

Catholic Junior College

H2 Economics (9570)

THEME 3: THE NATIONAL AND INTERNATIONAL ECONOMY

3.2 MACROECONOMIC OBJECTIVES AND POLICIES

3.2.1 STANDARD OF LIVING & MACROECONOMIC INDICATORS

THEME SUMMARY – THE NATIONAL & INTERNATIONAL ECONOMY

Theme 3 provides students with an overview of the workings and linkages of the national and international economy. Students will use the concepts, theories and principles from Themes 1 and 2 to examine the problem of scarcity of resources and the concept of trade-offs at the national level.

In particular, students will examine how governments make policy choices at the national level to improve living standards. In doing so, students will discuss how governments consider competing needs, weigh costs and benefits, recognise trade-offs and consequences to make policy decisions.

Students will first gain an understanding of the circular flow of income model and concepts of AD-AS, before applying the concepts to analyse macroeconomic issues and government decisions at the national level. Students will also examine domestic and external factors that influence economic growth, price stability, employment and balance of trade, with a focus on how these factors affect a country's standard of living.

Additionally, students will also discuss the different policy choices available to governments and their effectiveness in achieving higher living standards.

SYLLABUS KEY REQUIREMENTS

Check that you have mastered the following:

Theme 3.2 Macroeconomic Objectives and Policies	
Economics Content	✓
<p>3.2.1 Standard of Living and Macroeconomics Indicators</p> <p>a. Economies are primarily concerned with improving the standard of living</p> <ul style="list-style-type: none"> Standard of living involves material and non-material aspects, as measured by real national income per capita taking into account other indicators such as income distribution, leisure time, quality of environment <p>b. Standard of living is affected by an economy's ability to achieve macroeconomic objectives in terms of sustainable and inclusive economic growth, low unemployment, price stability and a favourable balance of trade position</p> <p>c. Macroeconomic indicators</p> <ul style="list-style-type: none"> Indicators of economic performance include real Gross Domestic Product (GDP) or Gross National Income (GNI), real GDP or GNI per capita, unemployment rate, Consumer Price Index (CPI) and balance of trade Human Development Index (HDI) as an indicator to reflect standard of living Gini coefficient as an indicator to reflect income distribution Comparison of living standards over time and over space (between economies) <p>An awareness of the key components of the balance of payments accounts (current, capital and financial accounts) is required. Knowledge of balance of payments accounting (including sign convention) is not required.</p> <p>An understanding of nominal and real concepts is required. An understanding of how index numbers are interpreted, including the base year and use of weights, is required. Calculation of index numbers and national income is not required.</p> <p>An understanding of the meaning of the Gini coefficient (using the Lorenz curve) and the variation of the coefficient between 0 and 1 is required.</p> <p>Calculation of current account of balance of payments, HDI and Gini coefficient is not required.</p>	
Concepts and Tools of Analysis	
<ul style="list-style-type: none"> Standard of living <ul style="list-style-type: none"> Material and non-material well-being Gross Domestic Product (GDP) and Gross National Income (GNI) Human Development Index (HDI) Income inequality Gini coefficient Economic growth Full employment and unemployment Price stability <ul style="list-style-type: none"> Consumer Price Index (CPI) Nominal and real concepts Balance of trade surplus and deficit Short-term capital flows Long-term capital flows <ul style="list-style-type: none"> Foreign direct investment 	

CONTENT

1. STANDARD OF LIVING

- 1.1. Definition of Standard of Living (SOL)
- 1.2. Measurement of Standard of Living
- 1.3. Other Indicators of Standard of Living
 - 1.3.1. Human Development Index (HDI)
 - 1.3.2. Net Economic Welfare
- 1.4. Income Distribution
 - 1.4.1. Income inequality
 - 1.4.2. The Lorenz Curve and Gini Coefficient

2. ECONOMIC PERFORMANCE

3. ECONOMIC GROWTH

- 3.1. Definitions of Economic Growth
- 3.2. Measurement of Economic Growth
 - 3.2.1. National Income Statistics
 - 3.2.2. Real vs Nominal Income
 - 3.2.3. Personal Disposable Income
- 3.3. Uses of National Income Statistics
- 3.4. Difficulties in Measuring National Income
- 3.5. Comparison of Economic Performance and SOL over Time and Space
 - 3.5.1. Difficulties in Using National Income Statistics to Compare SOL over Time
 - 3.5.2. Difficulties in Using National Income Statistics to Compare SOL across Countries (Space)

4. PRICE STABILITY

- 4.1. Definition of Inflation
- 4.2. Measurement of Inflation
 - 4.2.1. General Price Level, Consumer Price Index and Inflation Rate
- 4.3. Uses of CPI and Inflation Rate
- 4.4. Difficulties in the Use of CPI and Inflation Rate
- 4.5. Other Indicators of Price Changes

5. FULL EMPLOYMENT

- 5.1. Definition of Unemployment
- 5.2. Measurement of Unemployment
- 5.3. Uses of Unemployment (Employment) Data
- 5.4. Difficulties in Measuring and Using Unemployment Indicators

6. BALANCE OF PAYMENTS

- 6.1 Definition of Balance of Payments
- 6.2 Measurement of Balance of Payments
 - 6.2.1 Balance of Payments
 - 6.2.2 Structure of Balance of Payments Statement
- 6.3 Uses of Balance of Payments Data

FOOD FOR THOUGHT – Selected Past Year A-Level Essay Questions Related to This Topic

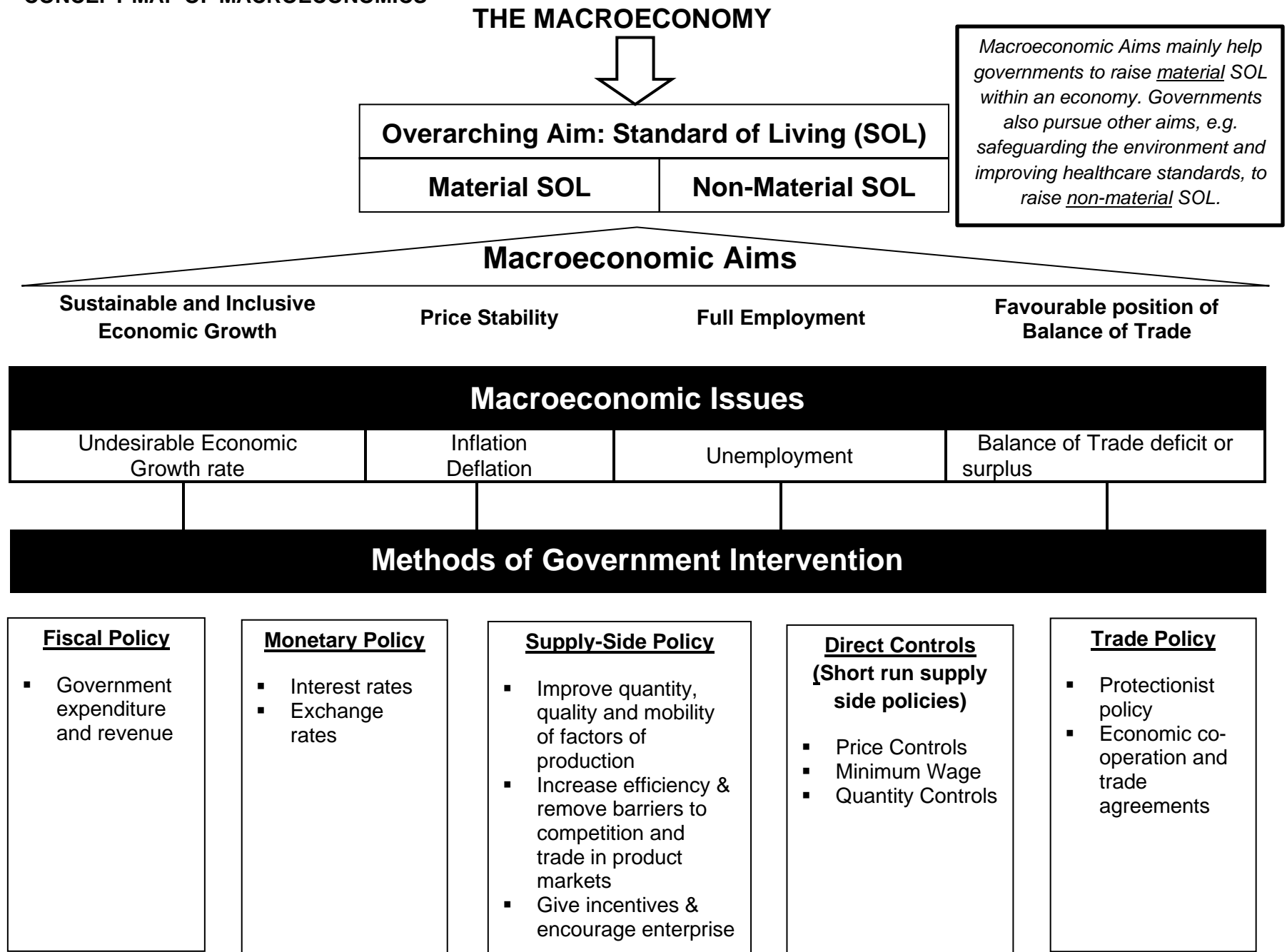
CONCEPT MAP WITH SUMMARY OF CONCEPTS

APPENDIX A

APPENDIX B

GLOSSARY OF KEY TERMS

CONCEPT MAP OF MACROECONOMICS



1. STANDARD OF LIVING

In **Microeconomics**, we learned about how the free-market mechanism can allocate resources in producing goods and services in individual/isolated markets, e.g. market for cars; how consumers, producers and governments make decisions in each of these markets. We also learned how the government intervenes to correct market failures, i.e. to achieve the Microeconomic Objectives of Efficiency (productive and allocative efficiency) and Equity.

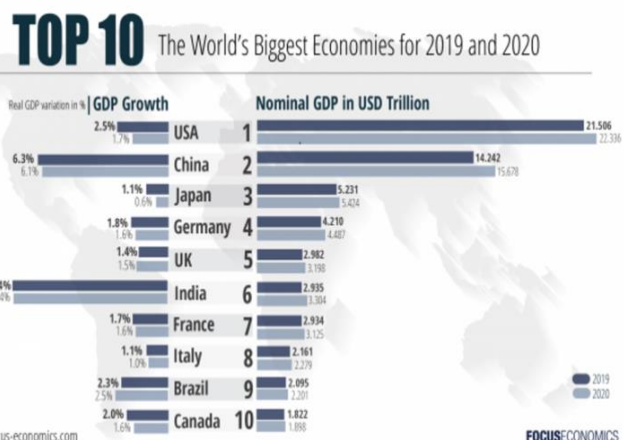
In **Macroeconomics**, we will study the economic performance of national economies and how the government uses macroeconomic policies to achieve Macroeconomic Aims and improve the **Standard of Living (SOL)** of the people.

A large part – but not the only way – of improving the country's SOL includes the government seeking to achieve the Macroeconomic Aims of:

- 1) Sustainable and inclusive economic growth rate;
- 2) Price stability;
- 3) Full employment; and
- 4) Favourable position of balance of trade



Singapore's economy grew 0.7% in 2019, down from 3.1% in 2018: Flash data



China GDP growth last year was 6.1 per cent, slowest rate for 29 years

- China's economy grew by 6.1 per cent in 2019, the lowest growth rate since political turmoil ravaged the country in 1990, the government announced on Friday
- Figure comes amid a fierce US trade war, with industrial production down to 5.7 per cent last year and retail sales also slowing to 8.0 per cent



Orange Wang
Published: 10:01am, 17 Jan, 2020

Europe
Jan 2nd 2020 edition

Steady state

Europe's employment recovery seems to be nearing an end

The EU's unemployment rate has not changed since the spring

Singapore core inflation cooled to 1% in 2019

These macroeconomic aims may **complement** each other, i.e. the pursuit of one macroeconomic aim can help the government to achieve different aims, or lead to **conflict** in aims, i.e. the pursuit of one aim may prevent the achievement of other aims.

Economic indicators are used to measure the economy's performance, and comparisons can then be made over **time**, e.g. in Singapore from 2010 to 2020, or over **space**, e.g. among countries.

1.1 Definition of Standard of Living

Definition:

Standard of Living (SOL) reflects the well-being of an average person in a country. It includes **material** and **non-material** well-being.

Material well-being refers to the **quantity of goods and services available to the average person** in a country.

Non-material well-being examines the **quality of life of an average person** in a country. This includes the number of working hours per period, leisure time, quality of physical environment, life expectancy, etc.

1.2 Measurement of Standard of Living

To better assess the **material** and **non-material** aspects of SOL in a country, we need to look at both the **quantitative** and **qualitative** aspects.

We can measure the **quantitative aspect** with **national income statistics**, e.g. Real Gross Domestic Product (GDP) or Real Gross National Income (GNI) per capita.

Real GDP per capita refers to the income and expenditure of the average person in the economy.

$$\begin{aligned} \text{Real GDP Per Capita} \\ &= \frac{\text{Real GDP}}{\text{Population}} \end{aligned}$$

The quantitative aspect is measured by real national income per capita, taking into account income distribution. As higher incomes would allow for the enjoyment of more goods and services, real GDP per person is a good measure of the **material** well-being of the average person. These national income statistics will be covered in more detail in Section 3 of this topic.

