

# **ECONOMICS**

## **Higher 2**

### **Syllabus 9570**

Examiner's Report

Year 6 Preliminary Examination 2025



# ECONOMICS

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Y6 H2 Preliminary Examination 2025

Paper 9570/01  
Paper 1

## Question 1      Electric Vehicles

- (a) (i) With reference to Table 1, explain how changes in prices of EV batteries might have affected sales of EVs over the period 2019 to 2021. [2]

### Suggested Answer

- Table 1 shows price of EV batteries falling and EV sales rising from 2019 to 2021
- As EV batteries are inputs, the fall in price reduces the production cost of EVs. Thus, supply of EVs rises, causing a fall in price that increases the quantity demanded i.e. sales [in million units]

### Mark Scheme:

- 1 m for link to input and production cost
- 1 m for link to SS, price and sales (quantity demanded)

### Examiners' Comments:

Most answers were awarded the full 2m, though some were exceedingly long - complete with diagrams and detailed adjustment process. For a 2-mark question, understanding the gist that inputs affect the supply of the final good - EVs, thus price and quantity will suffice.

The following are areas for improvement:

- Batteries are not complements, but inputs. Complements refers goods that are in joint demand. They do not have the same meaning as inputs – which are a derived demand or factor of production for EVs
- Some answers stated that both share an inverse relationship without any further economic reasoning. Others did not link their analysis to a change in the price of EVs – which is paramount in determining the change in sales volume
- Some answers applied PED to examine the effect on revenue when in this context, Table 1 clearly indicated that sales in 'million units' i.e. quantity.

- (ii) Explain one possible reason why the above relationship was not observed in 2022 and 2023. [2]

### Suggested Answer

- **Observation:** While price of batteries rose, EV sales continued to rise
- **Analysis:** any 1 reason to explain 'there is no ceteris paribus in reality – i.e. changes in other determinants affect the sales of EVs. These increases in demand and/or increase in supply lead to a rise in equilibrium quantity that outweighs the fall in quantity due to more expensive batteries
  - switch in taste and preference towards EVs due to convenience; intensive advertising & promotion by EV producers; or people care for a greener environment as EVs reduce carbon emissions – demand rises, causing sales i.e. equilibrium quantity to increase
  - price war amongst EV firms/government subsidy in China (that reduces production cost) – fall in price of EVs causing a rise in quantity demanded

- price of other important inputs such as steel fell – reduces production cost, increases supply of EVs and price – thus rise in equilibrium quantity
- any other valid determinant

**Mark Scheme:**

- 1m for stating determinant and elaboration of that determinant/linked to context
- 1m for linking to change in DD or SS

**Examiners' Comments:**

While most candidates recognised that this question was asking for other reasons that caused the rise in sales of EVs, the quality of analysis varied across answers.

Some problems include:

- merely stating that there is a 'change in taste and preference' without giving a reason for that change
- giving a reason without stating whether it is a demand or supply determinant

- (b) Explain whether the data in Table 2 allows you to conclude which firm is most likely to shut down in the short run. [4]

**Suggested Answer**

- Define SR: time period where there is at least one fixed factor e.g. machines
- To make a decision on whether to continue production or shut down in the short run, the firm has to consider whether its TR is more or less than TVC. Firm should shut down in the short run if TR is less than TVC.
- **T: With reference to data:**
  - As shown in Table 2, 3 firms – Nio, Rivian and XPeng are making losses where  $AR < AC$
  - It may seem that Rivian might be the most likely to shut down as it incurred the largest loss of US\$5.43 billion
- **AT: Data does not allow a conclusion to be made:**
  - Limitations of data: Table 2 only shows profit levels – need data on TR and TVC
  - Analysis:
    - In the SR, only TVC is considered in the shut-down decision since TFC has been incurred irrespective of the production level i.e. when output = 0, TFC is still incurred
    - The firm will decide to shut down only if  $TR < TVC$ 
      - In such a scenario, in continuing production, the TR cannot even cover TVC [such as wages and cost of raw materials]
      - It is a better option to shut down, TVC will no longer be incurred when production = 0 and the firm only loses TFC
      - In other words, loss is minimised when it shuts down

**Mark Scheme:**

- 2m for reference to Table 2 on loss-making firms and assessing data limitations
- 2m for analysis of shut-down condition  $TR < TVC$  clearly linked to what is meant by loss minimisation

**Examiners' Comments:**

- This question was rather poorly attempted as many candidates could not analyse clearly how shutting down when  $TR < TVC$  may allow the firm to minimise losses.

