

ANGLO-CHINESE JUNIOR COLLEGE JC2 Economics

H2

DOMESTIC MACROECONOMIC ISSUES (2) ECONOMIC GROWTH, UNEMPLOYMENT, & INFLATION

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In this set of notes, we will be studying the 3 **domestic** macroeconomic objectives and its related problems. For each macroeconomic problem, it is important to understand the (1) causes and the (2) consequences of the problem. We will learn the external macroeconomic problem and the respective policy tools used by governments to address these problems later in the term.



Article: Singapore must prepare for economic challenges

Amid the war in Ukraine and rising cost of living, Singaporeans must be prepared for more economic challenges, but the Government is doing all it can to cushion the impact on Singaporeans and alleviate the cost-ofliving pressures.

However, the Government also cautioned that despite the assistance, inflation will remain high and global growth will be weaker, and there may be a global recession within the next two years.

There could be two contrasting scenarios Singapore could face in the coming months.

If the global economy is able to grow despite some slowing down, Singapore's economy might follow suit. In this scenario, the labour market would remain tight and unemployment rates low.

On the other hand, a global recession could spell negative growth and higher unemployment rates for Singapore.

Source: Channel NewsAsia (CNA) & The Straits Times, 1 May 2022 & 22 Jun 2022

(Pre-Lecture) Questions:

What are some potential internal challenges that Singapore might face in the near future?

(Hint: What components of the Singapore's AD and AS could be affected by a global recession?)

Overview: Root Causes of the Internal Macroeconomic Problems (AD-AS Analysis)

Recall that a country's domestic aims are (1) sustainable and inclusive economic growth, (2) low unemployment and (3) price stability.

However, a country may not always achieve the aims as they face various macroeconomic problems, such as negative economic growth and high unemployment.

The macroeconomic problems are caused by the mismatch and shocks in AD and AS conditions. The table below provides illustrations how changes in the AD and/or AS can lead to various economic problems.

Table 10: Diagrammatical AD-AS analysis

(Note: the numbering is continuation from Domestic Macro Issues Part 1)

AD-AS RELATIONSHIP	MACROECONOMIC PROBLEMS
Scenario 1: A severe fall in AD to below productive capacity (full employment).	 Negative economic growth or fall in real national income. Recession occurs if a country face two or more consecutive quarters of negative real economic growth. Problem of high unemployment. This type of unemployment is also known as demand-deficient unemployment (see Section 3). Fall in general price level. Deflation (negative inflation) occurs if the fall in general price level is sustained over a period of time (see Section 4).
Scenario 2: Increase in AD excessively, at full employment of resources.	 Excessive increase in AD is not complemented by similar increase in long-run AS. Rising AD coupled with limited resources (or unavailable resources) leads to higher costs and wages, causing nominal income to increase but not real income (as economy already reaches full capacity). There is no actual and potential growth. Problem of high inflation. This type of inflation is also known as demand- pull inflation (see Section 4).



2. ECONOMIC GROWTH

2.1 Definition and Measurement

Do note that this is not entirely new to you as you would have learnt it under Introduction to Macroeconomics.

Recall that economic growth is an increase in the country's output level or real national income over a period of time. Economic growth occurs when the economy produces more goods and services using its existing resources.

A country's actual economic growth is the rate of increase in its national output or national income (i.e. real GDP). It can be calculated as the % change in **real** GDP.

For example, in the period from 2023 to 2024, using the following formula:

Real	Real GDP in 2024 – Real GDP in 2023	X 100%
GDP =	Real GDP in 2023	
growth		

A **positive** real GDP **growth** indicates that the economy is <u>growing in terms</u> <u>of real GDP</u> while a **negative** real GDP **growth** indicates that <u>real GDP has</u> <u>fallen.</u>



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The following table shows Singapore's GDP growth rates over the years.

Table 11: Singapore's GDP at 2010 Market Prices (Real GDP)

(Data based on chained 2015 Dollars) Source: Singapore Statistics

2.2 Types of Economic Growth

2.2.1 Actual Economic Growth

Recall that actual economic growth refers to an <u>increase in the country's</u> <u>output level or real national income over a period of time (usually per annum).</u>

Actual economic growth can be illustrated and explained using **three different models:** (1) the PPC model, (2) the circular flow of income model or (3) the AD-AS model. Although there are various ways to illustrate economic growth, the AD-AS model is most commonly used.

Table 12: Actual Economic Growth explained using three models





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In the circular flow of income model, the equilibrium level of national income is determined when the total injections equals the total withdrawals.

When **total injections exceeds total withdrawals**, there is an increase in the size of the circular flow of income, and hence illustrates actual economic growth.

The Multiplier Effect in Actual Economic Growth

Recall that:

- **AD-AS Model:** any changes in AD, illustrated by shift of the AD curve will lead to a change in the real national output / real national income.
- **Circular Flow of Income model:** any changes in the injections or withdrawals will lead to a change in the equilibrium level of national income.

In this section, you will learn about the multiplier effect.

- **AD-AS Model:** a change in AD (C, I, G, X M) will result in a magnified (larger) change in real national income.
- **Circular Flow of Income model:** a change in injections (I, G and X) into the circular flow will result in a magnified (larger) change in real national income.

Numerical example:

Firms decide to increase their investment by \$100 million, so \$100m is injected into the circular flow of income of the economy. The table below



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This spending of \$100 million is also known as **autonomous expenditure**.

Autonomous

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expenditure refers to spending that is <u>NOT</u> affected by income changes. This means that any changes in the real national income will <u>not</u> affect the country's autonomous expenditure. shows how the <u>initial injection of \$100m</u> leads to a multiplied and greater increase in national income eventually.

Assumption: For every dollar that is injected into the circular flow of income, 60% (0.6 is the marginal propensity to consume) of it is spent on domestic consumption and the other 40% (0.4 is the marginal propensity to withdraw) of it is withdrawn from the circular flow of income in the form of savings, taxes and / or spending on imports.

Round	Change in Investment (\$m)	Change in real national income (\$m)	Change in Consumption (\$m)	Change in Withdrawal (\$m)
1	100	100	60	40
2	-	60 🔺	36	24
3	-	36 🛩	21.6	14.4
•	•	•	•	•
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		250	(total) 150	(total) 100

# Table 13: Multiplier Effect (numerical example)

# Round 1:

If firms decide to increase investment, e.g. by \$100 million, there is an injection into the circular flow by \$100m.  $\rightarrow$  This will lead to more labour being employed to produce this increased output of capital goods.  $\rightarrow$  There would be more incomes being paid to households, i.e. the real national income increases by \$100 million.  $\rightarrow$  Households will then spend part (e.g. 0.6) of this increased income on <u>domestically</u> produced goods, which is \$60 million and the remainder of \$40 million will be withdrawn - via savings, taxes and / or spending on imports.

# Round 2:

This increased domestic consumption of \$60 million from the previous round (Round 1) will trigger additional income flows in the circular flow of income. The increased consumer expenditure encourages firms to produce more goods and services to meet the increased demand. Firms will thus employ more labour and other factors of production. This leads to even more incomes being paid out to households, i.e. the real national income increases by \$60 million.  $\rightarrow$  Households will spend part (0.6) of this increased income of \$60 million and domestic consumption will thus increase yet again,  $\rightarrow$  by \$36 million and withdrawals by \$24 million.

# Round 3:

This process continues, where another round of the increased consumption from the previous round's (Round 2) increase in incomes (\$36 million) and domestic consumption of \$21.6 million is generated.

These various consumption expenditures (\$60m, \$34m and \$21.6m) are known as **induced expenditures**.

Unlike autonomous expenditure, induced expenditure is expenditure **due to changes in income levels.** When there are changes to the real national income, the country's induced expenditure is affected. This process continues with additional domestic consumption generated becoming smaller and smaller in subsequent rounds.

Note: Only a fraction of the increase in income is consumed in each round. Thus, successive increases in income become smaller and smaller in each round of the multiplier process due to the leakages such as savings from the circular flow of income

So, given the smaller additional injections in each successive rounds, one may realise that the multiplier process will not go on forever. Thus, when would the process stops?

The process continues until the total withdrawals from the circular flow of income is equal to the initial injection of \$100 million. In other words, the multiplier process stops once the total injections leaks out of the circular flow of income as withdrawals.

Final effect:

The eventual increase in national income (which is \$250 million) is several times **more than** the initial injection of \$100 million. The **multiplier** represents the number of times the real national income increases with respect to the initial increase in injections, which is 2.5 in this case.

#### The multiplier effect using the AD-AS model:





The initial investment of \$100 million (autonomous expenditure) by firms will increase the investment component of AD. This leads to an increase in AD, from AD₁ to AD₂. The increase in AD will lead to more labour being employed to produce this increased output of capital goods. Hence, there would be more incomes being paid to households, i.e. the real national income increases by \$100 million from  $Y_1$  to  $Y_2$ .

Households will then spend 60% (0.6 is the marginal propensity to consume) of this increased income on domestically produced goods, which is \$60

million and the remainder (40% or 0.4 which is the marginal propensity to withdraw) \$40 million will be withdrawn - via savings, taxes and / or imports.

Due to higher income, households would consume more through the consumer expenditure (induced expenditure) component. This would then lead to further rounds of increased AD from  $AD_2$  to  $AD_3$ . The increased consumer expenditure encourages firms to produce more goods and services to meet the increased demand. Firms will thus employ more labour and other factors of production. This leads to even more incomes being paid out to households. Thus, there is a further increase in real national income from  $Y_2$  to  $Y_3$ .

