T1W9 Class Test 2
How the Macroeconomy Works
Mark Scheme

(a) Explain the factors that affect investment and exports. [10]

(b) Discuss the effects of a rise in investment on actual growth and potential growth of different countries. [15]

Part (a)

Students are expected to identify and explain 2 determinants of investments and exports. They are also expected to use examples of substantiate their explanation.

Introduction:

Definition of key terms:

- Investments is the act of acquiring new fixed capital assets like buildings, plants, equipment and machineries by firms (also known as 'fixed capital formation'). Investment also includes the accumulation of stocks and inventories such as raw materials, semi-finished goods and finished goods held by the producer (also known as 'changes in physical stocks').

- Exports refer to the spending of domestically produced goods and services by foreigners (export revenue).

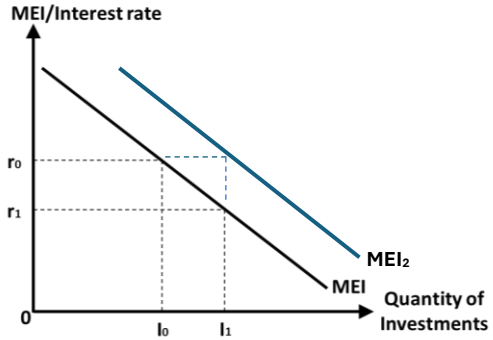
There are many factors that affect investments and exports in a country.

Body:

Requirement 1: Explain factors affecting <u>Investment</u>

a) Changes in interest rates

According to the Marginal Efficiency of Investment (MEI) theory, there is an inverse relationship between interest rate and investment. The MEI refers to the expected rate of return (or profit) of an additional unit of investment while the rate of interest (r) refers to the cost of borrowing. At any instance, there will be many investment opportunities with varying MEI or expected rate of returns. By ranking such investment opportunities from highest to lowest MEI, a downward-sloping MEI curve will be derived as seen in below figure.



To decide whether to undertake an investment project, the rational firm will conduct a cost-benefit analysis. A firm will only invest if it makes a profit - meaning that the expected rate of return of investment

(i.e. MEI) must be greater than or at least equal to the cost of borrowing for investment (i.e. the interest rate). If MEI $\geqslant$ r, firms will undertake the investment. If MEI < r, firms will not undertake the investment.

When interest rate falls, there will be more investment projects that would yield a MEI or expected rate of return that is greater than or equal to the new lower interest rate and thus cause the level of investment to increase, ceteris paribus.

b) Changes in business confidence and expectations

Business confidence refers to how optimistic firms are about their future sales and the level of economic activity. Firms form their expectations by looking at the current state of the economy, political factors, and global situation. If firms become more optimistic about future sales and economic activity, they will expect the rate of return on investments to increase, causing investment to increase.

c) Changes in corporate tax rates

If the government reduces the corporate tax on profits of businesses, firms' after-tax profits increase. This increases firms' willingness and ability to invest, leading to an increase in investment expenditure.

d) Changes in technology

Improvements in technology stimulate investment spending. This is because the implementation of new technology often requires new capital. For instance, advances in the sharing economy have encouraged massive investments in new sectors -the use of idle assets such as cars and spare bedrooms has led to growth of Uber and Airbnb.

The above factors will result in a shift of MEI curve to the right (MEI to MEI_2): Even when interest rates are unchanged (r_0), a rightward shift of the MEI curve will increase investment from I_0 to I_1.

Requirement 2: Explain factors affecting <u>Exports</u>

a) <u>Changes in national income of trading partners</u>

- A decrease in the income levels of trading partners can decrease exports.
- For example, if trading partners of Singapore (e.g. the US) enters a recession
- They would experience negative economic growth
  - Previous events that have severely impacted Singapore include the 08-09 US Financial Crisis and the more recent COVID-19 Pandemic which caused recessions in many of our trading partners
- This means that average incomes will decreases, which decreases their purchasing power
- Assuming Singapore exports are normal goods YEDx > 0, the demand for exports will decrease leading to lower export revenue.
- Therefore, falling income levels of one's trading partners will cause export revenue to decrease.

b) <u>Changes in relative price levels between countries</u>

- If the price level in one country rises relative to her trading partners, then in the world market, the demand for its goods and services will fall if they are substitutes to the foreign goods and services produced by the foreign countries.
  - For example, in a country with an ageing population such as Singapore, the number of workers entering the labour force is less than the workers leaving the labour force though retirement.
  - Moreover, the Singapore government has also slowed down the intake of foreign workers in many sectors including construction and F&B.

- This might cause AS to fall and the GPL to rise.
- This would cause the domestic exports have become relatively more expensive compared to its foreign substitutes which reduces our export competitiveness
- Thus, the export revenue of the country will decrease.

c) <u>Changes in foreign exchange rates</u>

- Changes in foreign exchange rates affect the price of imports in terms of domestic currency and the price of exports in terms of foreign currency.
- If the Singapore dollar depreciates relative to that of its trading partners, Singapore's goods and services become cheaper in terms of foreign currency.
- This results in foreigners switching towards purchasing more of Singapore's goods (i.e. Singapore's exports) which increases Singapore's domestic export revenue.
- This could result in a rise in exports.

