H2 Economics Chapter 5 and 6 Notes

This document is intended as a summary of the points provided in the NJC 2024 H2 Economics Chapter 5 and Chapter 6 Seminar Notes. It is to be used as a **study guide** to provide a **structure** for studying the Chapter 5 and Chapter 6 Notes.

1 The Circular Flow of Income

The Four Sector Economy is a model of a country's domestic economy. It is the basis of all Macroeconomics. It consists of four sectors, and one intermediary, each of which play a very important role in the economy:

Households buy goods and services as they want to maximise their satisfaction. They also provide resources like labour, land, capital and entrepreneurship to firms.
Firms produce goods and services using resources provided by households, and sell them as they want to maximise their profits.
The Government taxes households and hires firms to produce public goods and services as they want to maximise societal welfare.
The Foreign Sector trades with the domestic economy by buying exports and selling imports.
The Bank collects savings from households and funds investments by firms.

In the Four Sector Economy, it is important to understand that there is a movement of money between sectors (**money flow**) and a movement of goods and services between sectors (**real flow**). This is explained using Eli's Story of Macroeconomics.

Eli's Story of Macroeconomics (4-Sector Economy)
In 2024, country X's economy functions as it always has. firms produce goods and services and sell them in order to maximise their profits. In order to do so, they make factor payments to households to hire resources. Afterwards, households receive this money as factor income.

Using a large part of the income households have received, they spend on goods and services produced by firms in order to maximise their satisfaction. The goods and services purchased may be domestically produced or imported from the foreign sector. The remaining income that households have is either saved in the bank or paid to the government as taxes (Households do receive subsidies from the government, but generally, they are taxed more than they are subsidised).

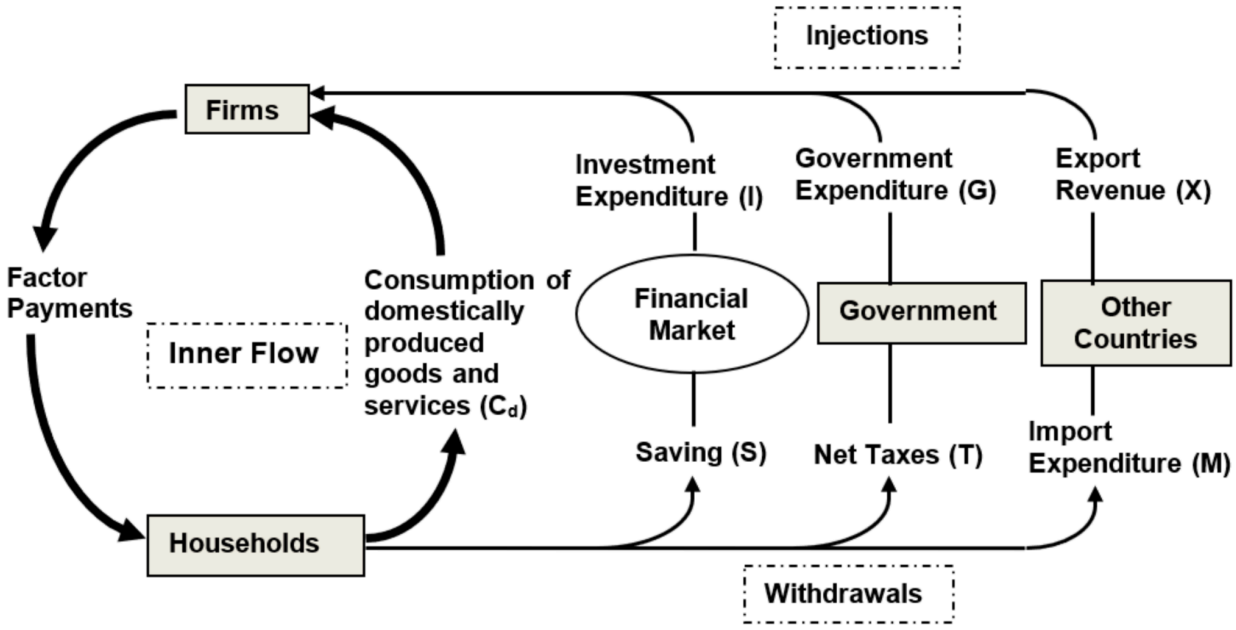
The bank uses most of the savings of households to fund firms' investments in productive assets (machinery, which, when built, can produce goods and services in the future). The government uses most of the taxes it collects mainly to hire firms to produce public goods and services. The foreign sector uses most of the revenue they receive from domestic households purchasing imports to purchase exports from domestic firms.

Firms, using funds from the bank and the government, as well as export revenue from the foreign sector, again make factor payments to households to hire resources to produce goods and services. And again, households receive factor incomes and spend it, save it and pay taxes.

The story's message is that eventually, whatever income is received by households is either spent by households (Consumption Expenditure), firms (Investment Expenditure), the government (Government Expenditure), or the foreign sector (Export Revenue[1]). Or, more simply,

National Income = National Expenditure

The diagram below illustrates this concept as it shows that factor payments, which is national income, eventually end up as national expenditure (C_d + I + G + X).



[1] We say 'export revenue' and not 'export expenditure' because Macroeconomics is studied from the perspective of the domestic economy. The domestic economy receives money which is spent by the foreign sector as revenue.

Injections (J) are additions of spending to the circular flow of income. The three injections are Investment Expenditure (I), Government Expenditure (G) and Export Revenue (X).

Withdrawals (W) are subtractions of spending from the circular flow of income. The three withdrawals are Savings (S), Net Taxes (T) and Import Expenditure (M).

This idea is usually extended to include the idea of National Output: the total value of all goods and services produced domestically. Since the value of the goods and services is determined by the amount of money spent on them, we can make a final conclusion:

National Income = National Expenditure = National Output

A Key Distinction:

In the calculation of national output, we use the formula Y = C + I + G + (X - M). Notice that we are taking away the value of imports. This is due to the definition of national output specifying that we are only taking into account the value of goods and services produced domestically.

It must be noted that $C \neq C_d$. C refers to consumption expenditure, which is the expenditure on goods and services which are domestically produced **and** foreign produced. C_d refers to *domestic* consumption expenditure, which is the expenditure on **only** domestically produced goods and services. Hence, $C = C_d + M$. Since we have specified that we are only going to look at goods and services produced domestically, we are only interested in C_d.