This increase in income earned by the households will further increase consumption expenditure (induced expenditure) and hence AD and real national income once again.

This process will further repeat itself and the real national income would increase more than proportionately to the initial increase in Investment expenditure. Therefore, the economy experiences a stronger economic growth, via the multiplier effect.

### **Reverse Multiplier**

Likewise, the initial decrease in AD (example, due to fall in autonomous expenditure by government), causing withdrawal of income from the circular flow will lead to a bigger final fall in real GDP. Reverse multiplier is the opposite effect of multiplier.

### Size of the multiplier, k

The size of the multiplier, denoted by k, depends Marginal Propensity to Consume, or MPC.

MPC is defined as the proportion of the <u>additional</u> national income spent on consumption of domestic goods for each dollar of income increased in the economy.

Generally, the <u>higher the MPC</u>, the larger the multiplier will be as more income is kept within the circular flow of income (via consumption). The larger the size of the multiplier, the larger is the increase in national income when there is an injection into an economy. Hence, the higher the economic growth experienced by the economy when there is any given injection.

In particular, the formula for the size of the multiplier, known as k

$$k = \frac{1}{1 - MPC}$$

In the earlier numerical example, the MPC is 0.6, and hence, the size of the multiplier, k = 2.5.

Should the MPC be higher at 0.8, the size of the multiplier would be larger, at k= 5. This will not come as a surprise as with the same increase in injection (of \$100m investment), the economy would then experience an eventual increase in national income by \$500m! This is so as with a higher MPC, there

would be more domestic consumption changes before the total injections leak out as withdrawals.

When there is additional income, the additional income can be used for consumption of domestic goods, saving, paying of tax and / or import of goods and services. When larger proportion of the additional income is used for consumption, less is used for saving, taxes or imports.

Hence, the size of the multiplier (k), is also determined by the Marginal Propensity to save (MPS), Marginal Propensity to tax (MPT), and Marginal Propensity to import (MPM).

$$k = \frac{1}{1 - MPC} = \frac{1}{MPS + MPT + MPM}$$

MPS, MPT and MPM are defined as the proportion of each <u>additional</u> national income saved, taxed and spend on import respectively.

The <u>lower the MPS, MPT and MPM, the larger the multiplier</u> will be as less income will be withdrawn from the circular flow.

Note:

The same multiplier effect applies to other forms of injection (I, G, X) into the circular flow of income. Similarly, any withdrawals from the circular flow of income will result in a multiplied decrease in national income, through the effect of decreased consumption. The magnitude of the eventual decrease in national income depends on the size of the multiplier.

### 2.2.2 Potential Economic Growth

**Potential economic growth** is the <u>rate at which an economy could grow</u> <u>without causing inflation over a period of time (usually per annum).</u> It refers to an improvement in a country's productive capacity and hence, potential output that can be produced given all its resources and technology.

Potential economic growth is dependent on long run supply side conditions, namely:

1) **The quantity of resources:** quantity of capital, labour, land and entrepreneurship.

For example, a country can produce or import more capital goods to be used for future production. With greater amount of capital goods, more goods and services can be produced in the future. Thus, the maximum output that the country can produce, increase and the productive capacity of the country increases. This increases the LRAS, achieving potential economic growth.

2) The quality/productivity of resources: quality of capital, labour, land and entrepreneurship. For example, the productivity of labour can be increased with better education, training, motivation and organisation.



SLS Lesson: Package A Activity 1 & 2 3) **The level of technology.** For example, the productivity of capital can be increased by technological improvements.

Conditions enabling these factors can be put in place by either governments or firms. For example, to incentivise firms in training their workers, governments may have to provide training subsidies or increase competition in the market by allowing entry of new firms so that competition pressure among existing firms can push the firms to send their workers for training and increase productivity. (Recall how productivity may help firms reduce their average cost (AC) per unit of output - refer to Firms & Decisions Part II notes)

Potential economic growth can be illustrated using the PPC or the AD-AS model. Both diagrams below illustrate that the <u>economy is now capable of producing a higher level of potential output.</u>



Table 14: Potential Economic Growth explained using different models

### 2.2.3 Sustained Economic Growth

Sustained economic growth looks at positive, steady, and non-inflationary economic growth.

For economic growth to be sustained, the economy should aim to ensure the expansion of its potential growth in tandem with actual positive growth.

# 2.2.4 Sustainable Economic Growth

Sustainable economic growth indicates a rate of positive and stable growth that can be maintained without creating other significant economic problems, especially for future generations. In particular, sustainable economic growth avoids environmental degradation and a depletion of resources for future generation.

Sustained economic growth is a prerequisite to achieve sustainable economic growth. Hence, part of achieving sustainable economic growth is to achieve both actual and potential economic growth. Doing so allows an economy to increase its real national output in the long run without causing a large increase in general price levels.

Furthermore, a country can strive to find cleaner methods of production so that it can produce its goods and services with less pollution. This can be achieved through research and development or legislation to mandate certain production methods to be used and others to be avoided. A country can also strive to be more efficient and productive. Doing so will allow the country to produce the same amount of goods and services with fewer resources, preventing the depletion of resources for future generations.

#### Article: The changing narratives of China's environmental story

Is the pursuit of economic growth always disastrous for the environment? In a discussion of why the Chinese environment is so terrible, there has been two recurring reasons: 1. *"the economy is favoured over the environment"*, and 2. *"implementation of the law has failed"*. For quite a long time, this was always the frustrating reality and to a large extent, these factors still affect China's environmental footprint today.

Take the games played around plans for coal power plants, for example. Many local governments tend to favour coal to power industries because the coal industry provides a large source of revenue for them. When given subsidies from the central government, many local governments launched a huge number of coalfired power plants. While such an initiatives do stimulate the economy and increase real national output, it does so at the expense of the environment. This shows us that in any pursuit of economic growth, it may leave profound impact on the environmental future.



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But deep-seated reforms are taking place and could have subtly shifting the
narratives. In 2014, some regions in China stopped using GDP in local government
performance indicators. For example, in Hebei province, which suffers from the
most serious smog, Chinese president Xi Jinping made a direct request for local
officials not to get tied up in GDP. In 2016, with the ongoing reform of local
government performance evaluation systems, many provinces such as Jiangxi and
Anhui began to compile a "natural resources balance sheet" and have since
incorporated protection of natural resources into performance indicators for local
governments.
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Source: http://www.eco-business.com/, 3 Jan 2017

### Questions:

- 1. How has economic growth affected China's environment?
- 2. How may environmental degradation affect the country's SOL?

# 2.2.5 Inclusive Growth (Case Study on Singapore)

**Inclusive growth** indicates a <u>rate of economic growth that is sustained over</u> <u>a period of time</u>, is <u>broad based across economic sectors</u>, and <u>creates</u> <u>productive employment opportunities for the majority of the country's</u> <u>population</u>.

Inclusive growth <u>implies economic growth that takes income distribution</u> <u>into consideration</u> and does not contribute to worsening income inequality, hence ensuring that economic growth benefits everyone in the country.



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# Article: Singapore economy must transform, like Disney's shift from Mickey to Star Wars

Acting Minister for Education Ong Ye Kung believes the way Hollywood's movie giant Walt Disney has changed over the years holds a lesson for Singapore. Initially, its focus was on marketing iconic cartoon characters Mickey Mouse and Donald Duck. Today, the spotlight is on the superheroes of Marvel comics fame and the Star Wars series. Similarly, Singapore's economy needs to transform itself to be more competitive and attractive so that it does not fail its young.

"For the young, their biggest concern is their jobs and their career. What are the opportunities for them?" he said, his mind on the projected slowdown in economic growth in the coming years and Singapore's drive to restructure its economy to keep growing.

Mr Ong, who was speaking about inclusive growth at an annual conference on Singapore by the Institute of Policy Studies, helms the higher education and skills portfolio.

He cited strategies that will play a crucial role in Singapore's economic transformation. These include the five-year Research, Innovation and Enterprise 2020 scheme that will pump \$19 billion into science and technology, and SkillsFuture, which promotes lifelong learning for workers to stay skilful and relevant.

"We must find a way to translate research to innovation, innovation to enterprise," Mr Ong said. "Research converts money to discovery, and innovation, discovery to business ideas. Enterprise converts business ideas back to money, hopefully more than when we started. So we have to push forward."

In his speech, Mr Ong said Singapore's progress and prosperity have raised incomes, and helped lower-income families. But he also acknowledged the prevailing concerns over social mobility and income inequality. The question of how to achieve inclusive growth - which he said is "elusive" - points to the need of a system that best delivers dignity and pride for its people.

While the Government has taken steps to help those left behind, such as the Workfare Income Supplement for lower-wage workers and the Silver Support Scheme for poor elderly people, Mr Ong said: "There are still more policies on the table for debate."

These include having a national minimum wage as opposed to a sectoral one as is the case now, or defining "absolute poverty", he added.

Mr Yeoh Lam Keong, former chief economist of sovereign wealth fund GIC, argued that more could be done for the lower-income by, for example, increasing payouts for redistributive schemes. This will cost 0.7 per cent to 0.8 per cent of Singapore's gross domestic product, he projected.

Replying, Mr Ong said it is not that straightforward: "You need to ask how to implement, at what cost, who pays, and in the long-term, what is the impact."