The qualitative aspects consider leisure time, externalities, physical environment, etc. For example, a country with better healthcare for children and a lower infant mortality rate indicates better **non-material** well-being. Another example is the **quality** of the environment. If firms produce goods and services without considering the pollution they create, material well-being in terms of the number of goods and services available for consumption may rise. Still, the non-material well-being in terms of the deterioration in the quality of air and water falls for the citizens.

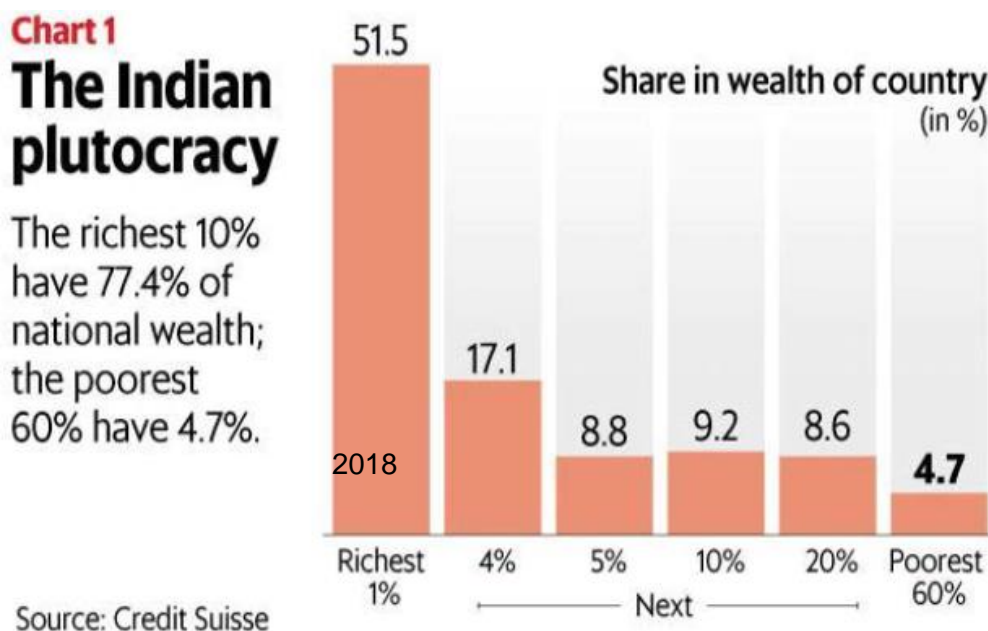
1.3 Income Distribution

1.3.1 Income Inequality

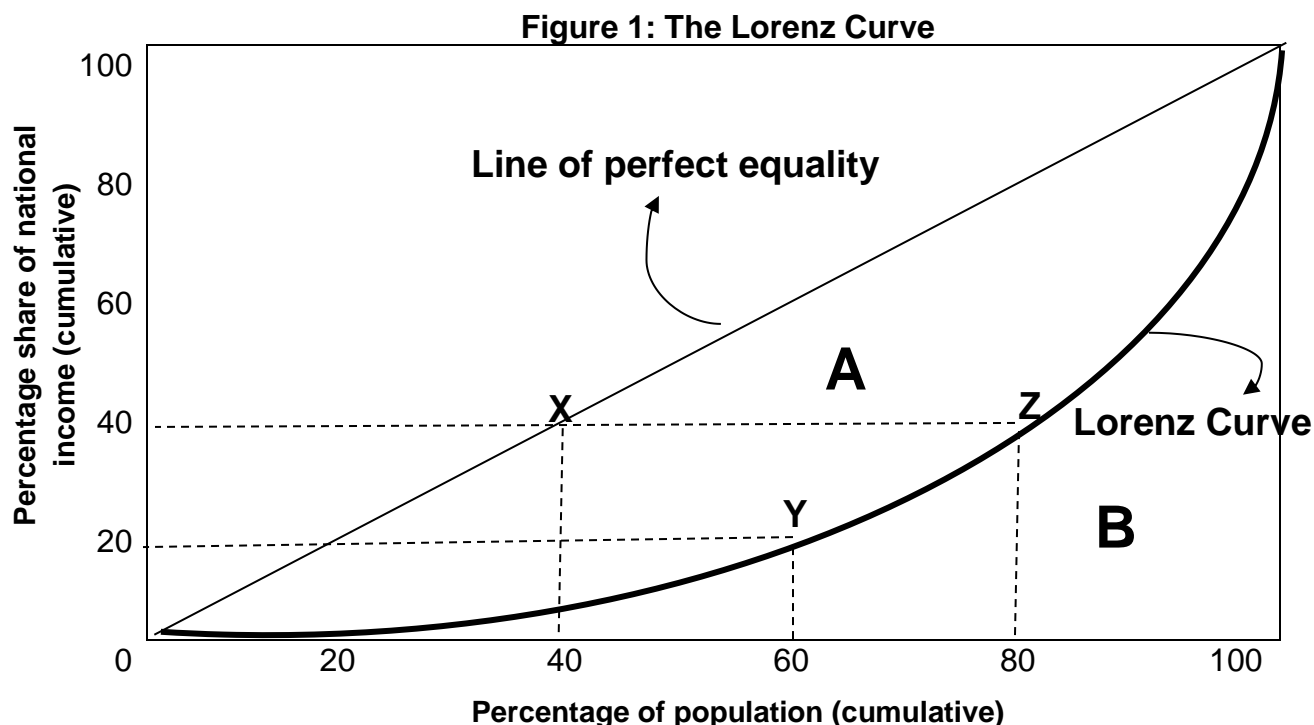
National income figures ignore income distribution, e.g. an increase in GDP per capita could be disproportionately attributed to a small high-income group within an economy. The result is growing inequality. If this is seen as undesirable, then national income statistics are an inadequate measure of the well-being of the citizens in the country.

There are **different ways of looking at income distribution**. Each way highlights another aspect of income inequality. **Income inequality** can be examined by looking at the:

- **size distribution of income** – how evenly incomes are distributed among the population;
- **functional distribution of income** – distribution among different factors of production (e.g. relative shares of wages and profits in national income, higher-paying jobs versus lower-paying jobs, higher rents in some areas than in others); or
- **distribution of income by the recipient** – whether by class of person (such as gender, ethnic group) or geographical location.



1.3.2 The Lorenz Curve and Gini Coefficient



- With reference the Figure 1, the horizontal axis measures the percentage of the population from the poorest to the richest. Therefore, the 20% point on the horizontal axis represents the poorest 20% of the population. The vertical axis measures the percentage of national income they receive.
- The 45-degree line (or 'Line of perfect equality') reflects a perfectly even income distribution. A perfectly equal income distribution is one in which everyone has the same income. Point X on the 45-degree line of perfect equality shows that the 'poorest' 40% of the population would earn 40% of the national income.
- **The Lorenz curve** is a graphical representation of the income distribution in a country. It **shows the degree of inequality** in the country and is often used to illustrate the extent to which income is distributed unequally in society.
 - In Figure 1, at Point Y along the Lorenz curve, 60% of the households earn 20% of the total income, while at Point Z, 80% of the households earn 40% of the total income.
 - **The Gini coefficient** is a precise way of measuring the position of the Lorenz curve. It is the ratio of the area between the Lorenz curve and the 45-degree line (Area A) to the whole area below the 45-degree line (Area A+B). Therefore, the Gini coefficient will be between 0 and 1, where 0 corresponds to perfect equality and 1 corresponds to perfect inequality.

- If **income is equally distributed** in the society so that the Lorenz curve follows the 45-degree line, Area A disappears, and **Gini coefficient would be zero.**
- As inequality increases, Area A, and the Gini coefficient rises. **The further the Lorenz curve is from the 45-degree line, the greater the income inequality.**
- If there is an extreme case of income inequality in the society, where one person earns the whole of the national income, Area B will disappear, and the **Gini coefficient would be 1.**
- **Therefore, the higher the Gini coefficient, the greater the income inequality.**

How do we calculate the Gini coefficient?

- Let us refer to the area between the perfectly equality line and the Lorenz curve as Area A, and the area under the Lorenz curve is Area B.
- The Gini coefficient is calculated by dividing Area A by the sum of Area A and B.

$$Gini\ coefficient = \frac{Area\ A}{Area\ A + Area\ B}$$

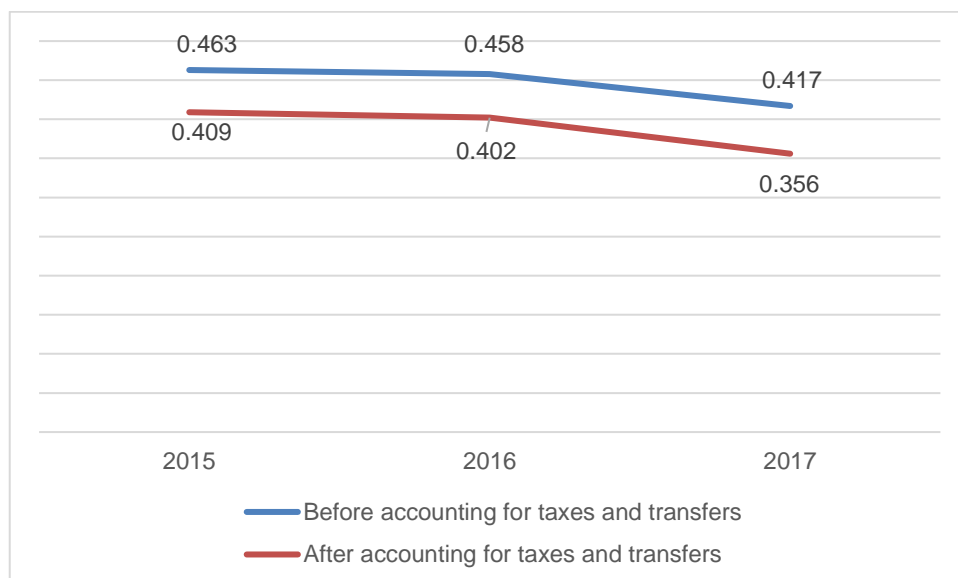
- Gini coefficients provide a straightforward way of comparing income distribution either in the same country across different time periods or between different countries in the same period of time.

The following shows the Gini coefficient of selected countries:

Table 1: International comparison of Gini coefficients



Table 2: Gini coefficients of Singapore



The country must also consider real GNP per capita together with the Gini coefficient to get a more accurate view of the material SOL of people in a country.



Food for Thought:

1. From Tables 1 and 2, what happens to the Gini coefficient before and after accounting for taxes and transfers?
2. Why do you think this is the case?

1.4 Other Indicators of Standard of Living

To holistically analyse SOL that includes a variety of material and non-material factors, we need to use other indicators to measure SOL apart from national income statistics. Composite indicators are helpful as they combine material and non-material measures to give a complete picture of the level of human well-being.

1.4.1 Human Development Index (HDI)

The Human Development Index (HDI) is a **composite statistic (index)** that reflects a country's overall SOL. It measures the average attainment of a long life, knowledge, and a decent material SOL. The following table lists the three main dimensions and the relevant indicators used to derive the HDI.

Dimension	Indicator
Health	Life Expectancy (years)
Knowledge	Expected years of schooling (years)
	Mean years of schooling (years)
Income	Real gross national income per capita (PPP\$)*

* Real national income (PPP\$) will be explained in detail in Section 3.5.2.

HDI is measured from 0 to 1. The nations are ranked and grouped according to human development, ranging from very high human development (closer to 1) to low human development (closer to 0).

Singapore's HDI trends based on consistent series data.

	Life Expectancy at birth	Expected years of schooling	GNI per capita (2011 PPP\$)	HDI value
2005	80.2	13.9	57 709	0.868
2010	81.9	15.2	71 681	0.909
2015	82.8	16.1	78 742	0.929
2016	83.0	16.1	78 427	0.930
2017	83.2	16.2	82 503	0.932
2018	83.2	16.3	88 099	0.936
2019	83.6	16.4	88 155	0.938

Human Development Index – Wikipedia 2020

Singapore's HDI value for 2019 is 0.938 which put the country in the very high human development category positioning it at 11 out of 189 countries and territories.

1.4.2 Measurable Economic Welfare (MEW)

Measurable Economic Welfare (MEW) adjusts the measure of total national output, to include only items that help improve economic well-being.

In addition to GNP the MEW includes:

- The value of leisure time enjoyed by citizens;
- Value of unpaid work; and
- Economic output in the underground economy (not measured by official GDP statistics).

The MEW also excludes factors which reduce economic welfare, such as:

- Environmental damage.

It is also known as net economic welfare (NEW) (Samuelson and Nordhaus, 1992).

Comparing this measure to GDP, it is an instant reaction to all of us that this measure is better than GDP as it includes economic welfare. This is because including economic welfare would mean it could better measure the standard of living in the country. GDP cannot measure the standard of living as it does not include economic welfare, like working hours and working conditions. It also considers the value of environmental damage caused by industrial production and consumption, for example, pollution, which will further make the calculation of living standards accurate.

However, there is a problem with this measurement. Putting a monetary value to economic welfare like the value of leisure time and unpaid work is hard. For example, how do you value the amount of leisure time you have in a day? Furthermore, how do you calculate this when we consider everyone in the country? Due to this difficulty, measuring MEW could be inaccurate as the original value placed is already inaccurate.