The value of domestic goods and services bought by consumers is C_d.
The value of domestic goods and services bought by firms is I.
The value of domestic goods and services bought by the government is G.
The value of domestic goods and services bought by the foreign sector is X.

As a result, we can say that $Y = C_d + I + G + X$.
$C_d = C - M$, so we can say that $Y = C + I + G + (X - M)$

2 National Income

National Income refers to the income generated from the production of all final goods and services by a country within a specific period, normally a year.

There are two main ways in which we may calculate the national income of an economy, namely Gross Domestic Product (GDP) and Gross National Income (GNI).

Gross Domestic Product (GDP) is the total monetary value of all final goods and services produced within the geographical boundaries of a country, (regardless of the ownership of the factors of production, within a specific period, normally a year), before accounting for depreciation.

Each word in the phrase 'GDP' has a meaning which is incorporated into the definition of GDP.

- ***Gross*** is an adjective meaning "total; without deductions for expenses or taxes"
- ***Domestic*** is an adjective meaning "within the geographical boundaries of a country"
- ***Product*** is a noun meaning "the value associated with goods and services produced"
- ***Nominal*** is an adjective meaning "measured at current prices; before accounting for inflation"

Why do we use the phrase "value of all goods and services" to account for "Product"?

GDP is typically measured by taking the difference between the value of goods and services purchased by the domestic economy and the value of imports. It is hence derived from the value of goods and services, otherwise known as products. Essentially, this distinguishes GDP from GNI, which is measured by taking the incomes of all residents of a country.

Why do we use the phrase "within the geographical boundaries of a country" to account for "Domestic"?

GDP typically only measures the value of domestically produced goods and services, and therefore excludes the value of any goods and services produced outside of the country. This distinguishes GDP from GNI, which measures the incomes of residents of a country, regardless of if the incomes are generated from domestic production or foreign production.

Why do we use the phrase "before accounting for depreciation" to account for "Gross"?
Depreciation is the process of deducting the total cost of something expensive you bought for your business. GDP is typically calculated using the concept of gross investment, which does not subtract depreciation of capital goods (cost of replacing capital goods subjected to wear and tear). Hence, it is important to clarify that GDP measures national income "before accounting for depreciation".

In other words, GDP measures the total market value of all goods and services produced within a country's borders, including the value of capital goods used up in the production process. This distinguishes GDP from Net Domestic Product (NDP), which accounts for depreciation.

Why do we use the phrase "monetary"?
GDP typically refers to *Nominal* GDP, which does not account for inflation. We must demonstrate understanding that GDP will change as prices change, distinguishing GDP from Real GDP, which does not change if only price changes. This will be clarified in a later part.

Gross National Income (GNI) is the total factor income earned by residents of a country from the production of all final goods and services, (regardless of the geographical location of production, within a specific period, normally a year), before accounting for depreciation.

What does "resident" mean?
Residency is a permit that allows an individual to reside in a specific country with conditions that must be adhered to. Residency can be either temporary or permanent. It is not to be confused with Citizenship, which grants rights, privileges, and protections to individuals within a country and state. Citizenship is permanent.

The Relationship between GDP and GNI
From Section 1, we have learnt that National Income = National Expenditure = National Output. Therefore, the value of goods and services is equal to the income generated from their production.

Using the definitions of GDP and GNI, we can then derive that GNI is GDP plus the income earned by residents from overseas sources minus the income earned by non-residents from the domestic economy (Net Factor Income from Abroad/NFYA). Mathematically,

GNI = GDP + NFYA

The Relationship between Real National Income and Nominal National Income

There are two formulae that are very important relating Real GDP and Nominal GDP. The first formula measures real GDP using a magic number known as the GDP Deflator. The GDP Deflator is usually a number that you will be given in a case study table.

Real GDP = Nominal GDP/GDP Deflator

The second formula estimates change in real GDP using a concept known as the general price level. Technically speaking, it is not accurate, but it is a good enough estimate.

%Δ Real GDP = %Δ Nominal GDP - %Δ General Price Level

3 Standard of Living

In the 9570 Economics Syllabus, Cambridge has categorically stated that "economies are primarily concerned with improving the standard of living." As such, it is the singular most important part of Macroeconomics. To understand standard of living as a whole, it is important to understand its two components first:

Material Standard of Living is related to the amount of goods and services that individuals within the country have available to consume for the satisfaction of their wants and needs.

Non-material Standard of Living involves indicators like the amount of leisure people consume, life expectancy and standard of education, amongst other social factors.

A Common Misconception

Material SOL is **not** directly related to the national income of a country. Rather, it is related to the purchasing power of a country. This is because the satisfaction of wants and needs only increases when the amount of goods and services purchased increases.

An increase in nominal income may not necessarily increase the purchasing power of a country. This is because if the increase in nominal income is equal or less than the increase in general price level, then the additional income cannot be used to purchase any additional goods and services.

Standard of Living (SOL) refers to the level of economic welfare and social well-being of an average individual or household. It includes the material and non-material aspects of living.

Limitations of National Income in measuring SOL

Like the definition of GDP, there are many descriptors in the definition of SOL, with some embedded in the definition of material and non-material SOL. These specifications mean that GDP may be necessary, but insufficient to accurately measure and compare the SOL of countries across time and space. GDP would either overstate or understate SOL of a country.

Why do we use the term "amount"?

Intertemporal: GDP does not take into account inflation. As such, a rise in GDP might not necessarily result in a rise in the volume of goods and services produced as the increase in GDP may largely be due to rising prices. Even if GDP increases, if the general price level increases at the same rate or at an even faster rate, then the country's real national output would have remained the same or fallen respectively. As such, material SOL would not increase and might even decrease as the purchasing power of households would not have increased and the amount of goods and services that they are able to purchase to consume and satisfy their needs and wants would not be increased. Hence, the word "amount" makes it clear GDP would overstate the material SOL of a country.

Hence, we should use the real GDP to calculate the change in material SOL as real GDP accounts for changes in prices over time, reflecting the change in GDP caused only by changes in real national output.