Source: The Straits Times, 18 Jan 2016

#### Questions:

Key in your responses in the SLS Package Acitvity.

1. How does economic growth through restructuring possibly lead to greater income inequality?

2. Using your own knowledge and recall from the previous set of notes, what are some possible consequences of failing to achieve inclusive growth?

# 2.3 Causes & types of undesirable Economic Growth

A country may not always achieve the objective of sustainable and inclusive economic growth. Instead, the country may experience undesirable economic growth in the form of:

- Persistently slow or negative economic growth
- Excessive high nominal economic growth
- Unsustainable economic growth (environmental degradation)
- Non-inclusive growth (inequitable income distribution)
- Persistently slow or negative economic growth
- Unsustainable economic growth (excessive increase in AD and environmental degradation)
- Non-inclusive growth (inequitable income distribution)

You may find the explanation for the different types of undesirable economic growth and its causes in the table below. Recall that changes to the AD and AS will affect the real national income and hence, the economic growth. In the explanation below, the **factors affecting AD and AS can both be either internal factors (domestic) and/or external factors**. In reality, both types of factors constantly influence one another, and it is hard to singularly point towards one factor resulting in undesirable economic growth.

Types of undesirable economic growth	Causes of undesirable economic growth
Negative economic growth is considered undesirable as the	The two main causes of <b>negative</b> economic growth are:
real national income is <u>falling.</u>	1. Falling AD: AD curve shifts to the left, causing real national income to fall and hence negative economic growth
A <b>recession</b> is defined as a period of <b>two consecutive</b> <b>quarters</b> of negative economic growth.	<ol> <li>Falling SRAS: SRAS curve shifts to the left, causing real national income to fall and hence negative economic growth.</li> </ol>
	<i>Try it yourself</i> : Are you able to list some of the internal and external factors affecting AD and SRAS? An example has been provided for you:

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	AD: Internal Factor: poor consumers' and firms' confidence External Factor: SRAS:
	External Factor:
<b>Persistently slow</b> actual economic growth is considered undesirable as real national income <u>increases at a slower rate</u> <u>persistently</u> , adding to the risk of negative economic growth eventually.	<ol> <li>The two main causes of slow economic growth are:</li> <li>Weak AD where AD is far below the level needed to achieve full employment and increasing slowly. This cause real national income to increase by at a slower rate causing slow economic growth.</li> <li>Weak SRAS where SRAS grows at a slow rate, and this limits actual growth. Factors that affect firms' cost of production could lead to slow growth in SRAS.</li> <li>Note that there is a slight difference between a negative and slow economic growth. While negative economic growth is a more severe economic problem than slow economic growth, the fear of persistently slow economic growth is the possibility of the country sinking into negative economic growth is considered as undesirable economic growth.</li> </ol>
Unsustainable economic growth may occur in two ways: 1. When there is an excessive increase in AD without a corresponding increase in AS (unsustained economic growth)	<ul> <li>Possible causes of unsustainable economic growth:         <ul> <li>(i) Excessive increase in AD and a rigid LRAS: The rigid LRAS curve (no increase in LRAS) suggests resources are fully employed and the maximum output a country can possibly produce has already been reached. This rigid LRAS can be due to poor productivity, tight immigration laws that prevent the import of labour resources.</li> </ul> </li> </ul>
And/or 2. When a country focuses on achieving economic growth at the expense of the environment.	Laws and legislation in the country: (ii) There may be little / no laws and legislation to protect the environment and prevent pollution as the country pursues economic growth. For example, there may be no laws to limit the growth of motor vehicles in the country. The uncontrolled growth of motor vehicles leads to heavy pollution, especially within the city.
	(iii) Even if there may be laws and legislation, <b>weak</b> enforcement by the government may lead to

		continued pollution and environmental degradation.	
	(iv)	Reliance on pollutive or unsustainable production method	
	(V)	Countries may rely on traditional pollutive methods of production such as burning of coal in coal power station to generate electricity.	
	(vi)	Countries may specialise in highly polluting industries as part of its industrialisation strategies.	
	list is non-exhaustive.		
Non-inclusive growth: country may be enjoying healthy rate of economic growth but the increase in real national income may not be enjoyed by majority of the country's population. Non-inclusive growth may occur when the economic growth of the country is driven by particular sectors such that there is unevenness in growth of different sectors of the economy. Thus, such growth is inequitable.	<ul> <li>Note: the list is non-exhaustive.</li> <li>A possible cause of non-inclusive growth could be the increased emphasis on capital, knowledge, and technology</li> <li>Government may focus on expanding specific sectors (e.g. pharmaceutical or biomedical sector) as part of their industrialisation strategies and these sectors might require higher-skilled workers. This would increase the demand for skilled workers, causing the wage of skilled workers to increase.</li> <li>On the other hand, other sectors (e.g. textile manufacturing) may see a decline in demand for their goods and services. Typically, these industries are what economists termed as <i>sunset industries</i>. Demand for these workers in the sunset sectors (e.g. textile industry) may fall, causing the wages of these workers to fall.</li> <li>With higher wages in certain sectors and falling wages in others, this worsens the income gap within the country.</li> <li>This widening income distribution is worsened by insufficient effort of the government to redistribute income. There may be a lack of attempt by the government to implement policies to reduce the widening income distribution.</li> </ul>		

** Note: In explaining how changes in AD and/or AS lead to changes in the various economic growths, you are strongly encouraged to apply appropriate economic concepts and the AD/AS framework in your explanations.



Think! What are some possible causes of excessive economic growth?

#### 2.4 Consequences of undesirable rates of economic growth

# 2.4.1 Consequences due to negative economic growth and persistently slow economic growth

**Recall that persistently slow** actual economic growth is considered undesirable as real national income <u>increases at a slower rate persistently</u>, adding to the risk of negative economic growth eventually. The consequences explained here can be applied to both negative and persistently slow economic growth.

#### (i) Impact on Consumers / Households

Lowering of standard of living
Due to negative economic growth, households may also face with
falling real incomes and job loss → falling real disposable income →
falling purchasing power → decrease in the amount of goods and
services that households can consume → falling material standard of
living.

#### (ii) Impact on Producers / Firms

- Falling profits and business closure
  - Due to negative economic growth, household income may be falling. Demand for goods and services by households may fall, causing profit of firms to fall as well. To minimise their losses or maintain their profit, firms may adopt cost cutting measures such as closure, downsizing and retrenchment.
- Falling investment

As firms make investment decisions based on current and future economic growth. When there is slow or negative economic growth, firms may be more cautious in their investment plan as they anticipate that future demand of their goods and services may be low or even falling  $\rightarrow$  firms may proceed with cancellation or postponement of investment plans. This will reduce the future production of goods and services, which may worsen standard of living for the country.

#### (iii) Impact on Government / Whole Economy

- Worsening effects on other macroeconomic aims. If negative economic growth is caused by falling AD, it could lead to concurrent negative effects on other macroeconomic aims:
  - <u>Rising unemployment:</u> When AD falls, there a fall in demand for goods and services. Hence, less labour is needed to produce goods and services and hence retrenchment. The decrease in demand for labour leads to rising unemployment rate.
  - <u>Deflation:</u> The fall in AD will lead to unsold goods and services. To clear the unsold goods and services, general prices will fall



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leading to negative inflation rate. (More details on deflation can be found in Section 4.5)

- Fall in tax revenue and/or increase in government spending leading to a strain on government's budget position
  - Fall in tax revenue:

When there is negative economic growth, there is higher unemployment in the country. Hence, a fall in average income across households in the country. This means that there will be less income tax collected. At the same time, households will be spending less and thus, firms will also earn lower profit. This leads to less corporate tax collected. Overall, there will be smaller tax revenue collected by government from firms and households that is needed to fund government projects

 Increase in government spending and worsen government budget position:

During negative economic growth, there will also be higher unemployment rate. More government spending might be needed for unemployment benefits.

At the same time, government may need to increase government spending (also known as fiscal policy) to prevent a sharp fall in AD.

- Due to falling tax revenue collected and increasing government expenditure, this will result in a strain on the government budget. It <u>may lead to a budget deficit</u> if government's expenditure exceeds its revenue collected during the given time period. This situation of budget deficit is unsustainable in the long run if the government depletes past reserves and accumulates a large amount of debt.
- Weaker government budget position leads to a poorer non-material SOL.
  - The strain on government budget would also mean that government has <u>fewer resources</u> to spend on infrastructure (e.g. construction of roads) and other non-material aspects of living standards such as healthcare and education.
  - For example, a reduction in spending on healthcare would mean that how income group may have difficult access to essential healthcare, hence unable to seek medical health, lowering their quality of life and thus, non-material SOL.

# 2.4.2 Consequences due to excessive increase in AD and environmental degradation

Excessive economic growth may be less undesirable than negative economic growth as it could still raise standard of living and boosts economic sentiments for consumption and investment, in the short term. However, there can be future economic concerns when this excessive economic growth is unsustainable.

#### (i) Higher levels of inflation (increase in general price level)

When AD increases against a rigid AS, there is limited spare capacity in the economy. Therefore, to meet the rising AD, as firms increase production, they have to compete for the limited resources. Firms bid for higher prices for the resources, hence drives up the cost of production. This then results in a large price increase of the final goods and services.