So is MEW a good measurement? In a way, it is much better than GDP as it considers economic welfare. However, putting a monetary value on economic welfare could be problematic and inaccurate.

Source: Stamford Economics

There are many other indicators of SOL, like access to medical services, the number of TVs owned, etc. Many of these indicators can be found on the World Bank website under "World Development Indicators", e.g. access to electricity and fresh water.

2 ECONOMIC PERFORMANCE

As explained earlier, a large part of the government achieving its overarching aim of improving the SOL of its citizens is its ability to achieve good economic performance. This can happen when it achieves the following macroeconomic aims:

- 1) Sustainable and inclusive economic growth rate;
- 2) Price stability;
- 3) Full employment; and
- 4) Favourable position of balance of trade

Better economic performance results in higher SOL for the people in the country.

Macroeconomic Aim	Key Economic Indicator
Sustainable and Inclusive Economic Growth	Economic growth rate (Real GDP/GNI growth rate) Gini coefficient
Price Stability	Inflation rate
Full Employment	Unemployment rate
Balance of Trade	Balance of Trade

3 ECONOMIC GROWTH

3.4 Definitions of Economic Growth

Definition:

Economic growth is generally defined as an increase in the output (or income) level of an economy.

Specifically, economic growth can be classified as:

Actual Economic Growth	Potential Economic Growth
<ul style="list-style-type: none"> • Increase in the output of goods and services • This is represented as a movement from within the Production Possibility Curve (PPC) towards the PPC (Figure 1) 	<ul style="list-style-type: none"> • Increase in the productive capacity of the economy, i.e. <i>potential</i> to produce greater output • This is represented as an outward parallel/pivoted shift of the PPC (Figure 2)
<p style="text-align: center;">Figure 1</p>	<p style="text-align: center;">Figure 2</p>

With economic growth, there will be higher incomes, lower unemployment and greater ability to enjoy goods and services to enjoy, which ultimately contributes to a higher **material** SOL for the people.

Definition:

Sustained Economic Growth refers to the rate of growth that can be maintained over a period of time without increasing inflationary pressures i.e. non-inflationary economic growth.

It is achieved simultaneously when actual economic growth (increase in AD) and potential economic growth (Increase in LRAS) are achieved.

Note: The AD/AS model will be taught in JC2.

In particular, governments seek to achieve **Sustainable and Inclusive Economic Growth**.

Definition:

Sustainable Growth indicates a strong and stable rate of growth that can be maintained without creating other significant economic problems (such as depleted resources and environmental issues or large debts), particularly for future generations.

- It implies a *positive and stable growth rate over an extended period of time* such that both the material and non-material SOL of *future generations* are not compromised.

Definition:

Inclusive Growth indicates a strong and stable rate of growth without resulting in worsening of income or wealth inequality.

- Inclusive growth ensures that the gains in SOL are well-distributed, which is vital for economic security and social stability for higher material and non-material SOL.
- In the case of Singapore, inclusive growth implies economic growth that considers income distribution and *does not contribute to worsening income inequality*.

Note: More on the causes and consequences of undesirable rates of economic growth will be discussed in later topics.

3.2 Measurement of Economic Growth

There are several **economic growth indicators**, known as **National Income Statistics** that economists use to measure economic growth or the increase in output. These indicators include Gross Domestic Product (GDP) and Gross National Income (GNI).

GNI is sometimes called Gross National Product (GNP), where "*Income*" is replaced by "*Product*".

Economic growth is measured by the **percentage change** in GDP or GNI, commonly known as the **economic growth rate**.

Self-Assessment 1



Singapore's Real GDP (at 2015 Market prices) and Y-O-Y growth

Year	Overall GDP (S\$m)	Growth Rate
2001	193,582.3	-1.1%
2002	191,512.7	3.9%
2003	199,009.8	4.5%
2004	208,036.5	9.8%
2005	228,464.7	7.4%
2006	245,277.5	9.0%
2007	267,365.2	9.0%
2008	291,487.2	1.9%
2009	296,932.8	0.1%
2010	297,292.1	14.5%
2011	340,475.7	6.3%
2012	361,797.2	4.4%
2013	377,894.7	4.8%
2014	396,090.5	3.9%
2015	411,540.3	2.9%
2016	423,444.1	3.0%
2017	435,987.9	3.7%
2018	452,118.5	3.1%

Source: Singapore Department of Statistics

State whether Singapore GDP in 2008 had fallen when compared to Singapore GDP in 2007.

Describe the change in Singapore GDP from 2010 to 2018.

3.4.1 National Income Statistics

Definition:

Gross Domestic Product (GDP) refers to the total money value of all final goods and services produced within the country's geographical boundary during a given period of time.

Gross National Income (GNI) refers to:

Gross Domestic Product (GDP) + incomes of domestic residents that is earned abroad – incomes earned domestically and paid to foreigners.

<input checked="" type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

Self-Assessment 2

Category	Amount	Included in GDP or GNI of Singapore
Singaporean earning wages in USA	\$200,000	
Indonesian earning rent from land in Singapore	\$400,000	
A European film's profits in Singapore	\$5,000,000	

GDP is the most often used indicator to assess the economy's economic growth. However, for most countries, the difference between GDP and GNI is relatively tiny.

Therefore, when economists consider national income, they can mean GDP or GNI.

3.4.2 Real vs Nominal Income

Changes in GDP may be due to changes in the quantity of goods and services produced and/or a change in the prices of the goods and services. In order to determine whether there is an actual change in **quantity** of goods and services and, therefore, SOL, the effects of *price changes* should be eliminated.

Definition:

Nominal national income refers to national income measured at **current** prices.

Real national income refers to national income measured at **constant** or **base year** prices.

- a) **Nominal national income** at **current** prices/dollars, e.g. **nominal** GDP, measures the value of the national output at prevailing or current prices.
 - Nominal national income can change because of a change in:
 - i) General Price Level; and/or
 - ii) Quantity of output produced.
- b) **Real national income** at **constant** prices/dollars, e.g. **real** GDP, measures the actual level of output, eliminating price changes.
 - It changes solely because of a change in the *quantity* of output produced in the national economy.

We need a deflator to convert nominal national income to real national income.

A **deflator** is an index number that shows the average percentage change in the prices of goods and services that constitute the national output.

$$\text{Real GDP} = \frac{\text{Nominal GDP} \times 100}{\text{GDP Deflator}}$$

When presented with **nominal** national income, we can estimate the changes in **real** national income by using the following formula:

$$\% \Delta \text{ in real GDP} \approx \% \Delta \text{ in nominal GDP} - \% \Delta \text{ in price level}$$

(%Δ in the price level can be either the rate of inflation or % change in GDP deflator)

These formulas also apply to the other national income statistic, GNI/GNP.

"GDP Deflators: They provide a broad measure of the change in the overall level of prices of the goods and services that make up GDP between the base year (e.g.

2005) and any other period. The deflators are derived as the ratio of the current price value of a component of GDP to its corresponding constant price value, with the base year index set at 100."

– Singapore Department of Statistics

Self-Assessment 3

Calculation of Real GDP

	Nominal GDP	GDP deflator	Population
Year 3	\$5,000	125	11
Year 4	\$6,600	150	12

1. What is the real GDP in Year 3?
2. What is the real GDP in Year 4?
3. What is the real GDP per capita in Year 3?
4. What is the real GDP per capita in Year 4?
5. What is the rate of real output growth between Years 3 and 4?



**Self-Assessment 4****Singapore's National Income Figures**

		2004	2005	2006	2007	2008	2009	2010
GDP at 2005 market prices	\$m	194,411	208,764	226,932	246,846	250,516	248,587	284,561
	%	9.2	7.4	8.7	8.8	1.5	-0.8	14.5
GDP at current market prices	\$m	190,484	208,764	230,923	267,253	267,952	266,659	303,652
	%	13.9	9.6	10.6	15.7	0.3	-0.5	13.9
GNI at current market prices	\$m	176,584	194,250	222,567	258,655	256,204	260,240	292,431
	%	9.7	10.0	14.6	16.2	-0.9	1.6	12.4

Source: Singapore Department of Statistics

Infer the rate of inflation from the figures in 2005 and 2009.

Infer the net factor income from abroad from the figures in 2007 and 2010.

Tip: When analysing rate of change data, e.g. national income growth rate and inflation rate, always analyse the:

- Sign, i.e. positive or negative, that tells us about whether there is an increase or decrease in absolute value; **before**
- Value, that tells us about the whether there is an increase or decrease in the rate of change.

3.4.3 Personal Disposable Income

Personal Disposable Income is the amount of income available for household spending after deductions and adding other benefits.

- **Deductions** may include **personal income tax** and contributions to national insurance (**CPF contribution, social security**).
- **Benefits may include** unemployment benefits, government hand-outs (Singapore Shares), pensions and child benefits.

3.3 Uses of National Income Statistics

a) Measure of Economic Performance

- National income statistics are a measure of economic activity in the country. It is, therefore an important indicator of the performance of an economy.
- The economy is growing if there is an increase in **real** national income.
- This means that there is an actual increase in the output of goods and services.

b) Estimate and Assess the Material Standard of Living (SOL) of an economy

- Economic growth will only lead to an increase in SOL over the same period of time if the extent of economic growth *exceeds* the growth in population.
- National income statistics are commonly used to assess the *material* SOL of its citizens and to do analyses or comparison of SOL over time and space (i.e. between countries). See Section 3.5 for elaboration.

c) Assist Government's Planning

- The government uses national income data to identify and evaluate the policies for intervening and enhancing the performance of the economy.
- Examples of economic policies include fiscal, monetary, supply-side, and trade policies.

d) Assist Firms' Planning

- Firms use national income data to identify and evaluate the strategies to increase their profits. National income figures can show the sectors with more significant growth in the economy.
- A logistics firm, for example, may need to know if the logistics industry is growing before investing.

- Firms can also find information regarding disposable income from the statistics. A firm may not want to produce luxury goods for an economy in which disposable income is stagnant even if the national income is rising.

e) Assist International Economic Planning

- International Organisations (e.g. WTO, IMF and UNICEF) and Non-Governmental Organisations (NGOs) frequently use national income statistics for planning.
- These could be in areas for identifying, planning and implementing aid or assistance programmes.

3.4 Difficulties in Measuring National Income

The measurement of national income is a tedious and complicated process. There are **many difficulties in the collection and measurement processes**. These include:

a) Estimation of Values

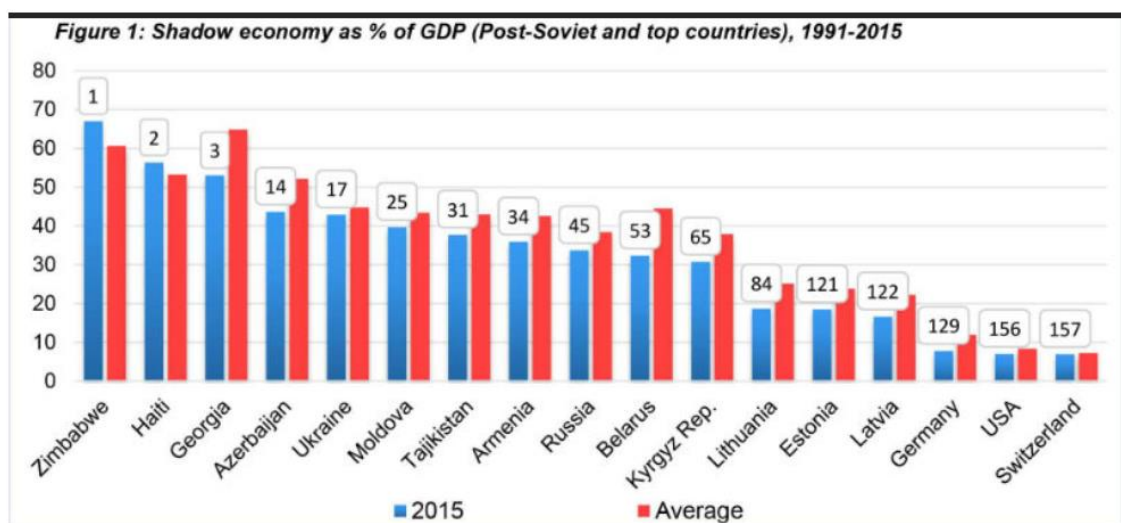
- Countries need to impute (*assign to something by inference from the value of the products or processes to which it contributes*) values to many goods and services that are produced. These include owner-occupied housing, employees' remuneration in the forms of food and lodging, or government-provided services.
- In some cases, it isn't easy to provide an accurate valuation. For example, the annual rental value of a rare housing which is owner-occupied cannot be accurately assessed as it is not traded in the market and has no similar rented counterparts as reference. It is also difficult to impute depreciation values, e.g. how an asset's value will fall over time due to expected 'wear and tear'.

b) Omissions in Measurement of National Income

- **'Non-market activities'** refer to the production of goods and services that are not bought and sold. Such production involves the use of society's resources for the production of goods and services to meet wants. Still, these transactions are not recorded because they do not occur in markets. Examples:
 - Housework services performed by housemakers may not be included in the measurement of national income even though the same service performed by a home-cleaning agency would be recorded as a transaction in the market for home cleaning services.
 - Rural villagers in many developing countries exchange goods and services without using money. These villagers tend to be self-sufficient through subsistence farming, and their output may not be included in their incomes, and their expenditures are not formally recorded. These

lead to an underestimation of the value of goods and services produced in these economies.