- There were many answers that merely stated the condition for shut-down and asserted that the data was inconclusive without any economic analysis. Others were confused over whether TVC or TFC was the criterion for such a decision.
- There were also a handful of answers that did not make any attempt to refer to the data in Table 2 to identify loss-making firms.

(c) **Explain, with the use of two examples, why China may have comparative advantage in the production of EVs.** [4]

- Define comparative advantage: If China has comparative advantage in EV production, it means it can produce EVs at a lower opportunity cost i.e. less of another good such as solar panels foregone
- analysis can be linked to lower MC or AC [or simply lower COP] that reduces the opportunity cost of production
- any 2 of these examples: **[2 m for each example]**
  - **Example 1:** Extract 1 states that 'China has been relying on a fiercely competitive market and huge domestic market to command transformative technology'.
    - 'fierce competition' will force firms to cut any slack in cost structure and strive to be X-efficient by operating at a point on the LRAC curve. In addition, the bid to be dynamic efficient through process innovation also leads to better production methods. Together these serve to reduce SRMC and SRAC or LRAC

OR

- Huge domestic market may lead to expansion of output to cater to that high demand. As a result, the firm may enjoy internal economies of scale and a lower LRAC. If linked to SR cost, it may mean lower SRMC and SRAC. Moreover, the possible higher profits may allow for process innovation.
- **Example 2:** Extract 1 - China's dominance in important inputs for EVs such as batteries, and other minerals - cobalt and graphite. This may imply ample supply or ability to reduce disruption to supply due to reliance on imported inputs. The stable price that ensues may lead to significantly lower MC and AC.
- **Example 3** has to be articulated clearly: Extract 1 states China government's massive subsidies for EV production. If these subsidies are intended for r & d efforts by the firms, the resultant effects of process innovation on MC and AC can lead to a lower opportunity cost and thus comparative advantage.
  - If answer links subsidies directly to a lower COP and increased competitiveness, then it may not be linked to opportunity cost. 0 credit.

**Mark Scheme:**

- 2m for each example
- max 3m if concept of lower opportunity cost not analysed
- max 2m if answer is purely theoretical without any reference to case material

**Examiners' Comments:**

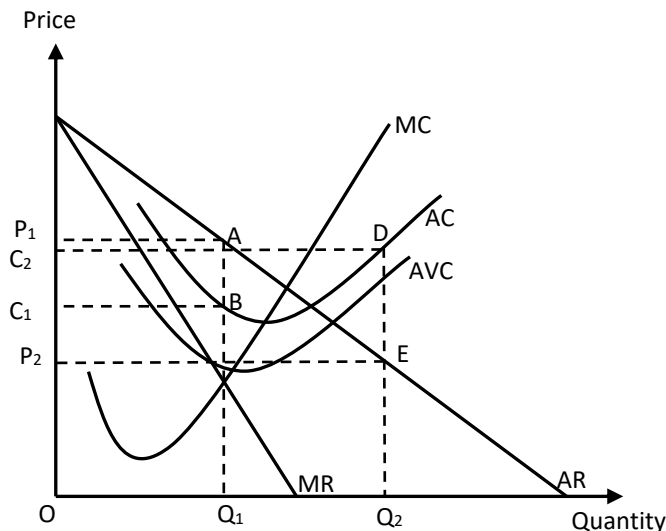
- Many answers did not link the effect of a fall in production cost to the concept of lower opportunity cost - either in terms of 'less of another good foregone' or 'need for less resources to produce other goods'.
- Most answers correctly identified China's 'fiercely competitive market' and 'control of inputs' as the two distinct reasons for its comparative advantage. However, the quality of analysis varied. Those that linked the examples to issues of process innovation, internal economies of

scale and less reliance on imports (and thus no transport costs) were definitely better than those that **simply stated** that huge factor endowments led to lower cost.