International: Using a common currency for comparison is a problem as the official exchange rates may not reflect the relative purchasing powers among the countries due to speculative activities or movement in the relative prices of traded goods, as well as government intervention in the currency market. As such, a higher GDP might not reflect a higher volume of goods and services available for consumption as the higher GDP may be a result of higher

general prices in some countries than others. For example, even if GDP in the US is higher than that in South Africa, the US might not have a much higher material SOL as it is a much more developed country than South Africa, causing general price levels in the US to be much higher than in China and South Africa. If so, US$1 in the US will buy a much smaller amount of goods and services compared to the same US$1 in South Africa. The GDP may hence overstate how much greater GDP in the US is compared to that in South Africa.

Hence, we should use Purchasing Power Parity (PPP), which takes the amount of foreign currencies needed to buy the same basket of goods and services in the different countries. PPP are the rates of currency conversion that equalise the purchasing power of different currencies by eliminating the differences in price levels between countries.

Why do we use the term "an individual or household"?

GDP is an aggregate figure and does not take into account the size of the population. It is important to do so because SOL refers to the welfare of each individual in the country. Even if a country's GDP increases, if the country's population size increases more, the amount of goods and services available to each individual may not be higher than before because the higher national income is distributed across a much larger population. As such, the phrase makes it clear that GDP may understate or overstate a country's SOL depending on population growth rates.

Hence, we should use GDP per capita, which takes the GDP of a country and divides it by its population size in order to derive the portion of national income that each person would receive assuming equal distribution of income.

Why do we use the term "average"?

GDP per capita reflects the mean income of an individual in the country, while SOL refers to the wellbeing of an average individual. As such, an increase in GDP per capita does not necessarily mean that all individuals in a country are better off than before because national income may not be evenly distributed. Even if GDP per capita increases, if the lion's share of the increase in income goes towards the rich minority, the majority of the individuals in a country will not enjoy a higher income and hence will not have a significantly higher material SOL.

Hence, we need data on the country's Gini Coefficient to know how income is distributed in the country in order to compare the material SOL of an average individual across time. If a country's Gini coefficient increases over time, it is closer to perfect inequality, suggesting that its higher GDP is not enjoyed by the majority of the people in the country.

Why do we use the term "includes non-material aspects of living"?

A country's SOL increases when its non-material SOL increases. However, an increase in GDP does not necessarily improve the qualitative aspects of life.

Leisure (Trade-off)

GDP does not account for changes in leisure time. Even if GDP increases, the increase in production to generate a higher GDP would require more labour, implying that workers work longer hours especially if production in the country is labour intensive. As such, workers would have less time for leisure, resulting in poorer mental health and higher stress, lowering non-material SOL. As such, the phrase makes it clear that GDP understates SOL as the increase in material SOL is at least partially offset by the decrease in non-material SOL.

Health (Trade-off)

GDP also does not account for negative externalities in production over time. The increase in production via employment of more factors of production from the environment (i.e. land) such as usage of coal and fertile land results in, for example, deforestation to generate the increased GDP, which would generate increased levels of negative externalities such as air pollution and global warming which entail harmful health effects to third parties. Increased levels of negative externalities would thus lower non-material SOL but these are not recorded in the national income statistics. Hence, even if a country's GDP increases, if the level of negative externalities increases more significantly, it cannot be concluded that it will have a higher SOL. As such, the phrase makes it clear that GDP understates SOL as the increase in material SOL is at least partially offset by the decrease in non-material SOL.

Knowledge (Lack of Consideration)

GDP does not account for changes in knowledge. A country enjoys higher SOL if the literacy rates/average years of schooling increases. A higher education attainment indicates the ability of the people to acquire knowledge. With greater knowledge, individuals are empowered where they could get better job opportunities and achieve their highest personal and collective

aspirations and goals. Also, with greater years of schooling, an individual will develop greater competency in decision-making, interactions with others and hence, becoming a more confident individual. Hence, knowledge enables the individuals to have a higher quality of life and thus, it is positively related to non-material SOL. Even if the GDP of a country increases, if it has a significantly lower literacy rate / average years of schooling, it cannot be concluded that the country has a higher SOL. As such, the phrase makes it clear that GDP understates SOL as the increase in material SOL is at least partially offset by the decrease in non-material SOL.

HDI/MEW

The Human Development Index (HDI) is a composite measure which quantifies a country's average achievement in three basic dimensions of human development: a long and healthy life, knowledge, and a decent material standard of living. A country with higher HDI suggests that the country has a higher combination of national income measured by GNI per capita, knowledge, measured by the adult literacy rate and the mean years of schooling received by adults 25 years and above, and health, measured by life expectancy and infant mortality rates.

- For your information, HDI ranges from 0 to 1.
    - 0.0 - 0.5: Low Human Development
    - 0.6 - 0.8: Medium Human Development
    - 0.8 - 1.0: High Human Development

The Measure of Economic Welfare (MEW) similarly adjusts GDP or GNI figures to account for leisure, environmental degradation, income distribution and other economically unsustainable costs such as depletion of natural resources. The MEW hence quantifies qualitative aspects of life as well as income distribution which the GDP cannot measure directly.

- Note: It is difficult to write the MEW as an evaluation for any particular point here as it does not address any singular limitation. It is somewhat more used to account for non-material SOL, but using HDI as a point is much more preferred.

Why do we use the term "their wants and needs"?

GDP does not break down the composition of national output. An increase in GDP does not necessarily reflect an increase in household consumption of goods and services as some goods and services produced may not be consumed by households and hence do not actually satisfy the wants and needs of consumers.

Investment Expenditure

If the increase in GDP stems from increased investment expenditure which is used to produce a greater amount of investment goods like plants and machinery which are not used to produce current consumer goods and services, then households will not be able to satisfy more of their wants and needs. Hence, an increase in GDP might overstate the improvement in SOL in the current time period.

However, the investment in more plants and machinery will increase the future material SOL of the economy. This is because it will lead to an increase in the quantity of capital in the economy, increasing the productive capacity of the economy, allowing for future economic growth. Hence, in the future, more consumption goods and services can be produced for household consumption. Hence, in future, households may be able to consume more goods and services to satisfy more of their wants and needs, increasing future material SOL.

Government Expenditure

If the increase in GDP stems from increased government expenditure which may be spent on tanks and artillery for national security, it does not lead to the consumption of more goods and services by households, so no additional wants and needs will not be satisfied and the use of GDP would overstate the improvement of China's material SOL.