- **The underground economy**, also known as the 'shadow economy', is the sector in which transactions are not reported to official authorities. These unrecorded transactions in the underground economy understate the country's national income figures. It consists of:
 - Illegal production, like the manufacturing of harmful drugs and firearms; and
 - Legal activities that are not declared in income tax returns, e.g. casual jobs.



Source: The Financial, 2018

c) Obtaining Reliable and Complete Information

- It is difficult to obtain complete and reliable information from all sources. For example, the wages of self-employed persons may not necessarily be reliable and are often under-reported to reduce taxes.
- Large and developing countries may not always have reliable data from their provincial areas.

The difficulties in measuring national income may reduce the effectiveness of how the national income statistics may be used.

3.5 Comparison of Economic Performance and SOL over Time and Space

National income figures are often used to estimate and assess the SOL or welfare in an economy. However, there are **various challenges** when we use these figures to compare economic performance over time and **space**.

3.5.1 Difficulties in Using National Income Statistics to Compare SOL over Time

a) Changes in Price Level

- Price levels in an economy change over time, which may make comparisons over time difficult. Therefore, when assessing changes in SOL over time, **real** national income figures should always be used to ensure that values of GDP calculated are at **constant prices**,
- E.g. **real** GDP should be used to assess whether SOL has improved because an increase in nominal GDP could be due to a rise in price levels rather than an actual increase in the volume of goods and services consumed.

Recall that:

$$\% \Delta \text{ in real GDP} \approx \% \Delta \text{ in nominal GDP} - \% \Delta \text{ in price level}$$

(% Δ in price level can be either the rate of inflation or % change in GDP deflator)

- The difficulties associated with changes in the price levels over time can be addressed by using the real figures rather than the nominal figures to compare.



Self-Assessment 5

Indonesia Statistics

	2003	2004	2005	2006	2007	2008
Percentage change in GDP at current prices	4.8	5.0	5.7	5.5	6.3	6.1
Rate of inflation	6.8	6.1	10.5	13.1	6.4	9.8

Source: Asian Development Bank

Q: Describe the trend of real GDP for Indonesia from 2003 to 2008.

b) Changes in Size of Population

- As the population increases over time, the rate of population increase may exceed the increase in real national income, and therefore **average** real national income would fall.
- In this case, growth in GDP does not translate to increasing material welfare for the average person in the economy, i.e. the share of goods and services available for consumption for an average person is lower. Therefore, to compare changes in SOL over time and account for changes in population sizes, we can use per capita national income figures, e.g. real GDP per capita. This is calculated by using the following formula:

$$\text{Real GDP per capita}_{\text{current year}} =$$

$$\frac{\text{Real GDP in current year}}{\text{Population Size in current year}}$$

c) Composition and Quality of Goods and Services Produced

- Changes in national income may not necessarily mean an increase in the standard of living over time, as it does not consider the change in *composition* and *quality* of goods produced over time.
- For example, over time, an economy that produces mainly capital goods rather than consumer goods may see a fall in the *current* standard of living but should see an increase in *future* standard of living.
- This is because allocating more resources to the production of capital goods now means that fewer resources are allocated to the production of consumer goods. Hence current SOL would fall.
- However, because the increased production of capital goods now allows more consumer goods to be produced in the *future*, this raises the future standard of living.

Composition of Goods: The ***GDP composition must also be considered*** when assessing the standard of living.

- E.g. An increase in real national income due to the rise in government expenditure may not mean an increase in welfare if the increase is used mainly on military products.
- On the other hand, a fall in real national income due to an increase in import expenditure may not mean a fall in welfare if the increase in imported goods increases the variety of goods consumers can enjoy.

Quality of Goods: An increase in real national income may not accurately account for the impact of the only measures increase in the *quantity* of output, but not quality. The quality of goods may have improved, and prices may have fallen over time. However, this may register as a fall in national income despite cheaper and higher-quality goods and services.

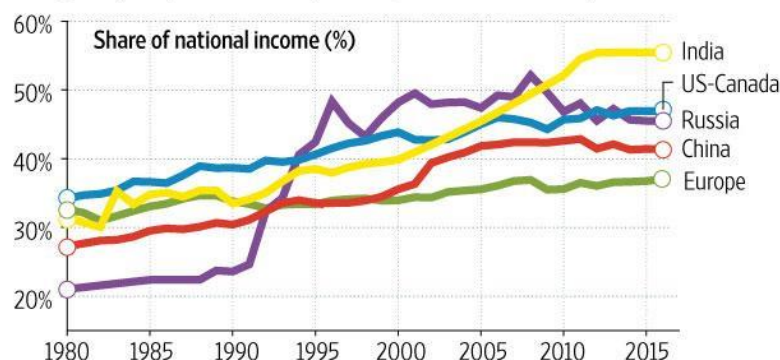
- E.g. Many goods, such as TV sets, computers and mobile phones have better performance and are more reliable than those made in the past. These goods may also be cheaper as a result of technology that raised productivity.
- This quality improvement (but not quantity) of the goods increases the welfare of the people but will not be reflected in the national income statistics.

d) Distribution of National Income

- When comparing SOL over time, we must also consider the distribution of national income. Despite an overall increase in national income, if only a small minority continue to benefit at the expense of the majority, the economy's overall SOL may not have increased.
- When this occurs, the economic growth that results is **non-inclusive**.
- Therefore, income equality has become an important indicator for many countries recently. Indicators, like the Gini coefficient and the proportion of income earned by different percentiles of the income earners, are used to measure income equality.

WHAT THE TOP 10% OWNED IN 1980-2016

Rising inequality almost everywhere, but at different speeds



In 2016, 47% of national income was received by the top 10% in US-Canada, compared to 34% in 1980.

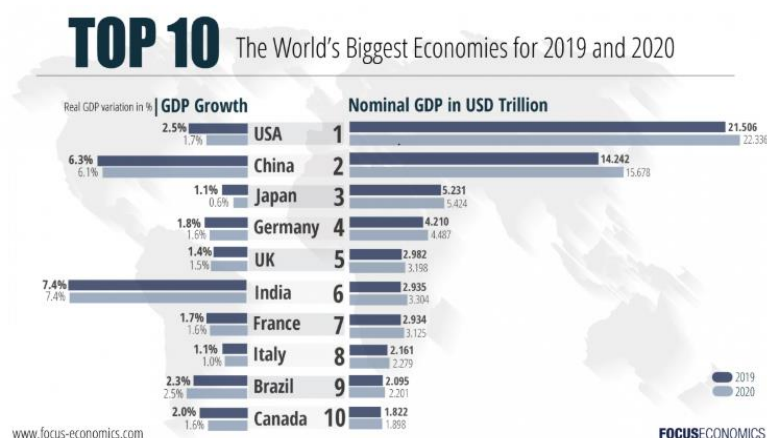
Source: World Inequality Report 2018

e) Leisure and Intangibles affecting Quality of Life and Non-Material SOL

A common problem with only using national income statistics to measure SOL is that it does not capture the *non-material* aspect. A worsening of non-material well-being may offset an increase in the material well-being. These could be due to worsening *leisure times* or *negative externalities*.

- **Leisure times:** An increase in national income may result from longer working hours. As a result, leisure times may fall, leading to a fall in non-material well-being.
 - However, an increase in national income combined with a fall in working hours (due to an increase in labour productivity) would lead to increased non-material well-being.
- **Negative Externalities:** National income may increase at the expense of increasing negative externalities.
 - E.g. Production of goods and services may result in pollution and the destruction of the environment. These may create economic and environmental problems for future generations. These are not captured in the national income figures, which only reflect private costs.
 - When this occurs, economic growth is considered **unsustainable**.

3.5.2 Difficulties in Using National Income Statistics to Compare SOL across Countries (Space)



a) Different Currencies and Costs of Living

- It is difficult to compare national income data across countries due to different currencies. For example, data released by China would be denominated in RMB while that of the UK would be in pound sterling.
- Before comparison, the national income figures of different countries in their respective currencies have to be converted into a common currency, widely accepted as the US Dollar.
- However, some problems are involved in the conversion to a common currency.

i) Fluctuations of market exchange rates

- Market exchange rates vary daily, and these changes can be very significant. Therefore, with each fluctuation, the converted national income and per capita income figures will change even though there is no change in output or values in terms of the domestic currency.
- E.g. If UK's per capita income is £100b and the exchange rate is £1 = US\$3.00, then UK's per capita income in US\$ will be US\$300b. But if the exchange rate of £ falls to £1 = US\$2.50, then UK's per capita income in US\$ will fall to US\$250b without any actual change in the quantity of output, i.e. there may not have been a fall in material standard of living.
- This would create a distorted impression that the UK's national income and material SOL had fallen.

ii) Differences in price levels/ costs of living across countries

- Market exchange rates could be misleading as they do not reflect the differences in the cost of living among countries.
- E.g. Based on prevailing exchange rates, US\$1 USD could be equivalent to S\$1.35 SGD. However, the S\$1.35 may be able to buy more goods and services in Singapore than US\$1 in the US due to lower cost of living in Singapore.

In using countries' national income to compare living standards, it is important to convert GDP into a common currency at the Purchasing Power Parity (PPP) rate,

- PPP is the rates of exchange that equalise the purchasing power of different currencies by eliminating the differences in cost of living among countries. Therefore, it is the exchange rate that allows you to buy the *same basket of goods and services* in each country using its domestic currency.

Definition:

The **national income at Purchasing Power Parities (PPP)** is the exchange rate that would ensure equal purchasing power of a same amount of currency across countries.

- E.g. PPP measures how many units of SGD are needed to buy the same basket of goods as can be purchased with a given amount of USD in the USA. For example, if the same basket of goods and services costs US\$10 in the USA and S\$20 in Singapore, the PPP exchange rate is US\$1 to S\$2. This means that S\$2 can buy as many units of goods and services in Singapore as what US\$1 can buy in the US.
- To compare SOL across countries, it is more accurate to use PPP rather than market exchange rate to convert national income & per capita income to the same currency since it gives a more precise measure of the number of goods and services one can purchase in the respective countries.

- However, it isn't easy to find a common basket of goods and services to make an international comparison of prices across different countries. For example, rice might be a staple in Asian countries but not Western countries.

Note: Do not confuse GDP (<i>PPP</i>) with <i>real</i> GDP.	
GDP (PPP)	Real GDP
GDP (PPP) converts GDP into a common currency to account for differences in costs of living among countries at a point in time, i.e. helpful for comparisons of SOL <u>over space</u> ; and	Real GDP eliminates the effects of price level changes that occur over time in an economy, i.e. helpful for comparisons of SOL <u>over time</u> .

b) Difference in Size of Population

Comparisons across countries using national income or GDP figures may not be accurate as the size of the population may differ between countries.

- E.g. China, the second-largest economy in the world, had a GDP of US\$14.34 trillion in 2019, while Singapore's GDP was mere US\$372.1 billion. Does this mean that residents of Singapore have a lower standard of living compared to those in China?
- No, this does not mean that the standard of living of Singapore residents is lower than those living in China. This is because, despite the higher GDP of China, China has the largest population in the world of 1.4 billion and Singapore has a population of 5.45 million. To more accurately measure the standard of living, the GDP per capita, i.e. GDP/Population size, must be used instead.
- If GDP per capita is used instead, Singapore registers a GDP per capita of US\$65 233, which is more than 6 times higher than that of China at US\$10 261 in 2019, thus reflecting a higher material standard of living in Singapore compared to China.

c) Difference in Accounting Practices

- Different accounting practices hold for different countries. As a result, figures may not be valid and reliable as a source of comparison.
- Many national income figures are based on estimates from samples. In developing countries where proper accounting practices have not been implemented, the statistics may not be accurate.

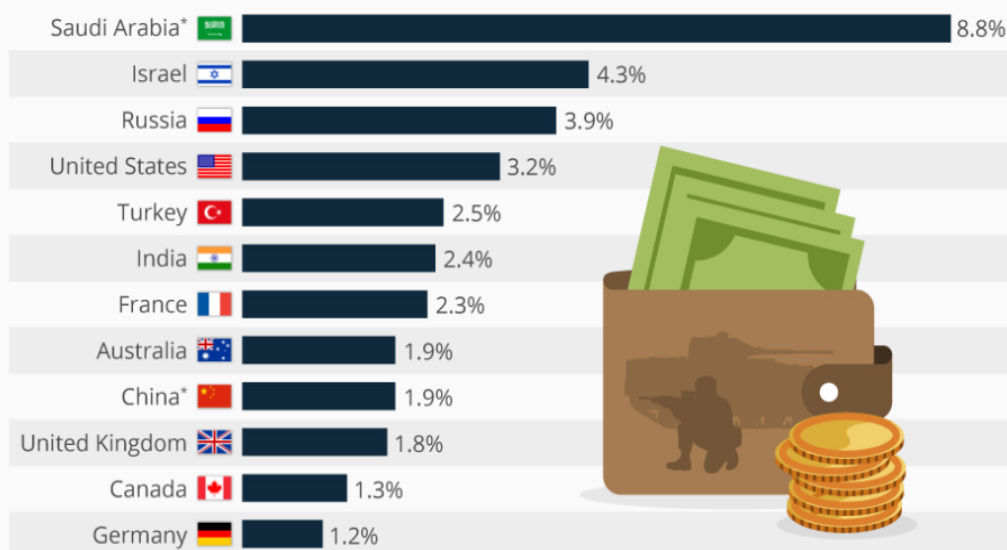
d) Difference in Composition and Quality of Output of Countries

Comparisons across countries using national income figures may not be fair as the *composition* of GDP and the *quality* of goods and services may differ.