At the same time, as prices of goods and services become more expensive relative to foreign countries, <u>export competitiveness fall</u> and export revenue to grow at a slower rate or even fall. If this persists into the long term, the reduced growth in exports revenue could lead to a slow growth or a fall in AD, pushing the economy into slowdown or recession.

#### (ii) Negative externalities and lack of sustainability

When a country experience excessively high nominal growth, average household income will increase (assuming population size unchanged). As income levels rise, people consume more normal goods such as meat, fast fashion, private transport and air travel. Consumption and production of such goods and services could bring about negative externalities, resulting in a high environmental cost to society.

Resources are also depleted at a faster rate as they are used for production of the increased goods and services demanded. Economic growth thus often results in negative impact on the environment.

### 3. UNEMPLOYMENT

We will learn more about how to measure unemployment, the types of unemployment and their causes in this section.

#### 3.1 Definition and Measurement

### 3.1.1 Unemployment Rate

Recall from your previous notes that the **unemployment rate** refers to <u>the</u> <u>percentage</u> of **labour force** that is unemployed but actively searching for job.

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

#### 3.1.2 Labour force

What exactly constitutes labour force?





Referring to the illustration above, the population can be divided into the working-age population and the non-working age population. In Singapore, the working-age population refers to those who are 15 years old and over.

The working-age population can be further divided into the **economically active**, which is called the **labour force**, and the **economically inactive**.

Specifically, the labour force consists of:

(i) People who are **employed** (i.e. currently have jobs)

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(ii) People who are **unemployed** (i.e. currently do not have a job but are **actively** looking for one)

A person who is **economically inactive** is **NOT** considered as part of the labour force. Therefore, even if they do not have a job, they are not considered as unemployed as they do not belong in the labour force. For example, even though a full-time student, homemaker, or retiree is of working-age, he/she is not considered as part of the labour force as he/she is not actively looking for a job.

### 3.2 Causes and Types of Unemployment

#### 3.2.1 Demand-deficient Unemployment

Demand-deficient unemployment is associated with the problem of **falling or negative economic growth** caused by **falling AD** relative to the country's LRAS.

- Recall that a fall in AD can be caused by a fall in any of its components: consumption expenditure, investment expenditure, government expenditure and net export revenue.
- Demand-deficient unemployment can be illustrated diagrammatically by a lowering of AD relative to the LRAS (see Figure 5). The figure illustrates AD falling from AD₀ to AD₁. With the fall in aggregate demand for goods and services in general, firms react by cutting back on production and investment expenditure. Consequently, real national output falls from Y₁ to Y₁. Given the lower level of output now being produced and with labour being a derived demand from the demand of output, firms would lay off workers or employ fewer workers as production is scaled down.

Figure 6: Fall in AD Leading to Unemployment





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#### 3.2.2 Structural Unemployment

**Structural unemployment** is caused by a <u>mismatch between skills and job</u> <u>requirements in the labour market</u>. While jobs are available, the unemployed do not possess the skills needed in these jobs. This can occur when the economy undergoes **structural changes** due to **changing demand and technology**.

- Changes in the pattern of demand will result in declining / sunset industries. Although there can be new industries, a mismatch can occur between the skills demanded in these new industries and the skills possessed by the unemployed from the declining ones.
- Changes in technology which results in labour saving or new skills required to handle new and more advanced equipment, software and machinery can also create unemployment for those who are not retrained or equipped with the new skills. In addition, new technologies like automation and artificial intelligence can often replace human labour in jobs that are labourous and repetitive. Examples include the proliferation of self-ordering kiosks at fast-food restaurants, self-check-out counters at numerous supermarkets, and new automated teller machines at banks that replace human bank tellers.

#### Take note!

- Structural unemployment can occur even when the economy is not in recession. In other words, the economy may be expanding, and jobs are created but the unemployed cannot be absorbed in these jobs.
- Structural unemployment may also be localised in particular industries that are permanently declining or that particular skills are no longer relevant as the economy undergoes economic restructuring.
- Structural unemployment is usually a **long term problem** as workers who are structurally unemployed often do not possess the skills needed to be reemployed immediately. Hence, they are likely to need some form of re-training, upskilling, which will need time to take effect.
  - This long term structural unemployment is a concern to the government especially if it leads to the unemployed workers being deskilled (i.e. loss of skills) due to long term unemployment. This may lead to these workers being discouraged and leave the labour force by stop looking for jobs, which can lead to a reduction in the labour force and shrinks the country's productive capacity as well as long term growth prospects.
  - Having a large group of deskilled workers may also **increase the fiscal strain** on the government due to an increase in expenditure on unemployment benefits.

### 3.2.3 Frictional Unemployment

**Frictional unemployment** occurs because <u>time is needed for workers to be</u> matched with suitable jobs due to imperfect information in the labour market.

- At any given time, some people with marketable skills are fired, others voluntarily quit jobs to accept or look for new ones and there are always young people who leave school and look for their first job.
- However, employers are not fully informed about the type of labour that is available and workers are not informed about what jobs are available.
- As such, workers have to search for the right jobs while employers have to search for the right labour instead of just taking up the first job or worker that comes along.
- The search time required to match qualified job seekers with available job openings creates frictional unemployment. For this reason, frictional unemployment is sometimes called 'search unemployment'.

#### Full Employment:

The government's aim regarding unemployment is to achieve **full employment** which refers to the situation where there is no involuntary unemployment. However, full employment does **not** imply **zero unemployment**. At full employment, there is a base level of unemployment that will always exist in the economy known as the <u>natural rate of</u> <u>unemployment</u>. At full employment, there is no demand deficient unemployment although frictional and structural unemployment may still exist. This natural rate of unemployment is hence made up of both structural and frictional unemployment.

#### Take note!

- Unlike structural unemployment that affects workers without relevant skills, frictional unemployment occurs even if workers have the required skills and training. In a dynamic economy where people are constantly losing or leaving their jobs, such unemployment is inevitable and will always be present.
- This unemployment is **temporary** due to job search in the process of transitioning between jobs and thus it **not much of a concern** to government.
- In fact, some frictional unemployment can be a **good thing** for the economy because it can allow workers to move to new job opportunities that are a better fit for their skills and preferences. This can lead to more efficient matching of workers with jobs, which can increase productivity and overall economic growth.

Activity: Identifying the types of unemployment				
Identify the type of unemployment present in the two articles, and justify your answer.				
Article	Justification			
The World Economic Forum (WEF) has warned that a surge in artificial intelligence (AI) and robotics could lead to the displacement of 85 million jobs by 2025, a phenomenon it calls "double-disruption." The WEF also predicts that the adoption of these technologies could create 97 million new jobs, but warns that these may not be sufficient to offset the losses. A report by PriceWaterhouseCoopers estimates that AI, robotics and other forms of smart automation could contribute up to \$15tn to global GDP by 2030, but warns of the potential for job displacement. Currently, 30% of tasks are performed by machines, but this could rise to 50% by 2025, according to the WEF.				
Adapted from Forbes, 2020				
Singapore's unemployment rate rose to a more than a decade high of 2.9% in Q2, with retrenchments more than doubling and total employment declining amid the COVID-19 pandemic. The drop was felt across the three broad sectors of manufacturing, services and construction, MOM said. The country is in the midst of a technical recession, after its economy contracted in Q1 and Q2 this year. The Ministry of Trade and Industry estimates that the economy shrank by 41.2% in Q2 following a 3.3% decline in Q1. The Ministry of Manpower warns that the external economic environment remains weak and some countries are experiencing a second wave of COVID-19 infections. Adapted from Channel News Asia, 2020				
Adapted from Channel News Asia, 2020				

#### 3.3 Consequences of high unemployment

High unemployment will have adverse consequences on the households, firms and government as well as the economy as a whole.

#### a) Impact on Households

As a result of high unemployment, households would generally experience a decline in both material and non-material standard of living.

#### i) Lower material standard of living

In the **short term**, unemployment **reduces households' income**. Households would experience a **fall in purchasing power**; thus, the **quantity and quality** of goods and services consumed could **decline**. Moreover, households may experience difficulties saving for retirement and medical needs. This is because of the following reasons.

- First, the unemployed would have lost employer and employee superannuation contributions¹.
- Secondly, the unemployed would experience a fall in their ability to save from disposable income. Mature-age workers with dependent children are thus one of the hardest hit groups when it comes to unemployment. This is because such workers are lightly to have large financial commitments such as payment of home mortgages and education expenses.
  - Even if the unemployed receive unemployment benefits, these tend to be temporary and can cushion the blow to some extent only. If unemployment is long term, these individuals may be forced to deplete their savings.

Furthermore, high unemployment can also negatively impact the material standard of living of people who are employed. Reduced consumption as a result of unemployment, translates into a fall in aggregate demand, resulting in *reverse multiplier* effects, causing a further multiplied drop in national income and output in the economy. This may cause a subsequent drop in standard of living even for people who manage to keep their jobs. *(Refer to section 2.2 for details on reverse multiplier)* 

In a rapidly changing job market, the **skills of the unemployed may dwindle** when they are not in regular use or even become **obsolete**. To compound this problem, employers may perceive the long-term unemployed to be less employable, even if there has been no dwindling of skills in an individual.

In particular, **unemployment amongst young workers** is a **greater cause for concern** because it denies them the opportunity to develop skills and gain experience, thus making them even less employable in the future which may depress their chances of an improvement in material standard of living in the future.