Conclusion

In conclusion, there are many factors that results in changes in investments and exports. Apart from (whatever factors that students explained), there are other factors including (suggest other factors not explained).

Mark Scheme:

Knowledge, Application, Understanding and Analysis		
L1	For an answer with mostly irrelevant with few valid points made incidentally regarding investment and net exports. Contains conceptual errors.	**1-4**
L2	For an answer with some explanation the factors affecting investment and net exports. Examples are not used consistently throughout the answer.	**5-7**
L3	For an answer with a clear and detailed explanation of the factors affecting investment and net exports with the use of examples.	**8-10**

Part (b)

Introduction

Define key terms:

- Investments is the act of acquiring new fixed capital assets like buildings, plants, equipment and machineries by firms (also known as 'fixed capital formation'). Investment also includes the accumulation of stocks and inventories such as raw materials, semi-finished goods and finished goods held by the producer (also known as 'changes in physical stocks').

- Economic growth – sustained increase in real GDP.
    - Actual growth – increase in real NY/GDP
    - Potential growth – increase in productive capacity – increase in the level of output that can be produced in the economy when resources are fully utilized.

Interpret the question:

- An increase in investment would have a positive effect on both actual and potential growth.
- However, the extent of this impact will differ between countries:
    - developing vs developed countries

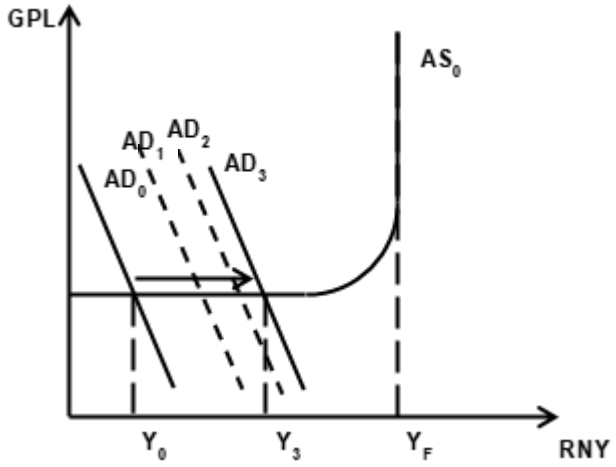
- welfare states vs non-welfare states
- any other categorization

Body:

Requirement 1: Discuss the effects of rise in investment on actual growth of countries

Thesis: Rise in investment will lead to actual growth (rise in equilibrium real NY)

- Rise in investment will cause an increase in AD.
- As I is a component of AD, AD would increase from AD0 to AD1.
- The increase in AD would start a multiplier process, which is based on the principle that spending creates income and income generates spending.
- The increase in AD causes a drawdown on inventories/or shortage and hence, signal to firms to increase production.
- Firm then hire more factors of production from households, and in paying households factor incomes, causes national income to increase.
- As national income increases, households spend part of their income on consumption, causing an increase in induced consumption. This leads to further increases in AD and increase in national income.
- However, the increase in consumption is smaller each round due to withdrawals (savings, taxes and imports) as not all of the income is spent.
- This continues until the initial increase in AD is completely withdrawn from the circular flow, and where the initial increase in investments is equal to the total increase in withdrawals.
- Thus, the increase in investments will cause a more than proportionate increase real national income from Y0 to Y3.



**Students should draw the AD-AS with dashed lines to show the stages of the multiplier process*

R1 EV: Different countries→different extent of increase in RNY/Actual growth for given change in I
Students should explain at least 1 evaluative point

1. Different size of the multiplier

- The multiplier is a numerical coefficient by which a change in AD is multiplied to give a final change in real national income

- K = 1/(MPS + MPM + MPT)
- In some countries the size of the multiplier may be small.
  - For example, in Singapore, the marginal propensity (MPS) to save is high.
  - This is because there are mandatory savings schemes like CPF and consumer behaviour driven by cultural factors might mean savings rates are higher than in other countries.
  - There is also a high marginal propensity in imports(MPM) as Singapore is heavily reliant on imports. This is because we are a small resource scarce economy that needs to import significant quantities of factors of production. These include oil, food, sand, metals etc.
- With a small multiplier, this means that increase in investment is more quickly withdrawn from circular flow.
- Smaller cycles of spending and re-spending will result in national income not increasing as significantly compared to if the multiplier was larger.
- Hence, an increase in investment will not affect the equilibrium level of national income as significantly in countries with a smaller multiplier, compared to other countries where multiplier is more pronounced such as in the US with relatively smaller MPS (lack value of thrift, consumerism) and MPM (large country with resources).