- E.g. In the former Soviet Union, a significant proportion of their income was spent on military expenditure. Hence, the welfare of its residents was lower than would be inferred from national income statistics.
- Likewise, the variety and quality of goods and services enjoyed is less.

The Biggest Military Budgets As A Percent Of GDP

Military expenditure as a % of GDP in selected countries in 2018



* Estimations
@StatistaCharts Source: SIPRI

statista

e) Different Size of Non-Monetary Sector

- As a country develops, more of its economy is monetised. As a result, more goods and services are sold in developed countries. This means that using national income statistics alone, the SOL of a more developed country would be overstated as compared to a developing country.
- E.g. The difference between US' real GDP per capita and Indonesia's real GDP per capita may be overstated as more economic activities have been monetised in the US as compared to Indonesia.
- For example, more American households may hire domestic workers to help with housekeeping, while more Indonesian households engage in housekeeping themselves and do not report such output as income.

f) Differences in Income Distribution

When countries have differences in income distribution, comparing GDP per capita may not accurately reflect the differences in material SOL.

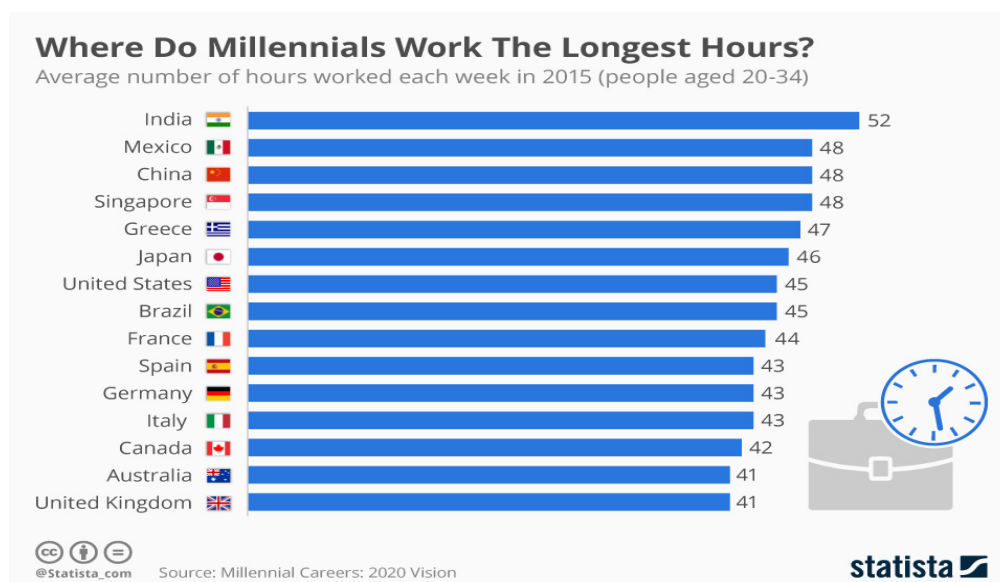
- E.g. USA has a higher GDP per capita than Sweden, but it may not mean that a typical individual in the USA necessarily has a higher material SOL than an individual in Sweden.
- In 2015, the Gini coefficient of the USA is 0.39 versus Sweden's Gini coefficient of 0.278. This shows that the USA has a highly uneven income distribution. The higher income group enjoys the bulk of the national income but constitutes a small minority of the population. Hence this does not truly reflect the material SOL of an average US citizen.

g) Leisure and Intangibles affecting the Quality of Life

- As per comparison over time, national income figures do not consider the *non-material* aspect of SOL. A worsening of non-material well-being may offset an increase in material well-being. This could be due to worsening leisure times or negative externalities.
- Therefore, when comparing living standards between countries over time, we should not rely exclusively on national income estimates. They should be supplemented with other information, e.g. social indicator.

These social indicators could include:

- The current state of health;
- Educational attainments;
- Crime rates;
- Environmental quality; and
- Stress levels and time for leisure.



- However, there are also some statistical problems in using social indicators for comparisons. For example, figures could be unreliable and not comparable because of different definitions used in collecting data.
- E.g. In one country, literacy may be defined as the ability to write one's name, while in another country, it may mean the ability to read a newspaper.
- Therefore, social indicators cannot replace but instead complement national income statistics, e.g. real GDP per capita/ GDP per capita (PPP) as a measure of overall SOL.

4 PRICE STABILITY

Definition of Price Stability: The general price level (GPL) rises slowly and predictably over time, i.e. a low and stable inflation rate.

4.1 Definition of Inflation

Inflation is defined as a sustained increase in the general price level (or overall prices) in the economy.

Deflation is defined as periods of falling overall prices in the economy.

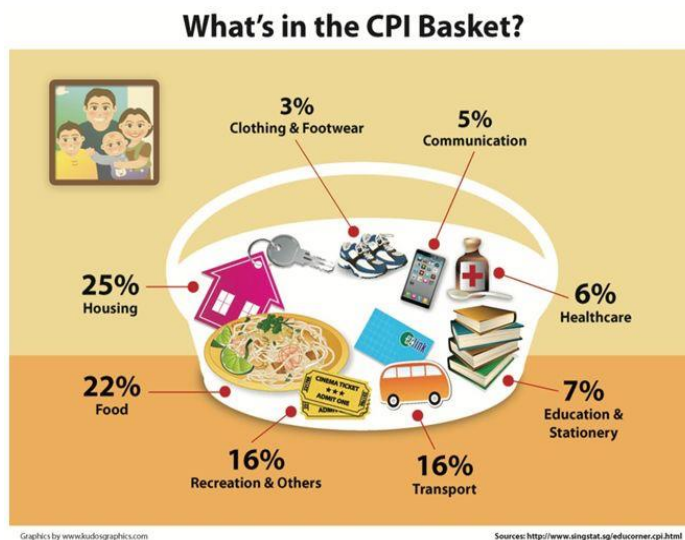
- The government must ensure that prices remain *stable* and do not fluctuate wildly as this will have an adverse effect on national income, employment and SOL.

Note: More on the causes and consequences of inflation/deflation will be discussed in later topics.

4.2 Measurement of Inflation

The General is represented Consumer (CPI).

Inflation is percentage CPI, known as the



Price Level (GPL) by the Price Index

measured by the changes in the commonly **inflation rate**.

4.2.1 General Price Level, Consumer Price Index and Inflation Rate

- The **general price level** reflects the average price level of the goods and services in an economy.
- Over some time, not all prices will move in the same direction or extent. Therefore, economists use **price indices** to estimate the average percentage change in prices of goods/services.

Definition:

The **Consumer Price Index (CPI)** is an index number for the price level. It is the weighted average of prices of a basket of goods/services purchased by the average household in a specific time period.

The CPI tracks the prices of a specified set of consumer goods and services, providing a measure of the change in general price levels. The changes in CPI over time reflect inflation.

The **inflation rate** reflects the rate of change in the general price level. It can be calculated by tracking the changes in the CPI.

$$\text{Inflation Rate} = \frac{\text{CPI}_2 - \text{CPI}_1}{\text{CPI}_1} * 100$$

where:

CPI_2 – is the CPI in the second period
 CPI_1 – is the CPI in the previous period

- A *positive* inflation rate means a *rise* in prices.

- A *rise* in inflation would mean a *faster* increase in prices.
- A *fall* in inflation, also known as disinflation, would mean a *slower* price increase.
- On the other hand, a *negative* inflation rate, otherwise known as deflation, would mean *falling* prices.

4.3 Uses of CPI and Inflation Rate



"The CPI is commonly used as a measure of consumer price inflation. It is also used as inputs in the formulation of many government policies, as well as in the compilation of economic statistics at constant prices."

Source: *Singapore Department of Statistics*

a) Measure of Economic Performance

A high inflation rate may mean that the economy is over-heating or growing too fast. Conversely, a healthy and sustained economic growth economy has a *low rate* of price increase.

b) Estimate and Assess the Standard of Living

If the inflation rate is greater than the increase in wages, real wages will fall. As a result, people will be able to buy fewer goods and services, resulting in a fall in material standard of living.

For other uses of CPI and inflation rate, refer to Appendix B.



Self-Assessment 6

Singapore's Consumer Price Index and Inflation Rate

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CPI (2014=100)	87.8	92.5	96.7	99	100	99.5	98.9	99.5	99.9	100.5

Source: *Singapore Department of Statistics*

Based on the CPI, describe the trend in the general price level between 2010 and 2014.

Based on the CPI, describe the trend in the general price level between 2010 and 2019.

4.4 Other Indicators of Price Changes

- CPI is the more commonly used indicator of inflation and price changes. Other indicators include the PPI. The **Producer Price Index (PPI)** measures the average percentage change in the prices of goods bought by *producers*. The PPI is important as movements in the index usually *lead* to movements in the CPI in later months.
- The **Gross Domestic Product (GDP) deflator** measures the average percentage change in prices of goods and services produced domestically. It is the broadest measure of the nation's general price level.

5 FULL EMPLOYMENT

Definition:

Full employment is when there is no involuntary unemployment, i.e. when all job seekers can find employment. Empirically, the economy is deemed to have reached full employment when total number of job vacancies is equal or greater than the total number of unemployed.

***Note:** At full employment, there is no demand-deficient unemployment. However, structural and frictional unemployment can still occur. These will be covered in the topic Macroeconomic Issues.*

5.1 Definition of Unemployment

Definition:

Unemployment represents the number of people of working age who are willing and able to work but are not able to find suitable jobs.

***Note:** More on the causes and consequences of unemployment will be discussed in later topics.*

5.2 Measurement of Unemployment

According to the Ministry of Manpower Singapore, unemployment refers to persons aged 15 years and over who are without work but are available for work and are actively looking for a job. They include persons who are not working but are taking steps to start their own business or taking up a new job.

Total Population		
Persons of working age (15 years and above)		Not working age
Economically active population (also known as labour force)		Economically inactive population
Unemployed	Employed	

Persons of working age can be classified as economically *active* or *inactive*.

- a) Economically active population (also known as the **labour force**) includes:
 - Persons who have jobs (employed); and
 - Persons without jobs but actively looking for work (unemployed).
- b) Economically inactive population includes:
 - full-time students, homemakers, retirees, and physically or mentally disabled persons;
 - voluntarily unemployed persons (persons who choose not to take up employment); and
 - discouraged workers (persons who have become discouraged by a long, unfruitful job search and given up finding employment).

Note: Economically inactive individuals are NOT counted as part of the unemployment figures, as they are not willing or not able to work. Hence, they are excluded from the unemployment figures and are typically counted as not in the labour force.

Unemployment is measured by the **unemployment rate**.

We can express unemployment either as a number (e.g. 2.7 million) or as a percentage (e.g. 9% of the labour force).

- 2.7 million is a quantity that shows the number of unemployed at a particular point in time.
- The **unemployment rate** is the number of unemployed expressed as a percentage of the labour force.

$$\text{Unemployment Rate} = \frac{\text{Number of Unemployed}}{\text{Labour Force}} \times 100\%$$

Note: The denominator is the size of the labour force, i.e. those who are willing and able to work at the legally employable age. The denominator is **not** the total population, i.e. it does not include full-time students, homemakers etc.

- A high unemployment rate is terrible for the economy. It may imply:
 - Wastage of resources;
 - Financial hardship for the unemployed as they are not able to enjoy goods and services;
 - Social hardship for the unemployed; and
 - Social unrest.

Self-Assessment 8

Singapore's Unemployment Rates

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Overall Unemployment Rate (%)	2.8	2.7	2.6	2.6	2.6	2.6	2.8	2.9	2.7	3.0
Resident Unemployment Rate (%)	4.1	3.9	3.7	3.9	3.7	3.8	4.1	4.2	3.9	4.2

Source: Singapore Department of Statistics

Note: Resident refers to Singapore citizens and Singapore Permanent Residents only.

Compare the overall and resident unemployment rate between 2010 and 2019.

- Besides the unemployment rate, policymakers are also concerned about the economy's productive capacity. This depends partly on the **labour force participation rate**, which is the proportion of the working age population in the labour force.
- A rise in the labour force participation rate can help promote potential economic growth by increasing the productive capacity of the economy.

$$\text{Labour Force Participation Rate} = \frac{\text{Labour Force}}{\text{Working Age Population}} \times 100\%$$

In addition to reducing unemployment, governments also look at whether resources, particularly labour, are *efficiently employed* – and hence, the concept of **labour productivity** needs to be analysed.

Definition:

Labour productivity is defined as the output per man-hour.

- This refers to the number of goods and services produced from each man-hour worked and is derived by taking total output divided by the hours of labour

employed to produce that output (output per man hour is the common term used to measure labour productivity).

- It is essential to understand this concept because although labour may be employed (and thus, the unemployment rate may be low), they may not be productively employed.
- Countries, therefore, need to improve labour productivity through **training of labour**, **improving the quantity of capital per worker**, and **improving the output per man hour**.
- As labour productivity increases, it will translate into more output per capita leading to **economic growth and a higher SOL**.