However, if the increase in government spending is spent on public goods like better road infrastructure, then the non-material SOL may in fact increase as the efficiency of travel may increase as congestion on roads may be improved, allowing for a faster flow of traffic. In this way, households spend less time travelling to work and for commuting in general, allowing them more time for leisure and sleep which can allow them to be less tired and more refreshed every day, increasing their non-material SOL.

Export Revenue & Import Expenditure

If the increase in GDP stems from increased export revenue, it will not contribute to a rise in material SOL if the income generated from exports is not spent on consumer goods and services. This is because exported goods and services are consumed by foreign economies and not domestic households. As a result, there is no increase in the satisfaction of consumers' needs and wants in the domestic economy. Hence, the use of GDP would overstate the improvement in material SOL.

Likewise, if the decrease in GDP stems from increased import expenditure, it may not cause a fall in material SOL. This is because imported goods and services are consumed by domestic households for the satisfaction of their needs and wants. Therefore, an increase in imports actually increases the material SOL of a country to some extent. Hence, the use of GDP would understate the worsening of material SOL.

Why do we use the term "available"?

GDP figures do not record the output of some goods and services. As such, these goods and services which are consumed by individuals for the satisfaction of their wants and needs, despite increasing material SOL, are not recorded as such. For example, many products like the services of housewives and subsistence farming are not recorded in GDP as no expenditure is paid for such services, and therefore no expenditure can be recorded. Hence, while such goods and services are available for consumption, they are excluded from the GDP figures, causing GDP figures to understate the material SOL of a country. (Another instance of unrecorded economic activity may be the transaction of goods and services in the underground economy. For example, counterfeit goods and services which are sold may increase material SOL, but because it is an illegal activity, any that were successfully sold would not be recorded in GDP so as for the criminals to remain under the radar). As such, GDP generally tends to generally understate the material SOL of a country because it fails to account for unmarketed activity.

Taking all this into account, when GDP increases, assuming that the rate of growth in GDP exceeds any increase in general price level, the real national income of a country increases. With higher income, consumers would have higher purchasing power. Coupled with more goods and services produced, households would have greater access to goods and services for consumption to satisfy their needs and wants. Assuming no change in population or that population growth rate is less than economic growth rate, there will be an increase in national output income per capita in the economy. This indicates that each person has more goods and services to consume, assuming income is equitably distributed, thus improving the material SOL.

Important Things to Note:

1. Questions typically require you to state the limitations of using GDP for intertemporal or international comparison of SOL. While the points for both types of comparison are the same, the phrasing used is different. For intertemporal comparison, the focus is on 'changes'. As such, the body paragraphs for these questions focus on 'increases' or 'decreases'. For international comparison, the focus is on 'differences'. As such, the body paragraphs for these questions focus on what is 'higher' and what is 'lower'. It is a very small difference, but it will be costly as Cambridge has, on multiple occasions, very clearly stated that rehearsed answers will be awarded lower marks. The points I have provided are written for intertemporal comparison, and must be adapted should the question require international comparison.

2. The points provided are not equally good. As such, you cannot simply select any points. The points are ordered from top to bottom in descending order of importance. The first three points must be written before writing any points below.

3. The points chosen must not contradict any data given in the preamble or the case study. For example, if the table notes that there was an increase in life expectancy, you cannot say that an increase in GDP might have caused greater pollution due to increased production, and hence a fall in health. Because the data about increasing life expectancy is a clear indicator that the nation's health did not decline.

4. As far as possible, specify if the GDP understates or overstates SOL. This is because often, the question already states or implies that GDP is an inaccurate measurement of SOL, and repeating that GDP inaccurately measures SOL does not demonstrate your understanding of the limitations.

5. While methods to address the limitations in measuring SOL may be used as evaluation, it must be noted that they will be worth lower marks. It is preferred that you offer conditions to judge the significance of the limitations for each point. That said, you are advised to take into consideration the additional time that would be gained from just writing solutions. The evaluative conclusion for questions about limitations in using GDP to measure SOL is almost always "GDP is useful but insufficient in measuring SOL".

4 General Price Level and Real National Income

The circular flow model is limited in that it cannot capture ideas of inflation, unemployment as well as balance of payments which are measures of the performance of an economy. It also fails to account for the scarcity of resources which implies the existence of a finite productive capacity of an economy. These limitations are addressed using the Aggregate Demand (AD) and Aggregate Supply (AS) model.

For Your Understanding (Not in Syllabus)

General Price Level (GPL) is a weighted average of the prices of all final goods and services produced in the economy in a specified time period, usually a year.

Real National Output (RNY) is the total value of all final goods and services produced within the geographical boundaries of a country within a specified time period, usually a year, after accounting for inflation.

In Macroeconomics, we plot a graph of GPL against RNY to analyse most topics using the AD-AS model.

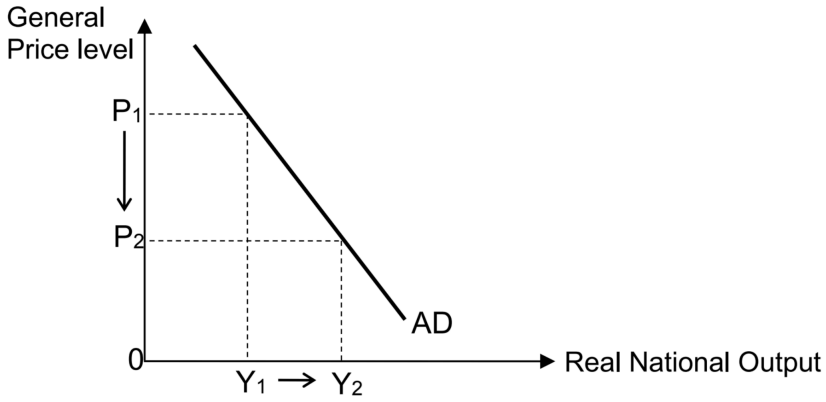
5 Aggregate Demand

Aggregate Demand (AD) is the total value of domestically produced final goods and services demanded by households, firms, the government and foreign countries at each general price level in a given time period.