2. Different state of the economy/Spare Capacity

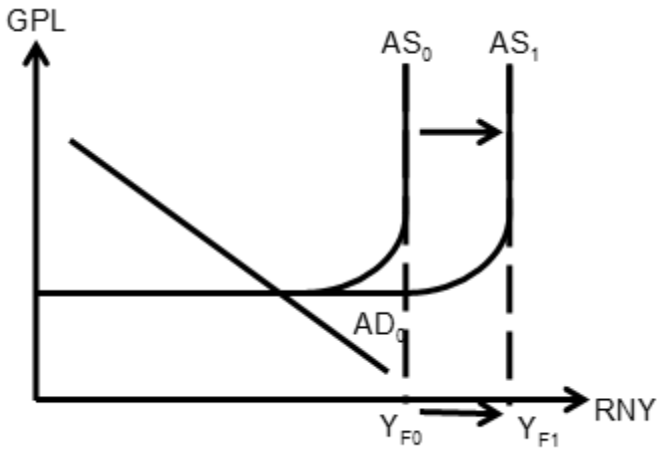
For given increase in I and size of k,

- When there is ample spare capacity, the full k-effect can take place → the impact of real NY is more significant than
- When there is lack of spare capacity, the rise in I will lead to inflationary pressures/rise in GPL due to bottlenecks in production, and diminishing returns, which dampens the k-effect → the impact of real NY will be smaller.
- Typically, developing countries such as India and Vietnam will not be near full employment, with ample spare capacity while developed countries such as Germany and Japan tend to be near full employment where resources are nearly fully utilized (unless it is in a recession).

Requirement 2: Discuss the effects of rise in investment on potential growth of countries

<u>Thesis: The rise in Investment will increase potential growth of countries (rise in Yf)</u>

- A rise in investments will increase a country's productive capacity in various ways:
  - Investment – accumulation of fixed capital assets such as machinery and plants à this will increase the quantity of FOP in the country à rise in the capacity to produce more goods and services → AS will rise (rightward shift of the AS curve) → Yf rises from Yf0 to Yf1
  - If the rise in I à rise in K-L ratio (capital deepening) à increase in efficiency/productivity → rise in quality of FOP à more goods and services can be produced with given FOP → AS will rise (rightward shift of the AS curve) → Yf rises
  - Students may also argue that the rise in investments may also result in fall in COP and rise in AS due to more efficient capital goods (downward shift of the AS curve). But do note that the focus for this part of the analysis is on potential growth.



Possible AT: Not necessary (points are relatively weak)

- If the increase in I is low (Gross I) → Net investment falls → fall in K-stock → fall in Yf
- Rise in I may lead to a fall in potential growth if investments are made in pollutive industries or at the expense of deforestation etc. causing a depletion of natural resources.

R2 EV: Different countries → different extent of increase in potential growth for given change in I
Students should explain at least 1 evaluative point

1. Different types of Investments

- If capital goods are more of the same, no change in technology → smaller increase in Yf as compared to capital goods with higher level of technology – higher increase in Yf
- Domestic investment → smaller increase in Yf as compared to Foreign Direct Investments → larger increase in Yf due to transfer of skills and technology typically associated with FDIs.

2. Different skill level of labour force

- Countries with skilled labour force e.g. Singapore, Germany and Japan → high technology absorption rate → better able to utlised newly acquired capital goods → higher increase in Yf
- Countries with low skilled labour force e.g. Myanmar, Laos → low technology absorption rate → less able to utilize newly acquired capital goods → lower increase in Yf

Conclusion and Overall Evaluation

- Increase in investments will lead to both actual and potential growth in most if not all countries. Even if countries are at full employment, the increase in potential growth will allow countries to achieve actual growth in the longer run.
- However, the extent of increase in actual growth and potential growth in different countries will differ and is dependent on a few factors as explained earlier:
  - Size of the multiplier in different countries
  - Availability of spare capacity
  - Extent of increase in I → what caused the rise in I in the first place?
- Suggestion of type of countries that will achieve a higher rate of actual growth and potential growth.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	• *Little / non-existent use of economic theory / framework in the explanation.* • *Limited scope and depth of explanation* • *0/K, K/K*	***1 – 4***
L2	• *Lack of scope – did not look at both actual and potential growth.* • *Insufficient depth of explanation – no multiplier process when explaining the impact on RNY. Poor links made to productive capacity.* • *K/C, C/C*	***5 - 7***
L3	• *A well-developed answer with good use of economic terminology and AD-AS diagrams.* • *Answer has good scope and good depth of explanation.* • *C/A, A/A*	***8 - 10***
Evaluation		
E1	*An unexplained judgement/conclusion that is not linked to the context of the question:* *1m – extent of rise in rNY that is unexplained with no links to different countries* *2m – 2 unexplained factors affecting the extent of rise in RNY*	***1 - 2***
E2	*Evaluative assessment supported by economic analysis* *Some substantiation of an evaluative comment and/or conclusion* *3m – a well explained evaluative judgement for 1st point + an evaluative statement for the 2nd point* *4m – 2 well explained judgements (size of k / extent of rise in I / avail of spare capacity)*	***3 - 4***
E3	*Well explained evaluative judgements PLUS a summative conclusion* *5m – e.g. impact of different countries differ because the characteristics and state of economies are different.*	***5***