- Others that used 'government subsidies' as a reason were less successful in their analysis. For a government to heavily subsidise EV production, it is likely that China may not have a comparative advantage. Also, mere subsidy which results in lower COP and pricing does not constitute CA since the opportunity cost / resources used in producing EV remains the same. A more credible response might be to link subsidies to the success of r&d efforts by the firms. This may allow the firms to actually gain a 'real' comparative advantage in EVs.
- A few answers used reasons that are not in the case material. An oft-cited reason pertains to China's cheap labour. But such answers could not justify how cheap labour can be useful for developing comparative advantage for a tech-intensive industry.

**(d) Discuss the extent to which BYD's 'price-for-volume' approach is beneficial to consumers and producers. [8]**

- 'Price-for-volume' approach is an attempt to sell a larger volume of goods at a price less than profit-maximising price. It may be to the extent of a price war where  $AR < AVC$
- This approach has been used by BYD - both at home and in overseas markets
  - In Extract 2, the industry including BYD is using 'steep discounts to entice buyers'
  - In Extract 3, BYD embarked on aggressive expansion outside China by 'undercutting' legacy carmakers such as Volkswagen and Toyota
- Nonetheless, the effects on domestic and overseas consumers may not be markedly different



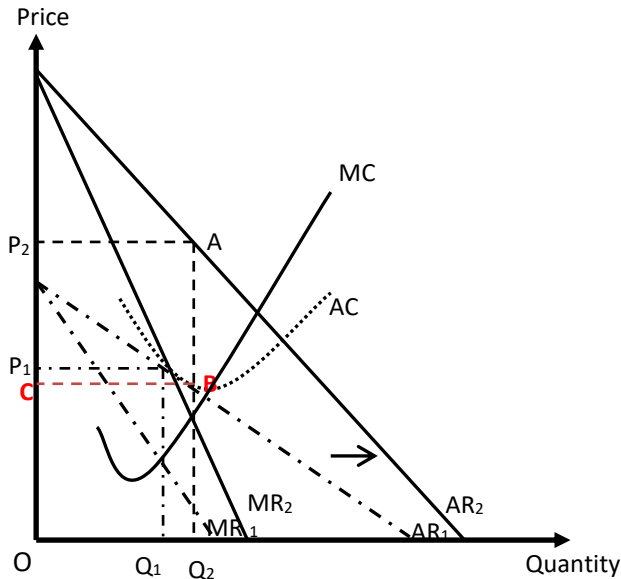
- As shown in the diagram above, BYD sells at a price  $P_2$  lower than its profit-maximising price  $P_1$  and at a higher quantity  $Q_2$ . Other firms may have to follow BYD's price for fear of losing market share
- This approach is likely to lead to lower profits or even losses for all firms in an extreme case of a price war. As shown, BYD's initial supernormal profits of  $P_1C_1BA$  has become a loss of  $P_2C_2DE$
- If prices fall below other firms' AVC, they may have to shut down in the SR. This allows BYD to reduce existing competition and gain market share as stated in Extract 3

**Is it Beneficial for Consumers?**

- **T:** In the short run, consumer welfare improves due to benefits of an increased quantity  $Q_2$  and lower price  $P_2$ . This is especially so if other firms follow the price reduction. In this regard, more consumers get to enjoy the convenience of a more affordable private transport

▪ **AT:**

- However, in the long run, when some firms exit the market and BYD gains monopoly power, it will be able to restrict output and set an exploitative price much higher than its MC. There will then be a significant reduction in consumer welfare. This can be linked to a diagram showing the price-setting ability of a monopoly



- Alternatively, the above diagram can be used. With fewer substitutes and BYD's entrenched brand loyalty, there may be an increase in demand for BYD's EVs and demand becomes less price elastic. This is shown as a shift in AR and MR curves to AR<sub>2</sub> and MR<sub>2</sub> respectively. The profit-maximising price rises to P<sub>2</sub> – a further accentuation of BYD's price-setting ability, thereby reducing consumer welfare
- In addition, the fall in profits for firms due to the price war may reduce their ability to invest in r&d - resulting in 'poor quality products' – as China's People's Daily warned in Extract 2
  - The fall in profits is corroborated in Table 2 where China firms such as Nio and Xpeng are making losses
- The exit of firms also reduces choice for consumers