Points to Note/ Common Mistakes/ Confusion

"Rise in labour productivity/ quality of labour/ productive capacity" is **not** the same as a "fall in cyclical unN":

Rise in labour productivity	Fall in unemployment
When labour becomes more skilled and productive, it can produce higher output in a given amount of time → increase quality of labour → increase productive capacity → positive potential economic growth.	Unemployment falls when there is a rise in real national income → firms increase their output → increase derived demand for labour
Represented by an outward shift of the PPC	Represented by economy producing at a point closer to the PPC.

Labour productivity is also an important indicator as it could imply *underemployment*.

Definition:

Underemployment implies that resources are not being used to their maximum potential

- For example, a person holding a part-time job while looking for full-time work or an overqualified person in terms of education, experience and skills is doing the job.
- This means that the labour resource is not fully utilised, but the individual might be considered employed as he has a job.

Note: This will be covered in the following topic under the Aggregate Demand-Aggregate Supply framework.

5.3 Uses of Unemployment (Employment) Data

a) Measure of Economic Performance

- Other than the National Income, the unemployment (or employment) data can also indicate the economy's health. If there is a very high unemployment rate, it may suggest that the economy is not doing well or shrinking.
- A high unemployment rate will also indicate that the economy is not fully utilising all its resources to produce goods and services, and thus, there is a wastage of resources.
- Sometimes, a high unemployment rate may indicate that the workers do not have the relevant skills for the jobs available, which indicates the lack of *quality* of the labour force.

b) Measure of the Standard of Living

- A higher employment rate (low unemployment rate) will increase the SOL as a more significant proportion of people will have the income to enjoy more goods and services. This can improve their material SOL.
- A higher employment rate (low unemployment rate) also means that more people can enjoy a stable income, and fewer are experiencing stress while looking for a job. This may improve their non-material SOL.
- High unemployment also often leads to social disruption, increased crime rates, and thus affecting the safety and security of the country. Therefore, there would be a fall in the non-material standard of living.

6 BALANCE OF PAYMENTS

6.1 Definition of Balance of Payments

Definition:

The **Balance of Payments (BOP)** of a country is a statement of all the international transactions of a country with the rest of the world over a period of time, usually a year.

In other words, the balance of payments records the international inflows and outflows of a country's currency.

With a more interconnected world with many economic activities done across the boundaries, the BOP will have implications on economic growth, inflation and employment of an economy.

Note: The causes and consequences of an unfavourable BOP will be discussed in the topic Macroeconomic Issues.

6.2 Measurement of Balance of Payments

6.2.1 Balance of Payments

Taking Singapore as the domestic country, all international transactions that give rise to Singapore's inflow of Singapore dollars are entered as *credits* in the Singapore BOP. Likewise, in our BOP, all transactions that result in money flowing into Singapore are entered as credit, or (+) sign.

- For example, exports of goods and services in Singapore are credit items. When foreigners buy Singapore produced goods, they must pay the Singaporean firm exporting them. The foreigners must sell their domestic currencies to buy Singapore dollars and make the necessary payments in Singapore dollars. Thus, this constitutes an inflow of Singapore dollars and is denoted as a (+) sign on the BOP accounts.

Conversely, items indicating an *outflow* of Singapore dollars are shown as *debits*. Therefore, in our BOP, all transactions that result in money flowing out of Singapore are entered as debit, or (-) sign.

- For example, imports are debit items. When Singaporeans buy American-made goods, they have to pay the American firm exporting the goods. The Singaporeans would have to sell Singapore dollars, buy US dollars, and make the necessary payments in US dollars. Thus, this constitutes an outflow of Singapore dollars and is denoted as a (-) sign on the BOP accounts.

When the BOP indicates a *positive sign* overall, the economy is said to be in a **BOP surplus**.

When the BOP indicates a *negative sign* overall, the economy is said to be in a **BOP deficit**.

6.2.2 Structure of Balance of Payments Statement

The actual presentation of a BOP varies from country to country but the major components are:

- Current Account; and
- Capital & Financial Account.

Table 1 shows the actual Singapore BOP accounted with the rest of the world in 2010.

Table 1: The Balance of Payments of Singapore, 2010

		\$ million
A	Current Account Balance	67,430.8
	Goods Balance	63,596.3
	Exports of Goods	487,972.1
	Imports of Goods	424,375.8
	Services Balance	21,606.1
	Exports of Services	152,929.2
	Imports of Services	131,323.1
	Income Balance	-11,221.2
	Current Transfers (Net)	-6,550.4
B	Capital and Financial Account Balance	9,458.0
	Capital Account (Net)	454.5
	Financial Account (Net)	9,003.5
	Direct Investment	-25,768.4
	Portfolio Investment	29,815.6
	Other Investment	4,956.3
C	Net Errors and Omissions	-492.3
D	Overall Balance (A - B + C)	57,480.5
E	Official Reserves (Net)¹	57,480.5

¹Increase in assets is indicated by a positive (+) sign.

Source: Singapore Department of Statistics

Note: As the "Overall Balance" was positive, Singapore was having a BOP surplus in 2010.

A Current Account

Macroeconomic Aim of Government: A favourable position of Balance of Trade indicates the avoidance of a large and persistent balance of trade surplus or deficit.

The current account shows the flow of goods and services, plus incomes flowing into and out of the country, plus the net transfer of money into and out of the country.

It consists of 3 subdivisions:

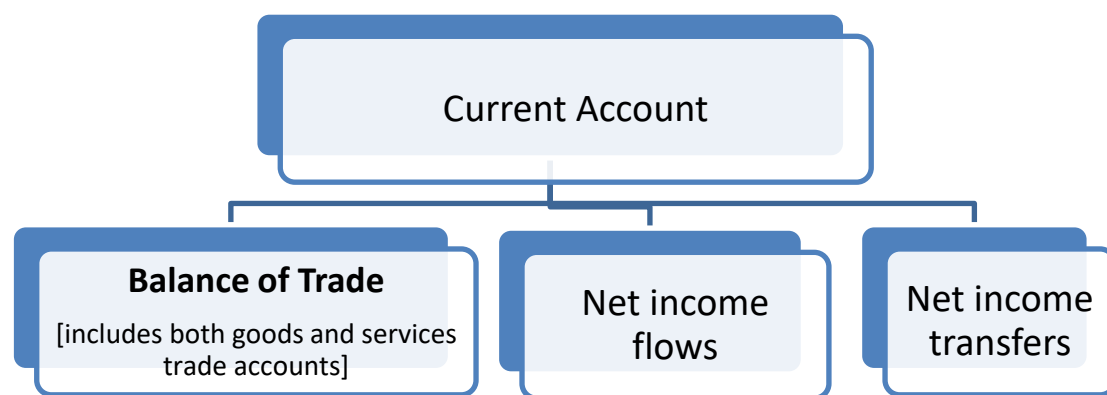
- i) **Balance of Trade;**
- ii) Net Income Flows (Income Balance); and
- iii) Net Current Transfers.

To calculate the current account balance, we will need to sum up the components of the

current account.

Current Account Balance = **Trade Balance** [Visible Balance (Goods) + Invisible Balance (Services)] + Income Balance + Net Current Transfer

The flow chart below shows a simple breakdown of the components of the current account.



The components of the current account will be further elaborated on below.

i) **Balance of Trade [Key Focus of Topic]**

This records the import and export of goods & services. The balance of trade shows the difference between the values of exports and imports of goods & services goods.

$$\text{Balance of Trade} = P_x Q_x - P_m Q_m \\ \text{or } X - M.$$

where	P_x	=	Price of Exports,
	P_m	=	Price of Imports
	Q_x	=	Quantity of Exports,
	Q_m	=	Quantity of Imports
	X	=	$P_x Q_x$ (Value of Exports/Import Revenue)
	M	=	$P_m Q_m$ (Value of Imports/Import Expenditure)

A **surplus** in the balance of trade occurs when the value of exports exceeds the value of imports.

A **deficit** occurs when the value of imports exceeds the value of exports.

Note: The largest component of the current account is the balance of trade, and the focus of this revised syllabus is the causes and consequences of a large and persistent trade deficit.

ii) Net Income Flows (Income Balance)

Net income flows consist of investment income in rent, interest, profits, and dividends flowing into and out of the country. So, for example, dividends earned by a foreign resident from shares in a Singapore company would be an outflow of money.

iii) Net Current Transfers

These are unilateral flows (i.e. no corresponding flows of goods and services in return) to and from abroad by citizens or the government. These include government contributions to and receipts from international organisations and international money transfer by private individuals (remittances of foreign workers). Take note that current transfers are not linked to capital assets or liabilities.

B Capital and Financial Account

The capital and financial account track the country's changes in assets and liabilities. In the capital and financial account, a rise in assets in a country will be recorded as a credit (+), while a rise in liabilities will be recorded as a debit (-).

Key components of the Capital & Financial Account include:

- i) Short-term Capital Flows; and
- ii) Long-term Capital Flows.

i) Long-term Capital Flows

Long-term capital flows include foreign direct investment (FDI), the purchase and sale of real assets such as manufacturing plants or acquiring existing firms. It does not mean the importing and exporting of machinery and equipment. Such an investment involves the firm acquiring a lasting (long term) interest and a large degree of influence or control over the management of an enterprise in another economy.

When Singapore companies build plants overseas, it is an outward FDI that it is recorded as a credit (+) in Singapore's BOP as they constitute increases in the assets of Singapore abroad.

When foreign MNCs build plants in Singapore, it is an inward FDI and is recorded as a debit (-) in Singapore's BOP as they constitute liabilities for Singapore.

ii) Short-Term Capital Flows

Short-term monetary flows are known as '**hot money**'. These consist primarily of various types of short-term investments or monetary flows between Singapore and the rest of the world. Examples include cross border loans, currency and bank deposits, inter-company debts, deposits or loans with non-bank financial institutions (merchant banks, finance companies).

For instance, when Singaporeans sell Singapore dollars to place foreign currency deposits with Singapore banks, it is known as short term capital outflow for Singapore and recorded as (+) item in Singapore's BOP.

Short-term monetary flows are common between international financial sectors to take advantage of differences in countries' interest rates and changes in exchange rates as well as in response to political uncertainty.

D Overall Balance

Recall that balance of payments (BOP) records all international transactions between a country and the rest of the world, such that inflows are considered a credit (+) and outflows are considered a debit (-).

$$\text{BOP} = \text{Current Account (A)} - \text{Capital and Financial Account (B)} + \text{Net Errors (C)}$$

If the overall balance is *positive*, we say there is a BOP Surplus (inflow of money > outflow of money, also known as 'net inflow').

If the overall balance is *negative*, there is a **BOP Deficit** (outflow of money > inflow of money, also known as 'net outflow').

6.3 Uses of Balance of Payments Data

Measure of Economic Performance

The BOP can measure the relative performance of an economy in the global economy as it provides a gauge of how successful the country's exports are in the rest of the world or how attractive the country is to foreign investment.

The BOP balance will influence the value of the currency or exchange rate; thus, a healthy and stable BOP will result in a stable exchange rate (especially in a free-floating exchange rate regime, which will be discussed later). A stable exchange rate will, in turn, be positive for the price stability, employment and economic growth

FOOD FOR THOUGHT – Selected Past Year A-Level Essay Related to This Topic:

FOOD FOR THOUGHT – Selected Past Year A Level Essay Questions Related to This Topic:

Type 1: Questions that focus on Key Economic Indicators and SOL/Economic Performance

(2020, H2)

Government expenditure on large-scale infrastructure projects, such as airports and mass rapid transit (MRT) can contribute significantly to a country's economic growth.

- (a) Explain how government expenditure on large-scale infrastructure can contribute to a country's economic growth. [10]
- (b) **Discuss the extent to which such government expenditure on infrastructure projects will lead to a rise in the living standards of a country. [15]**

(2017, H2)

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

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

(2014, H2)

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

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

(2012, H2)

- (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]**

(2012, H1)

- (a) Explain two possible causes of an increase in the average standard of living in a country. [10]**
- (b) Discuss the view that high rates of economic growth are often, but not always, desirable. [15]**

Type 2: Questions about why macroeconomic goals are important and/or impact of factors in achieving macroeconomic goals
--

(2012, H1)

- (a) Explain two possible causes of an increase in the average standard of living in a country. [10]**
- (b) Discuss the view that high rates of economic growth are often, but not always, desirable. [15]**

GLOSSARY OF KEY TERMS

Balance of Payments (BOP)	Balance of Payments (BOP) of a country is a statement of all the international transactions of a country with the rest of the world over a period of time, usually a year.
Consumer Price Index (CPI)	is an index number for the price level. It is the weighted average of prices of a basket of goods/services purchased by the average household in a specific time period.
Deflation	is defined as periods of falling overall prices in the economy.
Economic growth	is generally defined as an increase in the output (or income) level of an economy.
Full employment	is the situation where there is no involuntary unemployment, i.e., when all jobseekers can find employment. Empirically, the economy is deemed to have reached full employment when total number of job vacancies is equal or greater than the total number of unemployed.
Gross Domestic Product (GDP)	refers to the total money value of all final goods and services produced within the country's geographical boundary during a given period of time.
Gross National Income (GNI)	Gross Domestic Product (GDP) + incomes of domestic residents that is earned abroad – incomes earned domestically and paid to foreigners.
Inclusive growth	indicates a strong and stable rate of growth without resulting in worsening of income or wealth inequality.
Inflation	is defined as a sustained increase in the general price level (or overall prices) in the economy.
Labour force	refers to all people within a country who are economically active i.e. they are either working or actively seeking employment.
Labour productivity	is output per man hour.
Lorenz Curve	shows the proportion of national income earned by any given percentage of the population.
Nominal National Income	refers to national income measured at current prices
Purchasing Power Parities (PPP) exchange	is the exchange rate that would ensure equal purchasing power of a same amount of currency across countries to reflect upon the cost of living.