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¹ Superannuation contributions refers to percentage of salary that is channelled to retirement savings e.g. CPF

Thus, in the case of high unemployment, an economy may be faced with many households experiencing lower material standard of living.

#### ii) Lower non-material standard of living

- 1. Health impact
  - Unemployment could lead to poorer health outcomes. This is because a fall in income would reduce households' capacity to purchase nutritious food and healthcare services. Moreover, the unemployed are likely to experience higher levels of anxiety and depression; thus, affecting their mental health. The negative impacts on physical and mental health will thus decrease non-material standard of living of individuals who are unemployed.
  - In the case of **high** unemployment, the deteriorating nonmaterial standard of living among households would thus **magnify** and in most cases **persist** into the long run given the limited financial resources to address these health impacts.
- 2. Social impact
  - High unemployment could give rise to higher rates of crime. A rational offender would compare the returns to time used in illegal activity (e.g. income-generating criminal activity) and legal activity (e.g. legitimate employment). The loss of income due to involuntary unemployment would increase the relative returns to illegal activity. Thus, households may experience significant worsening of the non-material standard of living as the level of one's safety deteriorates in times of high unemployment.
  - High unemployment could also give rise to greater levels of alcoholism. This could be because of the following reasons. Firstly, financial difficulties arising from unemployment could result in increased tension and anxiety among households. Alcohol is then being used as a coping mechanism. Next, unemployment leads to a greater amount of leisure time which could encourage social drinking. The higher levels of alcoholism would then give rise to the associated negative externalities such as accidents from drink driving and increase rates of violence and crime, worsening the adverse impacts experienced by society. This will decrease the non-material standard of living of citizens.

#### b) Impact on Producers

Generally, firms would experience a fall in revenue as unemployed households are more prone to saving and less inclined to spend. As such, production would fall. Moreover, firms are less likely to invest in capital goods as there is no incentive to scale production.

Should the unemployment rate remains high and persist into the future, it translates to an even more pessimistic economic outlook for the economy, which signals to the firms to scale down production even more. This will lead to a vicious cycle of falling national income and rising unemployment rates.

Having said that, in an economy where income is falling and people are losing jobs, they may turn to inferior goods to satisfy their wants and needs. As such, these firms could see an increase in revenue and hence, profits.

#### c) Impact on Government and Economy

#### i) Impact on the government budget

#### 1. Higher Government Expenditure

- Social costs such as poverty and higher rates of crime would cause the government expenditure to increase, particularly due to higher welfare benefits dependency and higher spending to ensure a safe and secure environment for households.
- Countries that pay out unemployment benefits to the unemployed (e.g. UK, USA) would also experience a significant increase in government expenditure in times of high unemployment.
- The increase in expenditure will incur **opportunity costs** because the government could have **put these funds to other uses** such as improving public infrastructure.
- 2. Loss of Tax Revenue
  - The government budget will also come under pressure due to a loss of tax revenue that would otherwise be received (may result in government budget deficit). This is because:
    - Income tax collection is reduced due to a smaller tax base (lower income tax collection as less people are working).
    - Indirect tax collected (e.g. GST) is reduced because households spend less due to loss of earnings.

#### ii) Impact on the Economy

High unemployment can also impact on the other macroeconomic aims of the government.

#### 1. Negative Economic Growth

Empirical evidence suggests that there is a negative relationship between unemployment and GDP. In other words, an increase in unemployment would lead to a fall in real GDP. The negative relationship could be attributed to the following reasons:

- Poor Consumer Confidence
  - In light of high unemployment, households are likely to have a more pessimistic attitude towards future economic situations. In other words, households may anticipate that reemployment opportunities may be hard to come by in either the short term or medium term - depending on the severity of the unemployment problem.
  - As such, households are more prone to save and would be less inclined to spend on major purchases, leading to a fall in consumer expenditure (C).

- Poor Investor Confidence/Business Confidence
  - Confidence of future business performance is likely to be diminished in light of high and persistent unemployment.
     Firms are likely to experience lower sales. Consequently, firms are less likely to invest in new capital goods to scale production due to the expectations of reduced profits. This will lead to a fall in investment expenditure (I).

As such, the fall in C and I may lead to a **fall in aggregate demand**, leading to an **accumulation of inventory stocks**. This signals to the **firms to reduce their output production**, leading to a **decrease in real national output** which leads to **negative economic growth**.

2. Possible widening of income gap (Failure to achieve inclusive economic growth)

As the economy moves towards more knowledge-based activities, some groups of workers may have problems meeting the skill requirements of the new jobs created. For workers who are displaced from their jobs and are unable to take on new jobs, they may suffer from falling incomes whereas those who possess the skills/ qualifications to move into new jobs may see their incomes increase.

In this case, income is thus redistributed from one group of people to another group. If such a trend persists, the economy may start to see a widening income gap and inclusive economic growth may not be achieved.

#### 3. Risk of Deflation and Price Instability

As mentioned earlier on the negative relationship between unemployment and real GDP, a high and persistent unemployment will lead to falling AD and hence, negative economic growth (fall in RNY).

As demand for goods and services decreases, there is a **decrease in competition for scarce resources (i.e. factor inputs)**. This leads to **surpluses** in factor inputs which **drives down the cost of production**, leading to **a decrease in general price level**. A sustained decrease in general price level increases the risk of a deflation.

At the same time, with a fall in AD, the accumulation of inventory stocks signal to the firms to cut prices of their goods and services to clear stock. This translates to decrease in general price level, and a risk of deflation.



Think about this:

# When might high unemployment rate be less of a concern to the government?

- If unemployment is high but **temporary**, it may be less of a concern to the government. For example, if unemployment is high due to **seasonal** factors (such as a slowdown in demand during the winter months), it may be less of a concern because it is expected to be short-term and may not have a significant impact on the overall economy.
- If unemployment is high but accompanied by other positive economic indicators (such as strong economic growth or low inflation), it may also be less of a concern to the government. In this case, the government may view the high unemployment as a temporary issue whereby the economy is undergoing a restructuring phase and this issue will be resolved as the economy continues to grow.

#### 3.4 Limitations in the Measurement of Unemployment Rate

This section challenges us to think further about the accuracy of the indicator unemployment rate. While unemployment rate is a straightforward method to determine who is unemployed, it often does **not** capture all the employment experiences that individuals face. Therefore, the published/known unemployment rate may **understate** or **overstate** the true extent of unemployment in the economy.

#### 3.4.1 Under-estimation of unemployment

Typically, if the unemployment rate is low, we tend to regard the economy to be in a positive state. This is because the majority of the economically active population has a job that can be used to maintain their standard of living. However, the published unemployment rate may understate the true level of unemployment as it does not take into account the following:

#### (i) Discouraged and deskilled workers

- Earlier in this section, we explained how some structurally unemployed workers may be discouraged if they continue to fail in their job search, leading to the stop in any active search of jobs. Thus, they dropped out of the labour force eventually.
- These discouraged workers refer to individuals who <u>want to work</u>, <u>have searched</u> for work in the prior year but are <u>not currently looking</u> for work because they believe they will not be able to find a job.
- These individuals are not included in the unemployment rate because they are NOT part of the labour force. This means that the unemployment rate would have been higher than what is reported, should these individuals be counted in.
- The actual size of the labour force would actually be much larger and the economy has much more labour resources that can be used than what is officially recorded.
- Furthermore, this group of individuals are likely to face more struggles finding employment, and cause a loss of skills eventually.

They are likely to see a prolonged situation of loss in income. Therefore, **their standard of living could be the most negatively impacted**, and yet this is not being captured by the official statistics.

#### (ii) Under-employment

- Some workers <u>would like to be employed full-time or in a higher</u> <u>paying job but instead hold part-time jobs</u>. These individuals are counted as employed in the official statistics because they have a job. However, they are likely able to contribute more by working longer hours or are more productive than what they currently are working in.
- These individuals are regarded as 'under-employed'. Note that underemployment also refers to a situation in which a <u>worker's skill</u> & competency level is higher than the job he/she is currently having.
- Therefore, while they are considered as employed, they are likely to be receiving a lower income than what they could have been if they can work more hours or in higher paying jobs that can better utilise their skillsets.
- As such, even though they are being employed, their standard of living could be higher had they been employed in a full-time job or a job that matches their skill level.

#### (iii) Composition of labour force

- The composition of the labour force refers to the **demographics** of those who are participating in the labour force such as the gender, working age of those employed and unemployed.
- As such, a low unemployment rate may mask the fact that <u>different</u> segments of the labour force may be facing higher degrees of <u>unemployment</u> and hence suffering from a lower standard of living from a loss of income. Therefore, economists would also often examine the unemployment rate of a specific demographic.
- Different segments of the labour force may experience differing degrees of unemployment for varying reasons.
  - Age: <u>Compared to younger workers, older workers may be</u> <u>disproportionately unemployed</u>. Moreover, older workers are likely to take a longer time to be reemployed. The vulnerability of older workers in the labour market could be attributed to the phenomenon of ageism. Ageism is described as having an assumption that an older worker is less productive regardless of his/her actual abilities. Hence, employers may be more likely to retrench older workers and less likely to employ them.
  - Gender: On some occasions, women may experience higher job losses as compared to men. One reason is because women are more likely to work in part-time or casual jobs due to greater familial responsibilities. This can make them more vulnerable to unemployment or under-employment. For example, the proportion of women working in the hospitality and retail sector is higher. The economic slowdown brought about by the Covid-19 pandemic had disproportionately affected above sectors and thus brought about more job losses among women compared to men.