**Is it Beneficial for producers?**

▪ **T: On larger firms such as BYD:**

- Firms like BYD that have past supernormal profits or huge MES (huge economies of scale to lower LRAC) to survive their short-term losses may gain monopoly power in the LR
- Furthermore, their AR may rise and become more price-inelastic due to fewer close substitutes – resulting in a rise in profits, as shown in diagram above from normal profits to supernormal profits of P<sub>2</sub>ABC

- **AT: On other smaller firms:** As  $P < AC$ , these firms make losses and may shut down in the SR when  $AR < AVC$  or exit the market in the LR when  $AR < AC$

**Evaluation:**

**On Consumers:**

- whether consumers gain or lose depend on the time horizon– likely short term gains due to a price reduction but long term losses as existing firms gain market power

- In addition, while consumers may lose out due to less investment in r&d, the reverse may be true if the intensification of competition amongst a few large firms such as Tesla and BYD results in more product innovation

**On producers:**

- a price war has differing effects on firms – depending on whether they have past supernormal profits or have substantial internal economies of scale to survive
- moreover, even large firms such as BYD may not gain substantially. The approach may trigger a price war if there are other formidable rivals with a comparable market share. This is especially true in the overseas market where US firm - Tesla has huge profits in 2023 – almost 3 times that of BYD's

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ No theoretical framework/Descriptive and journalistic writing</li> <li>▪ Meaning of question not properly grasped – did not understand nor interpret correctly what is meant by 'price-for-volume'</li> <li>▪ Did not use correct theoretical framework i.e. MR-MC analysis; and not linked to effects on prices, profits, choice or effects of r&amp;d</li> <li>▪ Major conceptual errors</li> <li>▪ Answer mostly irrelevant or inaccurate               <ul style="list-style-type: none"> <li>○ used DD-SS framework instead; or</li> <li>○ used MR-MC diagram w/o application to 'price-for-volume'</li> </ul> </li> </ul> | <b>1 - 3</b> |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Evidence of use of theoretical framework and analysis linked clearly to effects on consumers and producers</li> <li>▪ Appropriate price-for-volume diagram/analysis</li> <li>▪ T/AT approach for both consumers and producers</li> <li>▪ reference to case material on issues such as profits or quality of products</li> </ul>                                                                                                                                                                                                                                                                                                 | <b>4 - 6</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| <b>E1</b>                                              | A judgement with some substantiation but not well supported with economic analysis/case context                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>1</b>     |
| <b>E2</b>                                              | Insightful judgement about the effects on consumers and producers such as with reference to time frame or size of producers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>2</b>     |

**Examiners' Comments:**

This question was generally well-attempted and most candidates applied rather adequately the 'firm' i.e. MR-MC analysis to examine the effects on consumers and producers. Answers that used a DD-SS framework tend to be less successful since the question was essentially about the firm -BYD's approach. The DD-SS approach tends to erroneously link 'price-for-volume' to a rise in market supply instead of a price below profit-maximising price.

Areas for Improvement:

- lack of theoretical framework i.e. MR-MC analysis to illustrate price-for-volume. Such answers usually simply assert (without economic analysis) that the approach leads to price fall and quantity increase that benefits consumers
- focus only on BYD for effects on firm when question is about effects on producers. Given the question, a good analysis should include larger firms like BYD and other smaller firms
- not illustrating the effects on profits from the MR-MC diagram or response not linked to outcomes such as profits for firms

- too much focus on discussion of allocative inefficiency (in the long run when BYD gains market power) without linking to impact of such price changes on consumers; or discussion of resultant X-inefficiency and dynamic inefficiency without linking to effects on (both) stakeholders
- a handful of answers misinterpreted the question and discussed 'price-for-volume' as non-pricing strategies such as product innovation. Some saw 'price-for-volume' as bigger car models vs smaller ones. There were also others that interpreted the approach as reaping of internal economies of scale. Though the latter was not totally wrong, such answers often could not link clearly to effects on prices and profits or provide a clear understanding of price less than profit-maximising price