Real National income	measures the actual level of output, eliminating price changes. i.e. national income measured in constant prices: i.e. in terms of the prices ruling in some base year.
Standard of Living (SOL)	reflects the well-being of an average person in a country. It includes the material and non-material well-being .
• Material well-being	refers to the <i>quantity</i> of goods and services available to the average person in a country.
• Non-material well-being	examines the <i>quality</i> of life of an average person in a country. This includes the number of working hours per period, leisure time, quality of physical environment, life expectancy, etc.
Sustained Economic Growth	refers to the rate of growth that can be maintained over a period of time without increasing inflationary pressures i.e. non- inflationary economic growth. It is achieved when both actual economic growth (increase in AD) and potential economic growth (Increase in LRAS) are achieved simultaneously.
Sustainable Growth	indicates a strong and stable rate of growth that can be maintained without creating other significant economic problems (such as depleted resources and environmental problems or large debts), particularly for future generations.
Underemployment	implies that resources are not being used to their maximum potential
Unemployment	refers to the number of people of working age who are willing and able to work but are not able to find suitable jobs.

Mindmapping/Summary Notes Development Skills

Standard of Living (SOL) reflects the well-being of an average person in a country. It includes the material and non-material well-being.

Material well-being refers to the quantity of goods and services available to the average person in a country.

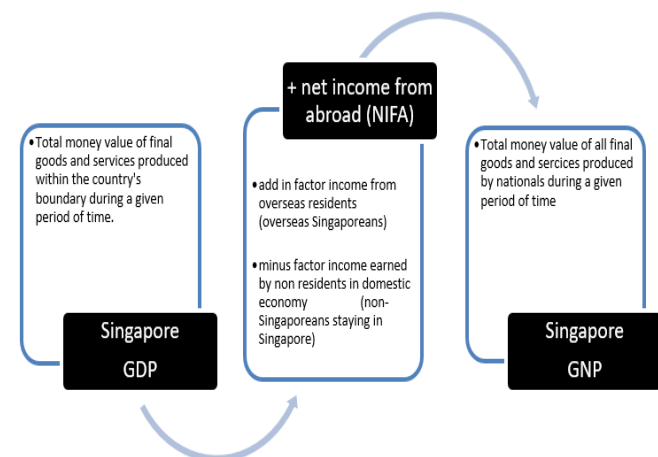
Non-material well-being examines the quality of life of an average person in a country. This includes the number of working hours per period, leisure time, quality of physical environment, life expectancy, etc.

Indicators for Material Standard of Living

Gross Domestic Product (GDP)	Nominal National income	National Income (adjusted for PPP)
Total money value of all final goods and services produced within the country's geographical boundary during a given period of time.	Value of the national output at prevailing or current market prices. Measured using current prices/dollars. Data reflects usage of current market prices "GDP/GNP at current market prices"	Purchasing Power Parity Exchange Rate (PPP) is a rate of exchange, which takes into consideration the prices of consumer goods and services. E.g. If a basket of goods and services costs US\$10 in USA and S\$20 in Singapore, the PPP exchange rate is US\$1 to S\$2.
Gross National Product (GNP)* Total money value of all final goods and services produced by nationals during a given period of time. *Gross National Income (GNI) is sometimes used	Real National Income Actual level of output, eliminating price changes. Measured using constant prices/dollars. Data reflects usage of prices from the base year "GDP/GNP at 2005 market prices"	The national income adjusted for PPP is able to reflect and compare purchasing power across countries accurately as it takes into account cost of living and inflation differences. "GDP/GNP at 2005 market prices (adjusted for PPP)" "GDP/GNP at current market prices (adjusted for PPP)"

Conversion from GDP to GNP Formulas

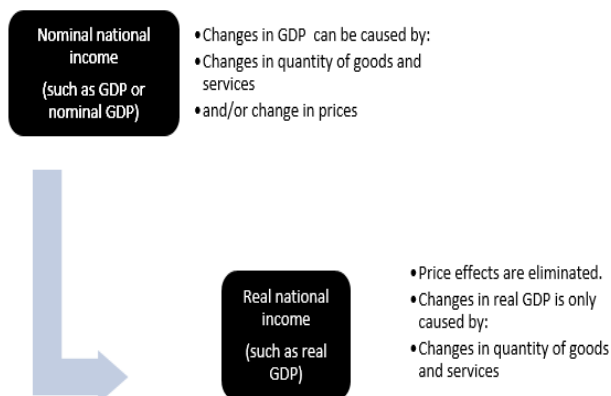
$$\text{GDP} = \text{GNP} - \text{Net Income From Abroad}$$

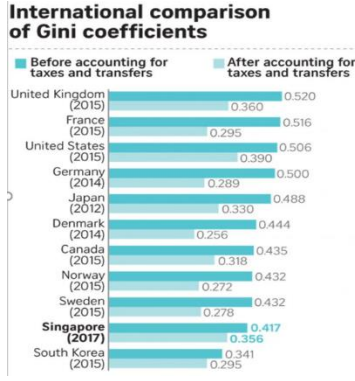


$$\text{GNP} = \text{GDP} + \text{Net Income From Abroad}$$

Conversion from Nominal to Real National Income Figures

$$\text{Real GDP} = \frac{\text{Nominal GDP} \times 100}{\text{GDP Deflator}} \quad \text{OR} \quad \% \Delta \text{ Real EG} \approx \% \Delta \text{ Nominal EG} - \text{inflation rate}$$



<p>Per Capita Income</p> <p>Average income per person in a given time period.</p> <p>$\frac{\text{Real GDP}}{\text{Population}}$</p> <p>Per capita income is a reflection of purchasing power, and MSOL. It will not accurately reflect material SOL in countries where high income inequality exists.</p> <p>Economic growth exceeding population growth results in rising per capita income, vice versa.</p>	<p>Personal Disposable Income</p> <p>Amount of income available for spending by households after taking into account deductions and other benefits.</p> <p>Government policies affects personal disposable income, affecting purchasing power and MSOL.</p>	<p>Gini Coefficient*</p> <p>0<Gini Coefficient<1</p> <p>0- perfect equality</p> <p>1- 1-perfect inequality</p> <p>International comparison of Gini coefficients</p>  <table><caption>International comparison of Gini coefficients</caption><thead><tr><th>Country (Year)</th><th>Before accounting for taxes and transfers</th><th>After accounting for taxes and transfers</th></tr></thead><tbody><tr><td>United Kingdom (2015)</td><td>0.520</td><td>0.360</td></tr><tr><td>France (2015)</td><td>0.516</td><td>0.295</td></tr><tr><td>United States (2015)</td><td>0.506</td><td>0.390</td></tr><tr><td>Germany (2014)</td><td>0.500</td><td>0.289</td></tr><tr><td>Japan (2012)</td><td>0.488</td><td>0.330</td></tr><tr><td>Denmark (2014)</td><td>0.444</td><td>0.256</td></tr><tr><td>Canada (2015)</td><td>0.435</td><td>0.318</td></tr><tr><td>Norway (2015)</td><td>0.432</td><td>0.272</td></tr><tr><td>Sweden (2015)</td><td>0.432</td><td>0.278</td></tr><tr><td>Singapore (2017)</td><td>0.417</td><td>0.278</td></tr><tr><td>South Korea (2015)</td><td>0.341</td><td>0.295</td></tr></tbody></table> <p>Note that the effect of government taxes and transfers tend to reduce income inequality, improving SOL. [see supplementary notes]</p>	Country (Year)	Before accounting for taxes and transfers	After accounting for taxes and transfers	United Kingdom (2015)	0.520	0.360	France (2015)	0.516	0.295	United States (2015)	0.506	0.390	Germany (2014)	0.500	0.289	Japan (2012)	0.488	0.330	Denmark (2014)	0.444	0.256	Canada (2015)	0.435	0.318	Norway (2015)	0.432	0.272	Sweden (2015)	0.432	0.278	Singapore (2017)	0.417	0.278	South Korea (2015)	0.341	0.295	<p>Unemployment rate (unN)</p> <p>Number of unemployed expressed as a percentage of the labour force.</p> <table><tr><th colspan="2">Total Population</th></tr><tr><td>Persons of working age (15 years and above)</td><td>Not working age</td></tr><tr><td>Economically active population (also known as labour force)</td><td>Economically inactive population</td></tr><tr><td>Unemployed</td><td>Employed</td></tr></table> <p>High unN rates causes falling MSOL as many lost personal income, and NMSOL may rise due to increased social issues like higher crime rate and stress stemming from unN.</p> <p>Inflation Rate</p> <p>Percentage changes in the CPI</p> <p>Inflation must be matched with wage increment to ensure MSOL does not fall.</p> <p>Note: Inflation is measured using weighted basket of goods, which may not be fully accurate.</p>	Total Population		Persons of working age (15 years and above)	Not working age	Economically active population (also known as labour force)	Economically inactive population	Unemployed	Employed
Country (Year)	Before accounting for taxes and transfers	After accounting for taxes and transfers																																													
United Kingdom (2015)	0.520	0.360																																													
France (2015)	0.516	0.295																																													
United States (2015)	0.506	0.390																																													
Germany (2014)	0.500	0.289																																													
Japan (2012)	0.488	0.330																																													
Denmark (2014)	0.444	0.256																																													
Canada (2015)	0.435	0.318																																													
Norway (2015)	0.432	0.272																																													
Sweden (2015)	0.432	0.278																																													
Singapore (2017)	0.417	0.278																																													
South Korea (2015)	0.341	0.295																																													
Total Population																																															
Persons of working age (15 years and above)	Not working age																																														
Economically active population (also known as labour force)	Economically inactive population																																														
Unemployed	Employed																																														

Indicators for Non-Material Standard of Living	
<p>Human Development Index</p> <p>Composite indicator which measures both MSOL and NMSOL through:</p> <ul style="list-style-type: none"> - health (indicator: life expectancy at birth), - education (indicator: mean years of schooling) , - income (indicator: GNI per capita (PPP)) <p>*measures both</p> <ul style="list-style-type: none"> - MSOL (income) and - NMSOL (health/educ) 	<p>Other types of indicator (e.g. Measurable Economic Welfare)</p> <p>Many alternative indicators that measures environmental pollution, sanitation, water and electricity access etc.</p>

APPENDIX A

Commentary: Grow first, develop later? The pitfalls of measuring economic growth using GDP

GDP is an imperfect metric. But it continues to be used as a benchmark for national performance and policymaking in an era of social, economic, and environmental disruption, highlight Asit K Biswas and Kris Hartley.

SINGAPORE: Singapore's projected 2019 growth rate in gross domestic product (GDP) of 0.5 to 1 per cent comes as a shock to many but is expected given current geopolitical instability and weakening global demand. October marked the third quarter in a row that Singapore exports have fallen.

Global headwinds and geopolitical tensions have been blamed. When big powers like China and the United States fight, admittedly, nearly everyone else suffers – especially small states whose exports account for a high percentage of GDP.

Still, while there is currently much hand-wringing around the world about tepid GDP growth, the dramas of global economic cycles hardly deserve to monopolise public attention and policy intervention.

WHY GDP IS NOT A GOOD MEASURE OF NATIONAL GOALS

For one, GDP itself reflects an economic model based on unsustainable and inequitable foundations. Between 2008 and 2019, the United States went through the longest period of economic expansion, as measured by GDP, in its history. Despite this growth, the country is now experiencing its highest levels of income inequality in 50 years, an enduring opioid crisis, and increasing rates of suicide and so-called "deaths of despair".

GDP – the preeminent comparative measure of development – draws attention away from social and environmental issues that are crucial to human well-being. Credited with first establishing the idea of GDP, Nobel prize laureate Simon Kuznets made clear decades ago that the measure concerned only economic production and not human well-being.

However, commentators and policymakers routinely conflate the two, with the troubling consequence that governments focus on economic output to the exclusion of welfare issues in measurable and unmeasurable forms.

IN INDIA, WHERE PROMISES OF GROWTH OBSCURE CHALLENGES

The pitfalls of this approach can be seen in India, where Prime Minister Narendra Modi's government rode to power promising higher GDP growth. The administration has endeavoured to realise this promise by strengthening the country's fiscal position through demonetisation and the 2017 introduction of a consumption tax.

However, these policies have disproportionately impacted informal sectors, raising costs of business and threatening the livelihoods of millions of lower-middle class and poor workers. Adding to the confusion is the Modi administration's publication of potentially misleading statistics. The country's stated 7 per cent yearly GDP growth rate was later said by the government's former Chief Economic Advisor to be overestimated by more than 2 percentage points.

