standard of Living

Singapore's **Human Development Index** value for 2018 is 0.935, out of a maximum of 1. This puts Singapore at a position of 9 out of 189 countries. Much of the improvement of the HDI from 1990 to 2018 is attributed to improvements in material welfare, as the GDP increased significantly during this period. Other notable improvements in welfare include the increase in life expectancy at birth by 7.5 years, and an increase in mean years of schooling by about 5.7 years.

The Singapore government also started to document the trend of **air quality indices** since 2007 in light of growing concerns over air pollution. While the total greenhouse emissions had increased by about 20% between 2007 and 2014, there was a dip in the annual mean of PM2.5 particles from 19 microgram per cubic metre the same period, to 15 microgram per cubic metre in 2016.

According to statistics from the Ministry of Manpower, the total paid **hours worked** per employee per week has dipped from 46.2 hours in 2010 to 44.7 hours in 2019. The paid overtime hours is approximately 2.7 hours weekly. Concerns over our long work hours and high stress levels are not new, and are growing as our economy progresses. Such long work hours could greatly reduce our standard of living.

******END******

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Section A: Data Interpretation Questions

Question 1

Table 1: Key Economic Indicators – Bangladesh

	2015	2016	2017	2018	2019
GDP per capita (current, USD)	1248.5	1401.6	1563.9	1698.4	1855.7
GDP per capita (current, PPP USD)	3555.5	3849.1	4161.1	4546.2	4950.7
Real GDP Growth Rate (%)	6.6	7.1	7.3	7.9	8.2
Unemployment Rate (%)	4.4	4.3	4.4	4.3	4.2
Inflation Rate (%)	6.4	5.9	5.4	5.8	5.5
Current Account Balance (billion USD)	2579.6	931.5	-5985.0	-7592.9	-3087.0
Official Exchange Rate (Taka/USD)	77.8	78.4	80.6	83.7	85.5

Source: Various

(a) With reference to Table 1 above, in which year was real GDP highest in Bangladesh? [1]

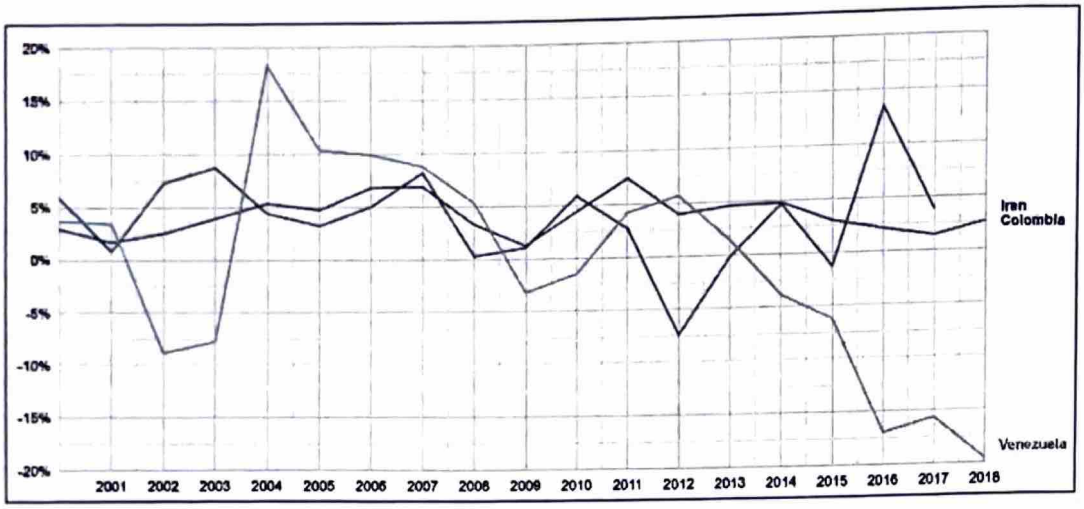
(b) Explain why the values of GDP/capita (current, USD) are lower than GDP/capita (current, PPP USD) from 2015 to 2019. [3]

(c) Describe the change in price level in Bangladesh between 2015 and 2019. [2]

(d) State what happened to the Bangladeshi taka between 2015 and 2019. [2]

Question 2

Real GDP Growth Rates of Venezuela, Iran and Colombia



(a) Compare the changes in real GDP of Venezuela and Colombia between 2012 and 2018. [2]

(b) Describe the trend in GDP growth rate of Iran between 2001 and 2017. [2]

Question 3

Table 2: Annual percentage rate of increase in the consumer price index

Year	Nigeria	Saudi Arabia
2014	8.1	2.2
2015	9.0	1.2
2016	15.7	2.1
2017	16.5	-1.0
2018	12.1	2.6
2019	11.4	-2.1

Source: International Monetary Fund

Compare the change in rate of inflation and the consumer prices for Nigeria and Saudi Arabia between 2017 and 2019. [2]

Question 4

Table 3: U.S. trade balance with China

Year	U.S. imports from China (USD billions)	U.S. exports to China (USD billions)
2014	468	124
2015	483	116
2016	463	116
2017	505	130
2018	540	120
2019	452	106

Source: United States Census Bureau

With reference to Table 3, compare the U.S balance of trade in goods with China in 2014 and 2019. [2]

Question 5

Table 4: Singapore's Key Economic Indicators

	2019	2020	2021
Real GDP, $million (2015 prices)	480,984.6	461,056.9	496,161.6
GDP growth, % (year-on-year)	1.3	-4.1	7.6%
CPI (2019 Base year)	100	99.8	102.1
Inflation rate %	0.6	-0.2	2.3
Unemployment rate, %	3.0	3.8	3.4
Balance of Trade position, $million	147,216.2	151,047.4	167,265.7

Sources: Singstat

(a) Compare Singapore's economic performance from 2019 to 2021.