(e) Discuss whether China should continue subsidising the production of EVs. [10]

### Suggested Answer

#### Question requirements:

This question is very open, and there can be microeconomic and macroeconomic implications

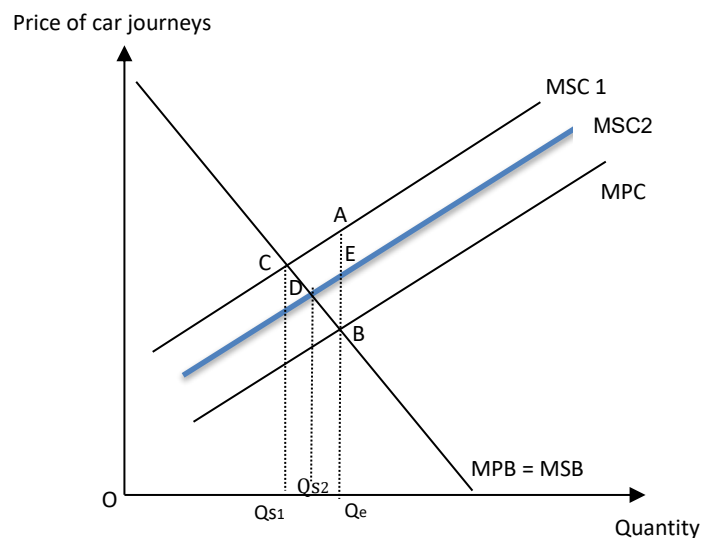
Only 1 Thesis and 1 Anti-thesis expected, but for the full range of marks, **response must be linked to issue of market failure** (how EVs reduce the extent of negative externalities as outlined in Extract 4 and Table 3) as well as 1 other issue such as export competitiveness

- Brief explanation of how a subsidy works: reduces production cost and increases supply, thus reducing the price of EVs.

#### Thesis: Continue subsidising

##### 1. Required Idea: reduce negative externalities in production of car journeys

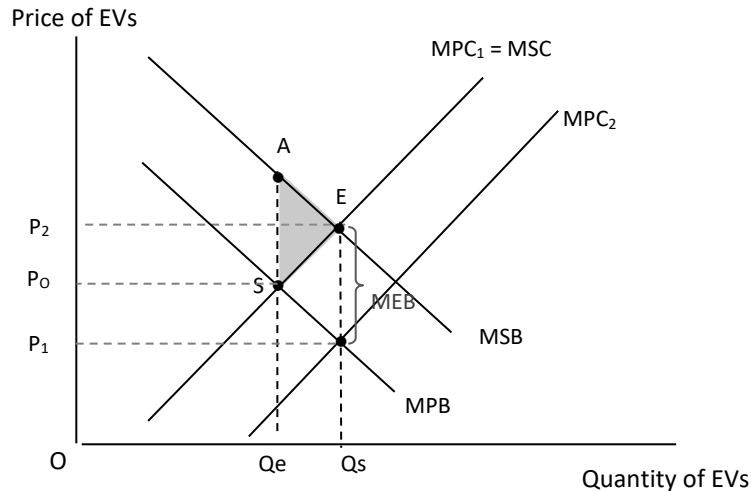
- **Use of case material:** Extract 1 states how sales of EVs helps China achieve its climate neutrality objective by 2060; Extract 4 explains why EVs cause less negative externalities than petrol cars; Table 3 shows that EVs (i.e. production of car journeys) cause less carbon emissions



- Using diagram above, explain free market equilibrium vs social optimal equilibrium and state clearly the conditions for each
- explain the negative externalities arising from car usage - resulting in  $MSC > MPC$  by amount of MEC
- **Analysis:** With the subsidy for EVs, as the price of EVs falls, there will be a rise in equilibrium quantity. As more people buy EVs, there may be increased EV usage i.e. more journeys produced