Essentially, AD refers to the spending on domestic goods and services, consisting of consumption expenditure (C), investment expenditure (I), government expenditure (G), and export revenue (X). Part of each of these expenditures includes money spent on imported goods. As such, the expenditure on imports (M) must be subtracted from these values. Mathematically,

$$AD = C + I + G + (X - M)$$

The AD curve is downward sloping. This is because when the GPL falls, with the same nominal income, households are able to purchase more goods and services, prompting higher production and hence an increase in RNY.



General Question Answering Structure for all AD Analysis

Step 1: How a ***cause*** affects the components of AD = C + I + G + (X - M)

- Try to cover 4 out of 5 components for maximum breadth. If you are slow, cover at least 1 internal (C, I, G) and 1 external component (X and/or M) in anticipation of part (b) requiring analysis relating to balance of payments
- One cause can affect multiple components of AD
- The list of causes for AD provided in the notes is not exhaustive

Step 2: How AD will change: Direction (& Magnitude), paired with illustration of the change

Step 3: What ***effect*** this has on one of the seven friends

Step 4: What are the ***responses*** to address this issue

General Question Answering Structure for all LRAS + SRAS Analysis

Step 1: How a ***cause*** affects QQT (Quantity of resources, Quality of resources, Technology)

Step 2: How LRAS will change: Direction (& Magnitude), paired with illustration of the change

Step 3: What ***effect*** this has on one of the seven friends

Step 4: What are the ***responses*** to address this issue

General Question Answering Structure for all SRAS-only Analysis

Step 1: How a ***cause*** affects cost of production

Step 2: How SRAS will change: Direction (& Magnitude), paired with illustration of the change

Step 3: What ***effect*** this has on one of the seven friends

Step 4: What are the ***responses*** to address this issue

5.1 Consumption Expenditure

Consumption Expenditure (C) is spending by households in return for goods and services.

- C is the largest component of AD
- C increases as national income increases, leading to further increases in national income

Cause	Key Analysis/Technical Terms
Income Determinant[2] (Induced C)	purchasing power
Expectations of Future Prices and Incomes[3]	Logic — no technical terms
Changes in Interest Rates and Availability of Credit	Opportunity cost of spending, return on savings discretionary income refers to income after spending on necessities like mortgages, loans, credit card debt, food, taxes
Wealth Effects	Real and Financial Assets, net worth, consumer confidence
Distribution of Income	MPC of Poor, MPS of Rich, spend a greater proportion of the increase in income
Government Policy	Disposable income refers to income after deduction of personal income taxes and the addition of transfer payments
Lifestyle, Habits and Attitudes	Materialism, Thriftiness, Kiasu, etc.
Demographics	**Young**: Credit-financed purchases **Middle-aged**: Pensioners, pension, mortgage, savings, loan repayments, discretionary income falls, **Elderly**: incomes fall sharply, use up savings

[2] An increase in real income can shift the AD, but only as a result of the multiplier effect (covered in later section) or a fall in GPL. Households only receive greater income when there is greater production and hence greater derived demand for resources, which only occurs if there is first an autonomous shift in AD or AS.
[3] This is a dangerous point. You will end up with a circular argument.

5.2 Investment Expenditure

Investment Expenditure (I) is spending to obtain new productive assets, which are man-made goods which are used in the production of future goods and services. It may include machinery, raw materials, intermediate products and even finished goods which are not in the market yet.

- Future goods and services: a fall in current investment does not result in a fall in the number of goods and services produced in the current fiscal period. It results in a fall in the efficiency of production of future goods and services due to depreciation of machinery that is worn out.
- Investment Expenditure refers to gross investment, which does not subtract depreciation of capital goods (cost of replacing capital goods subjected to wear and tear).

Cause	Key Analysis/Technical Terms
Income Determinant (Induced I)	Demand for Goods and Services, Increasing Productive Capacity Note: In the short run, income does not affect investment. This is because the effect of income takes time to be received by firms
Interest Rate	MEI, cost of borrowing funds, rate of return on investment Opportunity cost of using internal funds to finance investment projects
Business Expectations	Business prospects, profit expectations, increasing productive capacity
Cost & Efficiency of Capital Equipment	Returns on investment
Government Policies	Corporate tax, After-tax profitability

Ultimately, all investment decisions are based on the returns on investment. Hence, there are cases when these relationships do not hold true. For example, during a recession, governments would reduce interest rates to encourage spending, but this may not necessarily result in an

increase in investment because firms may see that there is low demand for their products and hence they do not expect a high amount of purchases. As such, there would be no point in expanding their productive capacity as they would be additionally spending on capital which is not needed to meet the demand. Hence, it is in fact, the returns on investment is what truly determines firms' investment decisions.

5.3 Government Expenditure

Government Expenditure (G) is spending by the government in return for goods and services.

- Government expenditure is dependent only on what the government plans to do in order to achieve its economy's macroeconomic aims.

Important Things to Note

1. It is important to distinguish between (G) and (C).
    - Government Expenditure results in the production of goods and services which are demanded by the government. Hence, even when the government spends to produce goods which satisfy the wants and needs of households, it is not considered government expenditure because the goods and services were demanded by the government, and not consumers.
    - Consumption expenditure results in the production of goods and services which are demanded by households. Hence, if the government gives vouchers to households which are spent by households, it is considered to be consumption expenditure because households the goods and services purchased using vouchers are demanded by consumers. The money may have originated from the government, but it was used by consumers

2. Government expenditure is entirely autonomous (does not change with income)

3. Government expenditure is not dependent on tax revenue. The government may run a budget deficit or surplus by borrowing money to finance its expenditure.

5.4 Net Exports

Net Exports (X - M) refers to the difference between a country's export revenue and its import expenditure. Export revenue is spending by the foreign sector in return for domestic goods and services. Import expenditure is spending by households in return for foreign goods and services.