Optional Question

GDP is not a good measure of wellbeing – it's too materialistic
By Joseph Stiglitz

Why focus on production of goods, rather than on health, education and environment?

Just under 10 years ago, the international Commission on the Measurement of Economic Performance and Social Progress issued its report, Mismeasuring Our Lives: Why GDP Doesn't Add Up. The title summed it up: GDP is not a good measure of wellbeing. What we measure affects what we do: if we measure the wrong thing, we will do the wrong thing. If we focus only on material wellbeing – on, say, the production of goods, rather than on health, education, and the environment – we become distorted in the same way that these measures are distorted; we become more materialistic.

We were more than pleased with the reception of our report, which spurred an international movement of academics, civil society, and governments to construct and employ metrics that reflected a broader conception of wellbeing. The OECD has constructed a better life index, containing a range of metrics that better reflect what constitutes and leads to wellbeing. It also supported a successor to the commission, the High Level Expert Group on the Measurement of Economic Performance and Social Progress. Last week, at the OECD's sixth World Forum on Statistics, Knowledge, and Policy in Incheon, South Korea, the group issued its report, Beyond GDP: Measuring What Counts for Economic and Social Performance.

The report highlights several topics, such as trust and insecurity, which had been only briefly addressed by Mismeasuring Our Lives, and explores several others, including inequality and sustainability, more deeply. It explains how inadequate metrics have led to deficient policies in many areas. Better indicators would have revealed the highly negative and possibly long-lasting effects of the deep post-2008 downturn on productivity and wellbeing, in which case policymakers might not have been so enamoured of austerity, which lowered fiscal deficits, but reduced national wealth, properly measured, even more.

Political outcomes in the US and many other countries in recent years have reflected the state of insecurity in which many ordinary citizens live, and to which GDP pays scant attention. A range of policies focused narrowly on GDP and fiscal prudence has fuelled this insecurity. Consider the effects of pension "reforms" that force individuals to bear more risk, or of labour market changes that, in the name of boosting flexibility, weaken workers' bargaining position by giving employers more freedom to

fire them, leading in turn to lower wages and more insecurity. Better metrics would, at the minimum, weigh these costs against the benefits, possibly compelling policymakers to accompany such changes with others that enhance security and equality.

Spurred on by Scotland, a small group of countries has formed the Wellbeing Economy Alliance. The hope is that governments putting wellbeing at the center of their agenda will redirect their budgets accordingly. For example, a New Zealand government focused on wellbeing would direct more of its attention and resources to childhood poverty.

Better metrics would also become an important diagnostic tool, helping countries both identify problems before matters spiral out of control and select the right tools to address them. Had the US, for example, focused more on health, rather than just on GDP, the decline in life expectancy among those without a college education, and especially among those in America's deindustrialised regions, would have been apparent years ago.

Likewise, metrics of equality of opportunity have only recently exposed the hypocrisy of the US's claim to be a land of opportunity: yes, anyone can get ahead, so long as they are born of rich white parents. The data reveals the US is riddled with so-called inequality traps and those born at the bottom are likely to remain there. If we are to eliminate these, we first have to know that they exist, and then ascertain what creates and sustains them.

A little more than a quarter century ago, Bill Clinton ran for office on a platform of "putting people first". It is remarkable how difficult it is to do that, even in a democracy. Corporate and other special interests always seek to ensure their interests come first. The massive US tax cut enacted by the Trump administration at this time last year is an example, par excellence. The dwindling but still vast middle class must bear a tax increase and millions will lose health insurance to finance a tax cut for billionaires and corporations.

If we want to put people first, we have to know what matters to them, what improves their wellbeing and how we can supply more of whatever that is. The Beyond GDP measurement agenda will continue to play a critical role in helping us achieve these crucial goals.

Source: https://www.theguardian.com/business/2018/dec/03/gdp-wellbeing-health-education-environment-joseph-stiglitz

(a) Explain why economists typically use GDP per capita as a proxy for a country's standard of living. [2]

(b) Explain 3 possible reasons why GDP is an inadequate metric of well-being. [3]

(c) The article suggested a number of alternative indicators that could be used to measure more comprehensively the living standard of a country. [8]

Read up on the other measures of well-being and explain how they can be used to assess the standard of living of a country. State and explain which indicator is the **best** measure rather than any other two.

Section B: Essay Questions

1. (a) How do economists compare the economic performance of different countries? [10]

   (b) Assess the extent to which Singapore's economic performance is the main determinant of its population's standard of living. [15]

2. Governments have aims in relation to unemployment, economic growth and the balance of trade. In 2014 Singapore's GDP at 2010 prices grew by 2.9%, the total population grew by 1.3%, inflation was 1% and overall unemployment stood at 2%.

   Source: http://www.singstat.gov,accessed July 2016

   Discuss how useful the above statistics are in assessing comparing Singapore's SOL with that of other countries. [15]

Section C: Further Reading

The trouble with GDP	GDP Revisions	Video on World Bank Visualizing Price Levels, Standards of Living and Size of Economies in One Chart	Video on real vs nominal GDP

Video on GDP & SOL	Happiness is the metric of the future	The Economics of Well-being