#### 3.4.2 Over-estimation of unemployment: shadow economy

In some instances, a high unemployment rate may not necessarily imply that the economy is not performing well. This could be because the reported unemployment rate may not take into account the **shadow economy**.

- Shadow economy is also called the underground, informal, or parallel economy. It <u>includes not only illegal activities but also</u> <u>unreported income from the production of legal goods and services,</u> <u>either from monetary or barter transactions</u>.
- Hence, the shadow economy comprises all economic activities that would generally be taxable were they reported to the tax authorities.
- Examples of the shadow economy can include:
  - $\circ$   $\;$  Unpaid work, such as household chores or babysitting  $\;$
  - Cash-based transactions, such as tips or under-the-table payments
  - Unlicensed businesses, such as street vendors or unregistered service providers
  - Illicit activities, such as drug trafficking or counterfeiting
  - Self-employment in the informal sector, such as artisanal or subsistence farming
- If a country has a significant shadow economy, the reported unemployment rate may then over-state the true level of unemployment. This is because even though on official records, these unemployed people do not have jobs, but they may just be working in a manner that is not recorded officially. Hence the standard of living for this group of people may be **higher** than what is presented by the official statistics.

# 4. INFLATION

Another one of the government's macroeconomic aim is **price stability** which refers to **a slow and predictable increase in general price level of goods and services over time.** This occurs when there is a low and stable inflation rate.

#### 4.1 Definition and Measurement

Inflation is measured by the <u>percentage change</u> in the **Consumer Price** Index (CPI) <u>between a current year and the previous year</u>.

Inflation Rate = 
$$\frac{CPI_x - CPI_{x-1}}{CPI_{x-1}} \times 100\%$$

Year	Consumer Price Index (2019=100)	Annual Inflation rate (%)
2015	99.0	-0.5
2016	98.4	-0.5
2017	99.0	0.6
2018	99.4	0.4
2019	100	0.6
2020	99.8	-0.2
2021	104.4	2.3

Table 15: Singapore's Consumer Prices (Singapore Statistics)

- Referring to Table above, the annual inflation rate in % is calculated by taking the annual change in Consumer Price Index.
- Recall that CPI measures <u>how the average price of a basket of</u> <u>consumer goods and services</u> (fixed in terms of quality and quantity) commonly purchased by the majority of the households <u>have changed</u> <u>from one period to another</u>.
- Different goods and services in the fixed basket vary in importance. Items that form a higher proportion of household expenditure will have larger "weights" assigned to them. For the same percentage change in price, an item with a larger weight will have a bigger impact on the overall CPI.

#### Remember!

• Falling inflation rate does not mean negative inflation! This is termed as disinflation -- which means <u>CPI still rises</u>, but at a <u>smaller</u> rate, hence a <u>smaller increase in the general price level</u>.



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The figure below show a composition of the most commonly purchased basket of goods and services in Singapore.

2019-based suggests that the base year is in 2019 and vice versa for 2014-based.

Figure 7: Composition of the basket of goods and services in Singapore



- Most countries, including Singapore, measure inflation by tracking the CPI.
  - > CPI- All Items Inflation or otherwise known as Singapore Headline Inflation: % change in CPI of <u>all items</u>
  - MAS Core Inflation: % change in CPI of <u>all items excluding</u> <u>changes in the price of private transport and accommodation</u>. This indicator better reflects the consumption pattern of the average Singaporean day to day, as prices of transport and accommodation are significantly influenced by government policies and hence, can be more volatile and unstable over time.

#### 4.2 Degrees of inflation

There are many different degrees of inflation and not all degrees are necessarily macroeconomic problem to a country. Low inflation rate (small increase in general price level) is an example of a good type of inflation. Low inflation rate suggests stability of general price level, is the key to sustainable economic growth and material SOL. Low inflation keeps the purchasing power of household income stable. As the inflation rate increases, this results in the prices of goods and services to be higher and as a result, this leads to the erosion of purchasing power.

- Mild inflation (also known as creeping inflation) Inflation rate is no more than 3% annually. This is likely to have <u>beneficial effects</u> on the economy as it is a sign of a buoyant economy, implying that jobs, output and growth are generated. In fact, as per the Federal Reserve, a 2% inflation rate is desirable. It is necessary for the economic growth of a country.
- Walking inflation Inflation rate falls between 3% to 10%. Such inflation can be harmful to the economy. The economic growth of the country is too accelerated to sustain. Consumers start stocking goods fearing the prices will rise further. This causes excess demand and the prices increase further.

Galloping inflation - When creeping and walking inflation are left unchecked, the rate of inflation will rise above 10%. This is galloping inflation. The currency of the country will lose value in the global economy. The salaries and income of common people will not be able to keep up with the ever-increasing prices of commodities. This will lead to the general instability of the economy and the country as a whole.

Hyperinflation - This happens when inflation runs out of control (around 50% per month). Under such conditions, money becomes worthless and the country's monetary system is likely to be withdrawn and replaced with a new one.

It is similarly undesirable to have inflation that is too low because this tends to be a symptom of poor economic growth and unemployment conditions. We will explain this further in the subsequent sections of this notes.

# 4.3 Causes & Types of Inflation

Considered_

as high

inflation

### Article: 'A perfect storm': Why inflation is rising in Singapore

A variety of global events has exerted upwards pressure on prices here given how Singapore is a small, open economy that imports most of its needs.

These include the strong recovery in global demand and growth, with the arrival of COVID-19 vaccines, a rally in oil and gas prices on the back of a supply crunch and recent geopolitical tensions, as well as pandemic-related disruptions to the world's supply chains.

Take the example of food. With Singapore importing more than 90 per cent of the food consumed by its population, supply chain snarls - ranging from production hiccups at farms and factories, shortage of shipping containers to port closures due to COVID-19 - have driven up freight rates, adding to the cost of imports. Extreme weather events, such as the recent spate of floods followed by warmer weather in Malaysia, have also fed into a steady rise in global food commodity prices. Higher energy prices drive up food production costs too. Natural gas, for instance, is used to create ammonia which in turn is a key component in many fertilisers.

Other imported consumer goods, such as cars and home electronics, have also seen prices head north amid a global chip shortage since early 2021. The supply



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shock was in part due to unexpected pandemic-fuelled demand from certain industries like smartphones and PCs, alongside complex multinational supply chains and long lead times.

A tight labour market, partly due to COVID-19 border curbs limiting foreign manpower inflows, has led to wage increases. This, in turn, drives up the prices of services here such as in the food and beverage sector.

Source: Channel News Asia, 3 February 2022

Question:

Answer this question in the SLS Package.

How does the above-mentioned events lead to the high inflation rate in Singapore? Hint: Consider the AD/AS framework as you apply these causes to explain the high inflation rate.

# 4.3.1 Demand-pull inflation

**Demand-pull inflation** arises because the economy is approaching or at full employment (AD curve rising along the upward sloping or vertical section of the AS curve). This could be due to AD rising too quickly coupled with a rigid / stagnating AS. The rigid AS could be due to a lack of investments in previous time periods resulting in capacity or infrastructural constraints, and the tightening of the labour market as unemployment falls.

Demand-pull inflation should be seen as an interactive process involving both aggregate demand and aggregate supply. While rising aggregate demand (AD) is the initial cause of the inflation, it is rigidity in the supply side (LRAS) that causes this rising demand to be inflationary.





# The inflationary process:

When an economy has not attained full employment:

- When output and employment are at low levels, increases in AD (from AD₁ to AD₂) result in the expansion of real national output from Y₁ to Y₂ and higher employment rate with zero inflation rate (GPL remains at P₁).
- As aggregate demand increases further (from AD₂ to AD₃) and goes closer to productive capacity, general price level is pulled upwards from P₂ to P₃ leading to demand-pull inflation. This is because as firms seek to increase production, there is an increase in competition for scarce resources, bidding up prices of factor inputs which will increase their cost of production. Firms will then pass on the cost increase in the form of higher prices to protect their profit margin, leading to an increase in general price level.
- The increase in real national output from  $Y_2$  to  $Y_3$  is less than the initial stages of production (horizontal portion of AS) as there are less idle resources available.

### When full employment is attained

- Further increases in AD (beyond AD₄) will lead to **further demand-pull** inflation as <u>all available resources are already fully employed</u> and <u>real</u> <u>GDP is already at its potential/maximum level</u>.
- An increase in aggregate demand from AD₄ to AD₅ will cause the general price level to rise to P₅ with no increase in output. At full employment, there is an even greater competition for the resources (i.e. factor inputs) and exert an even larger increase in the price of these resources, and hence cost of production for the firms and businesses. The firms then pass on the higher increase in cost to the households / consumers in terms of higher GPL.
- In this case, the **nominal national income rises but real national income remains constant.** (Recall, the differences between 'real' and 'nominal', refer to Section 1)

# Try it yourself: $\mathcal{L}$

- 1. Recall some possible explanations for <u>an increase in AD</u>, hint: think about the various components of AD
- 2. Recall some possible explanations for <u>a rigid / stagnant AS</u>, hint: think about the factors affecting PPC/production capacity of a country.

#### 4.3.2 Cost-push inflation

**Cost-push inflation** arises because of a <u>sudden and significant rise in</u> <u>economy-wide production costs</u> (which can be illustrated by an upward shift of the AS curve). This is usually caused by <u>rising prices of oil, food, or rising prices for all imported inputs</u>.