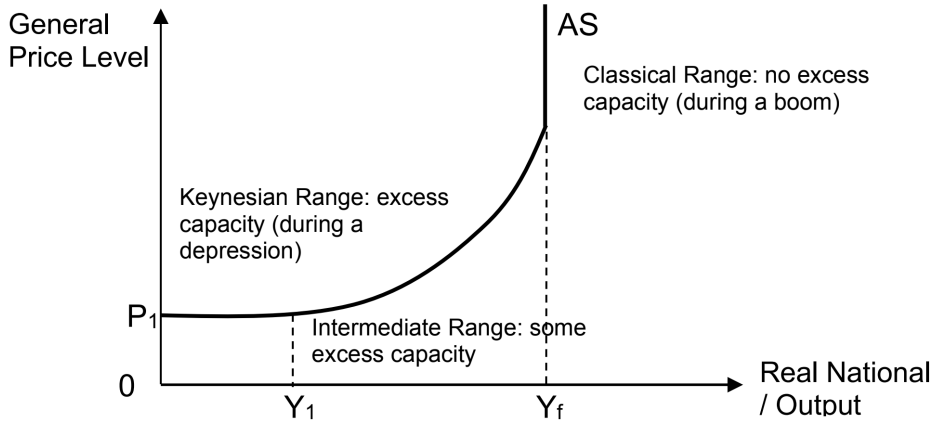
- From this definition, $C = C_d + M$. As a result, it may seem that an increase in M does not cause a fall in AD theoretically because it causes a proportionate increase in C to exactly offset the increase in M, ceteris paribus. However, this is not true for some reason.

Cause	Key Analysis/Technical Terms
Foreign and Domestic Income	Purchasing power Note: An increase in foreign income is not an income determinant. The GPL-RNY graph only applies to the domestic economy, so an increase in foreign income can be the initial cause of an increase in AD.
Foreign and Domestic Prices	Relatively cheaper/relatively more expensive, Substitutes in consumption
Foreign and Domestic Good Quality	Relative quality, tastes and preferences
Exchange Rate	Appreciation, Exported goods in terms of foreign currency, imported goods in terms of domestic currency. <u>Demand</u> for exports VS <u>Quantity demanded</u> for imports • Since the price of exported goods and services did not change in terms of the domestic economy's dollars, but the quantity demanded did, it is recorded as a change in the demand for exports.

6 Aggregate Supply

Aggregate Supply (AS) is the total value of domestically produced final goods and services firms in an economy would like to produce at different general price levels.

The AS consists of 3 segments: the Keynesian Range, Intermediate Range and Classical Range.



In the ***Keynesian Range***, there is sufficient excess capacity for output to increase without a need to increase prices. This may occur in a severe recession, when firms are employing far less resources than is available, so increasing production at a point where unemployment is high is unlikely to result in any increase in the costs of production per unit output as many are actively seeking jobs and do not care that much if the pay is not too high, so there is no need to increase prices as the profitability of selling the same goods and services remains the same.

In the ***Intermediate Range***, bottlenecks begin to appear as the economy moves closer to maximum capacity. To increase production in order to increase output, there will be an increase in derived demand for resources, increasing the cost of production. Hence, firms will partly offset this by increasing output and partly by increasing prices in order to increase revenue and protect their profitability.

In the ***Classical Range***, the economy is at full employment and all resources are fully and efficiently employed. Any additional spending causes a shortage of resources causing prices of the resources to increase. Firms cannot increase production and can only pass on the higher costs by raising prices to protect their profit margin. Hence, at Yf, additional spending can only increase prices without an increase in output.

6.1 Short-Run Aggregate Supply

Short-Run Aggregate Supply (SRAS) is determined by the cost of production. It is the keynesian and intermediate range of the AS curve. Hence, anything that shifts the SRAS reflects a change in the willingness of firms to sell domestic final goods and services.

Cause	Key Analysis/Technical Terms
Cost of production	Profitability

6.2 Long-Run Aggregate Supply

Long-Run Aggregate Supply (LRAS) is determined by the productive capacity of an economy. It is the classical range of the AS curve. Hence, anything that shifts the LRAS reflects a change in the productive capacity of the economy. The causes of a change in LRAS are hence the same causes which change the PPC of an economy.

Cause	Key Analysis/Technical Terms
Quantity of Resources	Increase in goods and services the economy has the capability to produce
Quality of Resources	Increase in the productivity of each resource, output per unit input
Technology	Labour enhancing technology, labour replacing technology, output per unit input

7 The Economy at Equilibrium

After changes in AD and AS, the economy stabilises and reaches a state of equilibrium, where there are no further changes in AD or AS. This is when sales (AD) are equal to production (AS). In other words, when National Income = National Output = National Expenditure. There is an implicit condition in Eli's Story of Macroeconomics in order for us to reach the above conclusion. This condition must be satisfied in order for the economy to be in equilibrium:

Total Withdrawals = Total Injections

Changes in Aggregate Demand

Short Run: When AD increases, sales exceed production and there is an unplanned fall in stocks, prompting an increase in production. With an increase in production, output increases. If the economy is producing in the Intermediate range, bottlenecks begin to appear as the economy produces closer to its productive capacity. To increase production in order to increase output, there will be an increase in derived demand for resources, increasing the cost of production. Hence, firms will partly offset this by increasing output and partly by increasing prices in order to increase revenue and protect their profitability. Hence, The general price level will also increase. The increase in the general price level causes the increase in output to be smaller because the same increase in nominal income can no longer buy as many goods and services as they have become more expensive.

Long Run: the economy is at full employment. Any additional spending causes a shortage of resources which cannot be resolved as all resources are already fully and efficiently employed, causing only prices of the resources to increase. Hence, firms cannot increase production and can only pass on the higher costs by raising prices to protect their profit margin. Hence, additional spending only increases the general price level without an increase in output.

Length of Analysis

Generally, if the question only asks for changes in output, the first two sentences of the Short Run analysis suffice as an explanation of the direction of change in output. Even if the AD increases into the intermediate range, this is the analysis you provide as long as the question does not require you to discuss changes in general price level. However, if the question does require analysis on the direction of changes in general price level, such as a question on inflation, at least the short run analysis is required.

That being said, the analysis of the direction should be coupled with a brief statement of the multiplier effect (covered in the next section) if the depth of analysis seems short. Gauging depth comes with practice.

Increases in Aggregate Supply

Short Run: When cost of production decreases, the SRAS increases. Firms will respond partly by increasing production due to higher profitability causing real national output to increase, and partly by passing the lower costs in terms of lower prices to consumers to be price competitive and hence, the general price level decreases.

Long Run: With an increase in QQT, there is an increase in the ability of the economy to produce goods and services in the same period of time. The LRAS increases with an increase in the productive capacity of the economy, causing the full employment output to increase. If the economy is producing near full employment, this will result in an increase in real output because a rise in (QQT) results in a rise in supply of resources, resulting in a decrease in the cost of production. firms will again respond partly by increasing output and partly by decreasing prices in order to be price competitive. Hence, the general price level will also decrease.