MEASUREMENT REMAINS A PROBLEM

India is not alone in such data anomalies. China also faces questions about the quality of its economic data, including the overstatement of yearly GDP growth by 2 percentage points between 2008 and 2016. Such phenomena have been attributed in part to political pressure; economic data are often collected by local government officials whose job security and promotion are tied to economic growth. For many rapidly growing countries, China included, the excessive focus on GDP is a priority that filters down to all levels of government.

Economic growth is also a source of international prestige. GDP estimates by global institutions such as the International Monetary Fund are treated as a horse race in which the winners attract foreign investment and command greater geopolitical influence.

GROW NOW DEVELOP LATER

China is emblematic of the grow-now-develop-later mindset. According to World Bank data, China now has the highest GDP in the world at purchasing power parity.

Yet, the country faces substantial environmental and public health costs from pollution, along with unsustainable levels of household debt – two of many challenges concealed by a slavish focus on GDP growth. For the governments of China, India, and many other countries, these outcomes are no surprise; economic growth is the primary source of political legitimacy.

WHAT CITIZENS WANT

Part of the problem with using GDP as a measurement of economic success is that it doesn't quite measure what citizens feel are important. Such economic metrics are typically focused on output, and can be immediately and straightforwardly measured. But desired national outcomes are typically more distant in time. These can also be impacted by numerous intervening factors within and outside the scope of public policy.

GDP figures also make it more difficult to place blame for failed outcomes. Many publics around the world want better. There is growing dissatisfaction about lax consideration for long-term outcomes in policymaking. One example is the climate action movement, seen in recent protests and strikes by young people around the world.

ALTERNATIVE METRICS

Pressure to find a replacement for GDP has yielded several alternatives, including the OECD's Beyond GDP initiative and the ecological and socially focused Genuine Progress Indicator.

Country-level efforts can also offer globally scalable alternatives. Within New Zealand's Living Standards Framework, the definition of capital is broadened to include environmental, human, and social capital and is applied to the preparation of a "well-being budget" that targets child poverty, mental health, and wealth inequality.

Other alternatives, such as the notion of Green GDP pursued by China and others, have gained less traction. Efforts to mainstream a new way of viewing GDP, if used to compare countries, have the potential to shame underperformers – dampening prospects of full and universal participation. Some countries might also lack the capacity to measure softer aspects of growth and development.

TOWARDS A FRAMEWORK COUNTRIES CAN AGREE ON

One path towards a comprehensive framework is the UN Sustainable Development Goals. Adopted in 2015, the SDGs include 17 social, economic, and environmental goals specified by 232 indicators. Measuring SDG indicators in a way that is meaningful for global comparison requires high-level universal reporting standards and guardrails to prevent gaming.

Additionally, implementation of SDGs must consider practical challenges facing local policymakers, who must interpret metrics based on unique conditions and capacity constraints. Metricising development can also lock policymakers into a "streetlight" perspective that focuses efforts only on what can be measured.

WHY GDP CONTINUES TO BE THE METRIC FOR GROWTH

So maybe we're back at square one. GDP is an imperfect metric, as its inventor stated decades ago. However, it continues to be used as a benchmark for national performance and for policymaking in an era of social, economic, and environmental disruption. While there is a movement to find development metrics to replace GDP, these too are at risk of falling into the same streetlight effect and one-size-fits-all traps as GDP itself.

Countries must consider their own practical realities as they develop alternative measures, and analysts must be mindful of national-level capacity and political constraints.

Broadly, sweeping indices like the World Happiness Report can draw casual public interest to social well-being; indeed, Singapore's 34th rank in the 2019 index could be cause for discussion given the country's top-10 position in GDP per capita. At the same time, more substantive indices regarding sustainability and social progress address detailed issues with which national policymakers can engage on issues beyond economic growth.

Ultimately, the difficult work of understanding and confronting the 21st century's complex mix of policy challenges does not excuse governments from the urgency of looking beyond GDP growth.

Asit K Biswas is Distinguished Visiting Professor of Engineering at the University of Glasgow. Kris Hartley is an Assistant Professor of public policy at The Education University of Hong Kong.

Source: Channel News Asia, 29 November 2019

Questions

1. Why is the author critical about the use of GDP to examine 'human well-being'?

2. Why does GDP continue to be 'the metric for growth'?

APPENDIX B

A. National Income Statistics

Besides GDP and GNP as the national income statistics, some countries may use Net National Product figures. Economists consider in the strictest sense Net National Product at Factor Cost as national income.

Net National Product (or NNP) is the aggregate value of all final output produced by factors of production of the country over a given time period, *after allowance is made for capital depreciation*.

During production, capital stock such as plant and equipment may be used up due to wear and tear and obsolescence. This is known as capital depreciation. For national income to better assess the performance of an economy, provision to replace or maintain this capital stock should not be included. As a result, depreciation has to be reduced from GNP to find NNP.

$$\text{NNP} = \text{GNP} - \text{depreciation}$$

When measuring national income figures, there is also a need to separate figures at market price and at factor cost. When calculating the value of an output, the market price may differ from the factor cost due to indirect taxes and subsidies. For national income to better assess the performance of an economy, the effects of indirect taxes and subsidies should be eliminated. Indirect taxes raise the market price of a good whereas subsidies reduce the market price.

$$\text{NNP at factor cost} = \text{NNP at market price} - \text{indirect tax} + \text{subsidies}$$

In theory, NNP at factor cost is the best measure of a country's output. However, in practice economists used mainly GDP. This is because of the difficulty in measuring capital depreciation accurately and consistently across countries.

Thus, when economists consider national income, they can mean GDP, GNP or NNP.

B. Other Uses of Consumer Price Index and Inflation Rate Data

i) Assist Government's Planning

The CPI and the inflation rate give an indication of the extent of price stability or instability in an economy. It provides information on the relative price movements of the different types of commodities, and identifies the causes of inflation. Such analyses are valuable for policy making to attain price stability. The CPI figures are also used as a deflator to calculate real values.

ii) Assist Firms' and Union's Planning

The CPI and the inflation rate is also used for assessing the change in purchasing power of wages. Unions and employers use it in wage negotiations. Unions will try to bargain for a rise in money wage that at least keep real wages stable. Recent price increases and trends will be taken into account by businessmen to judge their profit potential and to make price and output decisions.

iii) Assist Investment Decisions

When there is high inflation, investors will prefer to invest in assets like gold and property than put their money in a bank. As increasing prices mean that their assets (thus investments) will increase in value.

"As the most common macro-economic indicator of inflation, the CPI is often used in the formulation of monetary policies and to identify the sources of inflation. It measures price changes in a fixed basket of consumption goods and services commonly purchased by the households over time. The selection of goods and services in the CPI basket as well as their weights are kept constant at the base period to ensure that any changes in the CPI reflect only price changes."

Source: *Singapore Department of Statistics*

C. Other Uses of Employment (Unemployment) Data

i) Assist Government's Planning

The government uses the unemployment data to identify and evaluate the strategies for intervening in and enhancing the performance of the economy.

When the unemployment rate is high, it is an indication that the economy is not doing well and the people are suffering with no income.

The government needs to derive policies to improve it. If the unemployment data is computed for different sectors, industries or groups of people, the government can also formulate policies to help these groups specifically.

ii) Assist Firms' Planning

Firms can make use of the unemployment data to decide on their pay package. A high unemployment rate indicates sufficient supply of labour, thus wages can be set lower.

Firms may also use the data to decide on whether to set up production in a particular area.

A region or place with high unemployment may indicate that there are a lot of unemployed labour that a firm can utilise, but it may also mean that the workers are not skilled enough to be employed. Firms will want to sell their products in an economy that has high employment rate to increase their sales.

APPENDIX C

Difficulties in the Use of CPI and Inflation Rate

a) Difficulties in Constructing the CPI

Similar to the measurement of national income, constructing the CPI is a tedious and complicated process. Technical difficulties arise at various steps of information collection and calculation.

i) Difficulties in Choosing a Representative Basket of Goods and Services

- Basket of goods and services used may not be truly representative of a typical household. Households purchase different goods and services, depending on their income, preferences, race, etc.
- The basket of goods chosen may not always reflect what the majority buys. There may be considerable changes to goods and services purchased over time requiring changes in the choice of base year and the basket of goods.

ii) Difficulties in Choosing a Representative Price for each Item

- Price tagged to a particular item may not be a good representative of the price. The goods and services selected may contain grade or quality differences.
- Prices of some goods may differ according to seasons or geographical location.

iii) Difficulties in Allocating Weights

- Different households allocate their spending differently. Changes in spending pattern may lead to different weights and therefore, CPI.

iv) Difficulties in Data Collection

- Data collection errors may occur as people are reluctant to reveal how they spend their money.

b) Does not Reflect Effect of Inflation on Different Groups

- The CPI and inflation rate is meant to reflect the broad trend in prices. As the CPI is based on the consumption pattern of an average household, it does not reflect the inflation experience of individual households with different consumption pattern.
- Expatriates, pensioners and those who are extremely rich are not examples of an average household. To better estimate inflation for different groups, separate indices for different subgroups can be calculated.
- The Singapore Department of Statistics releases inflation data by different income groups.



Self-Assessment 7

Year	2017			2018			2019		
	Lowest 20%	Middle 60%	Highest 20%	Lowest 20%	Middle 60%	Highest 20%	Lowest 20%	Middle 60%	Highest 20%
Percentage change in CPI, Base Year=2014	-0.1	0.5	0.8	0.2	0.4	0.5	0.3	0.5	0.8

*The lowest, middle and highest refers to the income group

Source: Singapore Department of Statistics

Compare the rates of inflation on the various income groups over the years.

c) Limited in Long Term Comparison

- The CPI is of limited value for comparison of changes in the cost of living over a long period of time, unless expenditure patterns between the current and base year do not vary significantly.
- The fixed basket of goods and services becomes less useful the further we move from the base year as changes can occur and if such changes are not accounted, then, the CPI will be inaccurate.

These changes include:

- New products (e.g. smart watches, 3D TV);
- Tastes and preferences of consumers; and
- Composition and age structure of the population change.

- To reflect changes over time, the items in the original basket, weights, the sample households, and the base year must be revised at regular intervals. In Singapore, the index is revised every five years.

d) Does not Reflect Quality Changes

- The price index measures price but not quality changes over time. A new computer may cost more, but it is much better than the old computer. A portion of the price rise therefore reflects better quality rather than simply a higher price for the same item. In this case, the CPI overstates inflation.
- Comparison of price indices between countries is difficult because of differences in the quality and weights of the goods, and also other differences like base years, or baskets of goods.

APPENDIX D

Difficulties in Measuring and using Unemployment Indicators

There are difficulties in measuring the unemployed and labour force, and in using the unemployment indicator to measure the performance of the economy. The main problem lies in the inaccuracy of the indicator (either under or over-estimated).

a) Movement of Labour Force

- There is a lot of movement into and out of the labour force. Entrants to the labour force include young workers looking for their first jobs (e.g. fresh graduates), older workers who have previously left the workforce but returned to look for work, those transiting between jobs and those who are recently retrenched. Such movements may be hard to capture when measuring the unemployment rate, thus creating inaccuracies in the data.

b) Unemployment Benefits

- Some of those who report to be unemployed may not be trying hard to find a job. They may declare themselves unemployed to qualify for government unemployment benefits.
- Unemployment compensation stops if a person announces that he no longer wants to find a job. Such programmes have a tendency to overstate the unemployment rate.

c) Part Time Workers

- People who are working part time but who would like to work full time are still considered as employed individuals. Since these people represent unused labour effort that is available, the unemployment rate understates the extent of unemployed resources in the economy. This represents a form of "underemployment".

d) Discouraged Workers

- Another problem that causes the unemployment rate to understate the extent of unemployed resources is the "discouraged-worker" effect.
- This refers to persons outside of the labour force who are currently not looking for a job because they believe their job search would be in vain.
- Another common term to refer to this is "hidden unemployment". Reasons cited for being discouraged include belief that there is no suitable work available, employers' discrimination and lack of necessary qualifications, training, skills or experience.
- In this case, the official unemployment rate understates the extent of unemployment resources.

e) Problems with using Unemployment Rate to Measure Performance of Economy

- Even if the employment (unemployment) data is accurate, it may not be a good indicator of the performance of an economy. A high employment rate can sometimes indicate unproductive labour. Having employment for workers may also not necessarily increase their SOL if their wages remain low, or leisure time is cut short.



The Truth About the Trump Economy, Joseph Stiglitz

...Even the unemployment rate (3.6% as of October 2019), at a 50-year low, masks economic fragility. The employment rate for working-age males and females, while rising, has increased less than during the Obama recovery, and is still significantly below that of other developed countries. The pace of job creation is also markedly slower than it was under Obama.

Again, the low employment rate is not a surprise, not least because unhealthy people can't work. Moreover, those on disability benefits, in prison – the US incarceration rate has increased more than sixfold since 1970, with some two million people currently behind bars – or so discouraged that they are not actively seeking jobs are not counted as "unemployed." But, of course, they are not employed. Nor is it a surprise that a country that doesn't provide affordable childcare or guarantee family leave would have lower female employment – adjusted for population, more than ten percentage points lower – than other developed countries...

Source: Project Syndicate, 17 January 2020

Read more at:



Question:

Why is the economist Joseph Stiglitz sceptical about the low unemployment rate in the US?