<u>Note</u>: When illustrating cost-push inflation, which is due to an increase in the cost of production, only the SRAS curve will shift. Since it does not reduce a country's productive capacity, the country's full employment output or LRAS remains the same. Both Figure 6a and 6b can be used to illustrate such cosh-push inflation. The choice of digram can thus be based on the context.

#### The inflationary process:

- When <u>cost of production increases</u>, the short-run aggregate supply (SRAS) curve is shifted left from SRAS₁ to SRAS₂, resulting in higher general price levels, P₁ to P₂ as producers when faced with rising production costs (wages, prices of raw materials), <u>pass on the increase in costs to the consumers in the form of higher price</u> to protect their profit margin.
- At the same time, the firms may also cut back on production of goods and services, when it is more expensive to produce them now. This will lead to a reduction of real national income.
- With higher prices, households' purchasing powers will be lowered. Therefore, there is a fall in induced consumption expenditure, leading to a fall in the production of goods and services, thus causing real national output to fall from  $Y_1$  to  $Y_2$ .

Do note that unlike demand-pull inflation, cost-push inflation can hit an economy even when the economy has not attained full employment.

However, rate of inflation is higher if economy is closer to full employment - strong aggregate demand causes consumers' demand to be **relatively more price inelastic**, hence it is easier for firms to **pass on a larger cost increase** to consumers, in terms of **higher increase in general price level**.

#### Some possible causes for cost-push inflation:

Recall that any increase in price of the commonly used raw materials and factor inputs will inevitably lead to a rise in cost of production, causing the short-run aggregate supply curve to fall.

- (1) <u>Higher labour costs</u> (e.g. wages) Wages constitute one of the most important components of firms' total costs. If powerful trade unions negotiate for excessive wage increases that are not matched by corresponding increases in productivity, this will translate into higher costs of production. This causes the SRAS to fall and cost-push inflation results.
- (2) <u>Higher prices of imported raw materials</u> When the prices of imported inputs increase and without any productivity growth to offset this increase, the unit cost of production for goods made from imported inputs will increase. This is especially prevalent in countries which depend heavily on imports e.g. Singapore. For instance, an increase in the price of oil will cause oil-importing countries to experience higher unit cost of production for most goods and services. This is because oil is an essential factor of production in many production processes, used either directly or indirectly.
- (3) <u>Currency depreciation</u> Imported inflation can also result from depreciation in domestic currency. When a country's currency weakens, prices of imports will be more expensive in terms of domestic currency (especially imported raw materials/inputs), i.e. imported inputs would be relative more expensive to domestic firms, causing their cost of production to rise. Therefore, the impact of cost-push inflation is felt more severely by countries like Singapore who imports a large part of their raw materials and resources. The greater the reliance on imported inputs, the more severe the costpush inflation may be when the domestic currency depreciates.
- 4.3.3 Interactions of Demand-pull and Cost-push inflation: The Inflationary Spiral

It is not always easy to distinguish between **demand-pull and cost-push** inflation as they can reinforce each other.

For example, excessive growth in AD results in higher demand for factor inputs, which in turns push up factor prices/costs  $\rightarrow$  this translated into higher prices for goods and services as firms seek to protect their profit margins  $\rightarrow$  resulting in workers demanding for higher wages as well to cope with the rise in cost of living.

If <u>wages rise in response to rising consumer prices</u>, and this is higher than the increase in productivity rates^{*}, producers will again transfer the higher production cost to consumers, leading to further rise in prices of goods and services. This resulted in a sustained inflationary pressure and this is called **wage-price spiral**.

The inflationary spiral is strengthened by strong trade union power and entrenched expectations about rising inflation. Once caught in this spiral, the rise in cost of living would lead to firms and households raising SLS Lesson: Package D

Activity 4

Central Bank is an independent national authority that conducts monetary policy, regulates commercial banks, provides and financial services including economic research. Its goals are to stabilize the nation's currency, keep inflation low.

expectations of future inflation level. As expectations of the future can drive behaviour today, the Central Bank is concerned to keep inflation expectations under control to help meet their inflation target. (More details will be covered in "Macroeconomics Policies" lecture notes.)

*<u>Note</u>: Recall this concept in the 'Firms & Decisions' topic. Productivity rate measures how efficiently the output is produced per unit input. The higher the productivity rate, the more efficient the output is produced, the lower the cost per unit output.

#### **Stagflation**

This refers to a period of <u>rising inflation together with falling real national</u> <u>income</u>. This is usually caused by a <u>falling SRAS and a falling AD</u> happening simultaneously. This may be a more severe concern than high inflation alone, as it has larger impact on the standard of living of its residents.

#### 4.4 Consequences of High inflation



Think about this:

"Over the last three decades or so, empirical and theoretical arguments have been advanced to show that high inflation is detrimental to economic growth. An environment of low inflation, in comparison, is thought to be essential for sustainable economic growth. By "sustainable economic growth", we mean steady economic growth year after year, and not the boom-bust cycles typically associated with high-inflation countries, in which rapid economic growth alternates with deep recessions."

The Economics Explorer Series on Inflation

#### Question:

Why might having 'an environment of low inflation' be important? Recall from your Introduction to Macroeconomics.

The effects of inflation depend on the causes, the degree of severity and whether the inflation is anticipated or unanticipated.

- Anticipated Inflation: rate of inflation that most individuals believe will occur.
- Unanticipated Inflation: inflation that comes as a surprise to individuals in the economy. For example, if the inflation rate in a particular year turns out to be 10% when most people thought it was going to be 5%, then the inflation is greater than expected.



SLS Lesson: Package D

Activity 5

### 4.4.1 Internal effects of inflation

#### Impact on households: standard of living

- In the event of high cost-push inflation, firms may find their profits squeezed. In response to rising cost, <u>firms will cut back on production</u> as well as <u>pass part of the rise in cost to consumers in the form of</u> <u>higher prices</u>.
- The fall in production and hence employment will lead to a <u>fall in</u> <u>income and material standard of living of consumers.</u>
- Households, <u>especially those with fixed incomes</u> (e.g. wages, interest deposits and private pensions), will suffer a <u>fall in their real</u> incomes because despite receiving the same nominal income, the price of goods and services has risen, reducing their purchasing power → lower material SOL.
- Note to students: households who earn variable incomes, i.e. incomes that vary with price levels, such as rental from properties, may enjoy an increase in their income, as prices increase.
- [Savers] Besides spending, households also save part of their income. Saving accounts will decline in real value during inflation. Note that Real interest rate = Nominal interest rate - Inflation rate. The higher the inflation rate, the lower the real interest rate, if the nominal interest rates remain unchanged. The real interest rate is the value of the interest earned, in terms of purchasing power.
- [Creditors vs Debtors] High inflation tends to benefit debtors (i.e. people who borrow money) since real debt falls with inflation. While the nominal debt they borrow remains the same, the real value of it has fallen as it is worth fewer units of goods and services. However, in the same light, creditors will lose out as the debts they recover is now worth less in times of high inflation.

(Note to students: Creditors and Debtors can also apply to firms)

#### Impact on firms: profits

- With high cost-push inflation, the rise in price of factor inputs adds to the cost of producing goods and services.
- Firms with relatively more price elastic demand will face greater difficulties passing on the higher costs to the consumers. In other words, the firms will have to <u>suffer from lower profit margins</u> (or even a loss in profits).
- High and unanticipated inflation introduces uncertainty into the economy, making it <u>challenging for businesses to plan for future</u>. The fluctuating prices can make it difficult to accurately project costs, revenues, and profits. This uncertainty may lead to a more conservative approach to investments and business expansion, as businesses may be hesitant to make long-term commitments in an unpredictable economic environment.
- The lack of investments may restrict their production capacity in the future, resulting in risks of lower future sales revenue and profitability.

#### Impact on government and other macroeconomic aims

#### Slower / negative economic growth in both short and long run

- As consumers cut back spending and firms cut down on production in times of high inflation, the economy sees a reduction in economic activities, leading to <u>negative impact on</u> the current economic growth.
- As mentioned earlier, inflation can lead to an <u>increased</u> <u>uncertainty</u> among the businesses and hold back investments. With the lack of business' investments, the economy may see a reduction in capital goods investment, <u>restricting the country's</u> <u>production capacity.</u>
- With a limited AS, the country may find it hard to achieve both actual and potential economic growth and hence, sustainable economic growth in the long run. This eventually leads to a <u>fall</u> in the material standard of living in the <u>future</u> too.

#### Less inclusive economic growth / widening income gap

 As seen earlier under the impact on households, there may be certain groups of households and firms gaining more than the rest. In essence, fixed income earners lose out more than the variable income earners, leading to a <u>widening income gap in the country</u>.

#### Reduction in government budget

- Loss in jobs and cut in profitability of firms result in <u>smaller tax</u> revenue (both personal income and corporate income tax) collected.
- Government may face <u>higher opportunity costs</u> with a smaller budget revenue.
- Affects the amount of spending on public projects such as schools, hospitals, public roads and housing, which directly <u>negatively</u> <u>affect the current and future standard of living.</u>

#### 4.4.2 External effects of inflation

The external effects of inflation explained here is largely on the external macroeconomic performance of the country, i.e. Balance of Trade.