Decreases in Aggregate Supply

Short Run: When cost of production increases, the SRAS falls. Firms will respond partly by cutting back on production due to lower profitability causing real national output to decrease, and partly by passing the higher costs in terms of higher prices to consumers to maintain their profit margin by raising prices and hence, the general price level increases. (This leads to a reduction in consumers' real purchasing power, causing workers to bargain for higher wages. If firms accede to these demands, then SRAS will further decrease. Hence, there is a sustained decrease in SRAS causing a sustained increase in GPL.)

Long Run: Realistically, the LRAS of a country does not decrease, and only really remains constant even in less developed countries.

8 The Multiplier Effect

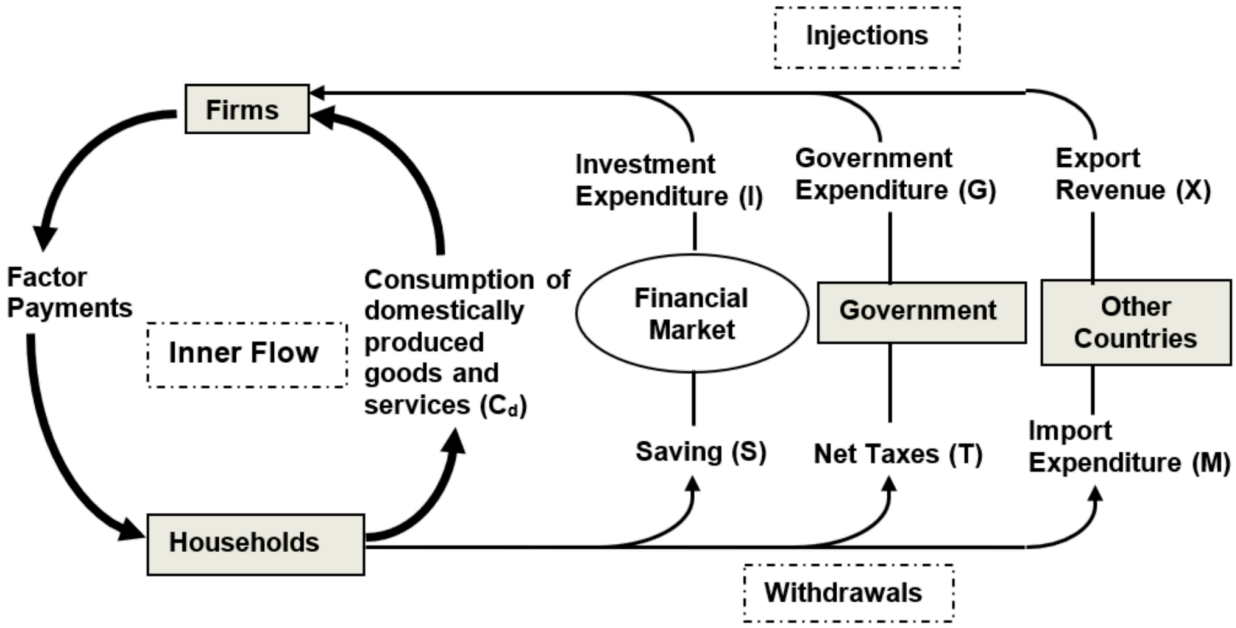
Generally, an initial increase in AD is observed to cause a more than proportionate increase in National Output. This is a result of the Multiplier effect.

The Multiplier is a numerical coefficient by which an autonomous change in AD is multiplied to show the final change in income.

Eli's Story of Macroeconomics (The Multiplier Effect)

In the Keynesian era, the domestic economy is experiencing a recession. There is a lot of spare capacity in the economy. To reduce unemployment, the government decides to spend $100 million on building infrastructure.

We assume that all households spend 60% of any additional income on domestic consumption and save 40% of it, for ease of calculation. As it turns out, the higher government expenditure creates higher income, prompting higher consumption and withdrawal. This cycle continues until the economy is once again in equilibrium when total withdrawals = total injection. We assume that there are no other injections and withdrawals made for theoretical illustration.



Time Period	Increase in Y	Induced Increase in C_d	Increase in Withdrawals
1	$100	$60	$40
2	$60	$36	$24
3	$36	$21.60	$14.40
4	$21.60	$12.96	$8.64
5	$12.96	$7.78	$5.18
6	$7.78	$4.67	$3.11
7	$4.67	$2.78	$1.87

8	$2.78	$1.68	$1.12
9	$1.68	$1.01	$0.67
10	$1.01	$0.60	$0.40
:	:	:	:
∞	$0	$0	$0
	Total Increase in Y	Total Induced Increase in C_d	Total Increase in Withdrawals
	$250	$150	$100

As a result of this cyclical increase in income, in answers explaining the full multiplier process, we have to draw multiple shifts in the AD. However, the multiplier analysis varies in depth depending on what the question is focusing on.

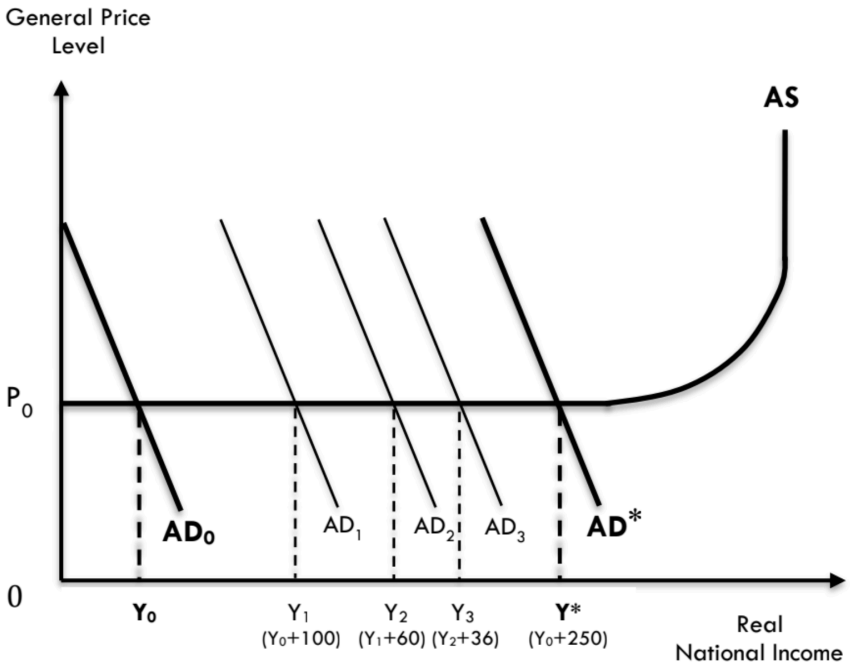
Full Multiplier:
This is to be written if the focus of the essay is on the magnitude of change in AD (75-80%). If there is only one cause and one effect for AD analysis and the effect is on national income, you should write this. If you write quickly, you should also write this if it is a 10m effect-type question that has little depth without it.

The rise in AD will result in a more than proportionate rise in national income via the multiplier effect. The multiplier effect is based on the principle that expenditure generates income, and income generates expenditure. A rise in expenditure causes a rise in income, which in turn leads to further rise in expenditure. Suppose in the first instance, national income rises by $100 million due to the rise in net exports as illustrated by the shift of AD_0 to AD_1. This rise in $100 million of income could be, for example, a rise in the income of building workers and contractors, who will in turn spend $60 million less on domestically produced goods assuming the country's marginal propensity to consume (MPC) is 0.6. The remaining $40 million will be in terms of increased savings, increased income taxes to the government, and increased spending on imported goods.

The $60 million increase in consumption will in turn result in higher output and income for firms and workers by $60 million in the next time period. This is illustrated by the shift of AD_1

to AD_2. Due to their increased income of \$60 million, these firms and workers will in turn increase their consumption by \$36 million, which will in turn generate more output and income again. This is illustrated by the shift of AD_2 to AD_3.

After each successive round, the increase in income gets smaller because of leakages. Eventually, the multiplier process will end when the additions to withdrawals total \$100m (i.e. Δwithdrawals = initial Δinjection) and the economy has returned to equilibrium but at a higher output level Y*. The total rise in national income is given by: ΔY = 1/(1 - MPC) x ΔJ (Injections) = 1/(1 - 0.6) x \$100m = \$250m. Hence the rise in net exports of \$100 million results in a \$250 million increase in national income.



Brief Multiplier:

This is to be written mainly as an evaluation for effect-type questions. If you write slowly, you should also write this if it is a 10m effect-type question that has little depth without it.

To evaluate, despite the large increase in AD from AD_0 to AD_1, the final increase in national output (NY) would depend on the size of the country's multiplier (k) given ΔNY = ΔAD x k. This is because the increase in AD will result in a smaller, but still more than proportionate increase in national output via the multiplier effect if the multiplier is small. In turn, there would be a smaller increase in derived demand, and thus a smaller decrease in demand deficient

unemployment compared to if k is large. The multiplier is based on the proposition that expenditure creates income which in turn generates expenditure. The cycle repeats and at each successive round, the increase in income output gets smaller and smaller because of the increase in leakages in the form of savings, taxes and imports.

Statement of Multiplier:

If the focus is on AD direction, mentioning the multiplier will give you an additional mark.

The fall in AD will result in a more than proportionate decrease in production and output from Y_1 to Y_0 via the reverse multiplier process, which is based on the proposition that a fall in expenditure leads to lower income, and lower income leads to a further fall in expenditure.

Factors affecting Magnitude of Change in National Income

Size of the Decline in AD

As AD declines, sales will be less than production because aggregate demand (AD) will be less than aggregate supply (AS). There will be an unplanned increase in stocks, prompting firms to reduce production and thus employ less factors of production and hence pay out less factor payments. As a result, national output would decrease. The larger the decline in AD, the larger the unplanned increase in stocks. Firms would thus have to reduce production by a larger extent to bring stocks back to the optimal level, causing a larger contraction in GDP.

- For example, a more far-reaching impact was observed during the 2023 COVID-19 pandemic where Singapore faced a much larger decrease in AD thus the sharpest fall in Singapore's real GDP in history as compared to the 1997 Asian Financial Crisis as the latter is more localised while the former is a global crisis.

Size of the Multiplier

In the circular flow of income, all expenditure eventually becomes someone's income. Therefore, when there is an autonomous fall in national expenditure, national income also falls. Hence, consumption expenditure falls which further reduces income earned. The initial fall in expenditure hence results in a more than proportionate fall in the national output by the reverse multiplier process.

Given $\Delta NY = k \times \Delta AD$, the larger the multiplier (k), the larger the decrease in output when AD declines. Moreover, given that k = 1/MPW, the higher the marginal propensity to withdraw

(MPW), the smaller the size of the multiplier and hence the smaller the eventual decrease in GDP when AD declines.

This is because a higher MPW means that there is a larger fall in withdrawals as income decreases. As income falls, households with a higher MPW will save less, buy less imports and pay less taxes. With a higher MPW, the income that is saved, taxed or spent on imports also falls more. For example, (examples provided below. Pick ONE) This implies a smaller decrease in consumption expenditure and hence a smaller overall decrease in GDP.

- MPS: Thriftiness, Government policies like compulsory savings scheme such as CPF
- MPT: Income tax rates
- MPM: Reliance on imports, Tastes and preferences for imports

Price flexibility in the Economy

For Decreases in AD

As AD declines, firms may cut back production in the next production period to use up excess inventories, reduce prices to increase quantity demanded to clear excess stocks, or both. When prices are inflexible due to agreements like contracts, there will be a greater reduction in production to run down the inventories. There would hence be a larger decrease in output when AD declines. However, if the contracts expect a certain quantity of production, such as in the case of exported goods and services, then the fall in AD may have a less pronounced effect on output and the economy will largely see a fall in general price level.

- For example, Singapore's Flexible Wage System enables firms to cut wages more quickly in response to a downturn in demand. The fall in labour cost buffers the effect of a declining AD and the eventual reduction in output and thus GDP turns out to be much smaller.

For Increases in AD

Real national income may not increase by the full multiplier effect if the economy is nearing full employment, as the economy is facing resource bottlenecks and hence, firms will partly offset the increase in AD by increasing output and partly by increasing prices in order to increase revenue and protect their profitability. Real national income increases by the full multiplier effect only when there is the existence of a lot of spare capacity in the economy to increase production.