#### (A) Balance of Payment (BOP) and Balance of Trade problems

- Balance of Trade (BOT) problem Higher domestic inflation relative to other countries can <u>erode the domestic country's export</u> <u>competitiveness</u> and <u>makes purchasing imports from other countries</u> <u>more attractive</u> → <u>worsening of current account</u> due to falling net exports.
- Foreign investors will <u>not</u> find it favourable to invest in countries with high rates of inflation. High and unanticipated rate of inflation not only <u>reduces the real returns on the investment</u> but also increases the <u>risk of making losses</u> as consumers reduce spending and hence, demand, making it less attractive to these foreign investors to invest.

 The existing foreign firms may choose to <u>relocate their production</u> to other countries. This causes <u>capital outflow</u>, worsening capital and financial account - one of the Balance of Payment (BOP) accounts.

<u>Note</u>: Balance of Payments (BOP) accounts consists of current, capital & financial accounts. (More details will also be covered in "External Macroeconomics Aims & Problems" lecture notes.)

#### (B) Depreciation of currency

Higher inflation rate (e.g. in Singapore) relative to other countries (e.g. Malaysia) tend to <u>result in weakening/ reducing of the value of</u> the domestic currency (in this case Sing Dollars, SGD). This is because:

- Higher inflation (e.g. in Singapore) would <u>weaken Singapore's export</u> <u>demand</u> as the price of Singapore's exports is relatively more expensive to foreigners. Therefore, Singapore goods become less competitive.
- Demand for Singapore exports will fall → less SGD is needed/ in demand in the foreign exchange market (FOREX). At the same time, domestic consumers (in this case, households and firms in Singapore) will find foreign imports relative cheaper. Therefore in buying foreign imports, they will be supplying SGD in exchange for the foreign imports. This increases the supply of SGD into the foreign exchange market (FOREX)
- The fall in demand and rise in supply of SGD result in weakening of SGD value → depreciation of SGD.
- The currency depreciation can lead to more problems and presents a vicious cycle of depreciation and higher inflation rate:
- Depreciation (value of currency weakens relative to other countries' currencies)  $\rightarrow$  domestic firms that rely on imported inputs will face rise in costs of production  $\rightarrow$  SRAS will fall and there can be adverse consequences on economic growth of the country.

#### 4.5 The problem of Deflation

While we have learnt how undesirable high inflation may have on households, firms and the entire economy, it does not mean that falling prices always mean beneficial for the country. In this section, we will explore the definition of deflation, the causes and consequences of deflation.

#### 4.5.1 Definition of Deflation

**Deflation** is a situation in the economy where there is a <u>sustained decrease</u> in the general price level of goods and services in an economy (negative inflation rate).

Using the AD/AS model, deflation can be caused by the following forces:

- AD falling and further away from the productive capacity (LRAS)
- Productive capacity expanding faster than the growth in AD



SLS Lesson: Package D

Activity 6

While deflation may seem to suggest that it is good for consumers as prices are falling, it may not be so if the deflation is accompanied with a falling real national income, which is often the result of a falling AD.

During the Great Depression, the United States underwent a severe deflation. Prices fell 33% on average and wages fell along with prices. A more recent case would be the deflation which Japan experienced in the 1990s, although much milder than the Great Depression - about 1% per year. Banks in Japan faced a lot of problems as borrowers, including large corporations defaulted on their loans. This resulted in the weak performance of the Japanese economy in the 1990s ("a period known as the lost decade").

When deflation is due to productive capacity expanding faster than the growth in AD, this is often a desirable situation as the economy experiences sustainable economic growth, mild inflation rate and low unemployment rate.

### 4.5.2 Causes of undesirable deflation

There are several possible causes of undesirable deflation, some of which are of relatively greater cause for concern than others. For instance, deflation due to persistent fall in aggregate demand below the full employment national output is more of a concern than deflation due to increasing productive capacity of the economy.

#### (a) Undesirable economic conditions (e.g. recession)

- Countries that slipped into recession (falling AD) may cause households and businesses to have pessimistic and weaker economic sentiments. This can reduce C and I, causing AD to fall.
- As AD falls, firms react to the weaker demand by cutting back on production, leading to job losses and rising unemployment.
- With a weaker demand, there are <u>now more unsold goods in an</u> <u>economy, leading to increase in inventories and hence a drop in</u> <u>general price level to clear the unsold goods.</u>

#### (b) Greater thrift / changes in demographics

- In some of the western capitalist countries, generations of 'bigspenders' are slowly being replaced by a generation who has begun to save for retirement or their future.
- This is especially so in countries with <u>greying population</u> like Japan, where a large proportion of their citizens are the elderly who tend to save more and this <u>lowering of consumption levels</u> for goods and services → causing AD to fall and hence fall in general price levels.
- This may also happen in countries where there are <u>excessive levels</u> of <u>debt</u> in an economy. When households, businesses, or governments are heavily indebted, they may prioritize debt repayment over economic spending. <u>Reduced spending</u> contributes to lower aggregate demand, triggering a vicious cycle of poor economic growth and deflationary pressures.

### Try it yourself: Input your answer in the SLS package

Deflation may be a good economic situation if it is due to a greater increase in LRAS as compared to the increase in AD.

Explain the possible factors that can lead to a <u>desirable</u> deflation situation. One example has been done up for you! (Hint: think about the factors improving AS)

#### Factor 1: Deregulation of industries

Deregulation and the gradual opening up of markets around the world also lead to greater competition among producers. To protect their customer base and their demand, producers may be more willing to reduce prices of their goods. In certain situations, it could even lead to price wars in many goods and services and hence, a subsequent fall in general price level.

Factor 2:

# 4.5.3 Consequences of undesirable deflation

Note to students: The consequences from undesirable deflation are largely <u>similar</u> to the <u>consequences of negative economic growth</u>, as an undesirable deflation occurs when there is a fall in national income. Kindly refer to the section on Consequences of slow/negative economic growth for more information.

At the same time, there are <u>additional</u> negative consequences that come with undesirable deflation. Some examples are:

# a) Deflationary Spiral: Expectation of falling future prices prompting delayed spending, vicious cycle of worse economic growth and poorer material standard of living

- There is the incentive to <u>delay spending by the households</u> if goods and services are expected to be cheaper in the future. While this may be less likely in the case of necessities, the expectation of future prices can put off consumers purchase of many other goods and services, especially luxury items.
- As a result <u>firms are less likely to expand, invest and hire</u>. Thus, with the cut in spending by households and firms, there may be a <u>further</u> <u>fall in aggregate demand</u>. This can cause prices of goods and services (general price levels) to further fall, leading to deflationary spiral, adversely affecting other macroeconomic goals such as economic growth and employment.



SLS Lesson: Package D

Activity 7

#### b) Increased real debt burden on borrowers

 During deflation, the purchasing power of money increases, meaning that the same amount of money can buy more goods and services over time. While this might seem beneficial, it can lead to an increase in the real burden of debt. Fixed debt obligations become more onerous in real terms, as the value of money rises, making it more difficult for borrowers (including households, firms and governments) to repay loans.

#### 4.6 Limitations in the Measurement of the Consumer Price Index

This section is to let you understand the possible limitations of CPI as an indicator for inflation. Recall the definition of CPI - CPI measures <u>how prices</u> of a basket of consumer goods and services (fixed in terms of quality and quantity) commonly purchased by the majority of the households <u>have</u> changed from one period to another.

#### Behavioural Changes of consumers:

- Changes in consumer behaviour, such as the increasing prevalence of online shopping, are not always promptly reflected in the CPI. The changes in consumer behaviour may change the composition of the commonly purchased goods in the basket, which means the current reported price index may not be representative of the inflationary pressures felt by the consumers in reality.
- Consumer behaviour may change due to changes in the demographics. In an ageing population, expenditures may largely be on elderly products and healthcare spending.

#### Changes in the quality of goods and services:

- The CPI may not fully account for changes in the quality of goods and services over time. For example, enhancements in product features may have caused the prices of these better quality goods to increase (e.g. use of better quality ingredients or materials).
- However, as the CPI only captures the price increase and not the improvement in quality, this could result in an over-estimation of the price increase in reality.

Despite these limitations, the CPI remains a valuable and widely used indicator of inflation. However, by relying on one singular indicator to formulate policies for inflation can be dangerous, hence policymakers and economists often consider multiple inflationary data and feedback, to gain a more comprehensive understanding of price movements in the economy.

# Annex 1: The Main indicators for Singapore



Source: www.mti.gov.sg

# END OF TOPIC REFLECTION

Students should be able to		Checklist
1	Define standard of living (SOL) in terms of material and non-material aspects	
2	<ul> <li>Define and explain the following:</li> <li>Economic Growth</li> <li>Unemployment</li> <li>Inflation/Deflation</li> </ul>	
3	Explain how material & non-material SOL is measured	
4	Use various indicators (GDP indicators, HDI, Unemployment rate, Inflation Rate, etc) to compare living standards over time and over space	
5	Evaluate the usefulness of measuring SOL using national income statistics and other measures	
6	Interpret Gini coefficient and explain how it reflects income distribution in a country	
7	<ul> <li>Explain the following domestic macroeconomic aims of governments:</li> <li>Economic growth (actual, potential, sustainable and inclusive growth)</li> <li>Full employment</li> <li>Price stability</li> </ul>	
8	Analyse a country's macroeconomic performance based on a set of key economic indicators presented such as GDP/GNP, inflation rate and unemployment rate	
9	• Evaluate the key reasons for the performance of an economy.	