- As EV usage results in less negative externalities (reference to Table 3 and Extract), the MEC is reduced. This can be seen as the MSC curve shifting rightwards towards MPC curve from MSC1 to MSC2. As a result, the extent of deadweight loss has been reduced from ABC to EBD
- **Other acceptable answers:**
  - Scenario 1: Positive externality in consumption of EVs since EVs reduce carbon emissions. In this case,  $MSB > MPB$ . A production subsidy i.e. for firms will reduce COP and shift MPC curve from MPC1 to MPC2. Here, MPC is taken to equate MSC. (See diagram below)



- Scenario 2: Negative Externality in consumption of petrol cars. In this case,  $MSB < MPB$  in the market for petrol cars. If the government subsidises EV production, the cheaper EVs will entice consumers to buy more EVs and reduce demand for petrol cars. Thus, as demand for petrol cars falls, MPB curve shifts to MSB – achieving social optimality
2. **Additional Idea:** Effect on X-M and macroeconomic objectives of economic growth and job creation
- Extract 1 states that China accounts for 2/3 of EV global sales – sales of EVs in the global market may be a major contributor to China's real GDP and employment
  - With subsidies, the lowered price may allow China firms to be more competitive in the world market. The objective of subsidising may be to help China develop comparative in EV production. If the subsidies are used for r&d, process innovation leads to lower cost and prices. And product innovation improves the range and quality
  - This switches global consumers' demand towards China EVs. In all, these serve to increase the demand for China EVs. China's X-M rises, and the subsequent AD increase has a positive impact on its economic growth and employment. (use AD-AS diagram and briefly on multiplier process)

### Anti-thesis: Should not continue subsidies

1. Impact on government budget – link to opportunity cost and inability to finance
  - use the subsidy diagram to show the amount of *subsidy* [need for some theoretical framework instead of mere journalistic writing]
  - link this to government spending
    - and its opportunity cost - less to spend on healthcare in view of ageing population and conflicting objectives – government needs to spend more to stimulate an ailing economy
    - inability to finance and its associated problems – eg. need to increase taxes in future. This can result in inter-generational inequity as households in future have less disposable income for consumption

2. continued subsidies for firms may lead to complacency, resulting in X-inefficiency and dynamic inefficiency (explain the 2 terms). These result in higher costs, and firms may not be able to produce at competitive prices nor produce quality products in the long run
3. subsidies allows firms to sustain unhealthy price wars
  - at home, it reduces choice as some firms shut down and this also leads to loss of jobs
  - subsidies in the international market may be seen as unfair competition and may invite retaliation from other countries. When trading partners impose tariffs, the resultant fall in their imports of China EVs will affect China's export revenue and negatively impact its economic growth (*answers should have a clear analysis of how tariffs work*)

### Evaluation: Possible Ideas

**Issue of pollution:** Given the huge pollution problem in China, continued subsidy to reduce pollution may be a right move. But people's willingness to convert to EVs also hinges on the availability and convenience of charging infrastructure. Investment in the latter also requires funding and can impinge adversely on budget

**Issue of comparative advantage:** Subsidy to help China gain comparative advantage is not really needed since China may already wield that edge - as seen from its control of minerals

Subsidies may be perceived as helping China firms to engage in predatory dumping i.e. allow China EV firms to sell in the world market at  $P < \text{China firms' own MC}$ . This works against the principle of efficient allocation of resources based on comparative advantage. Furthermore, a 'beggar-thy-neighbour approach' may reduce purchasing power of trading partners which in turn affects China's X-M

**Issue of efficiency:** Whether to continue subsidies also depends on the type of subsidy – whether it is merely a production subsidy or if the subsidy is targeted at improving r&d efforts. The former is more likely to result in the X- and dynamic inefficiencies discussed

**Issue of financing:** The size of subsidy can also be an issue – given China's current economic problems of high unemployment and slow-down in economic growth– efforts in these areas may take precedence over subsidies for EVs.

### Summative Conclusion:

- can be linked to what the intended objective is:
    - e.g. a good move if it is meant to correct market failure. But need to tread carefully if the intention is to gain world market share – given retaliatory measures and inefficiencies that may arise
- or any relevant summation

### Mark Scheme:

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                        |              |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ No theoretical framework/Descriptive and journalistic writing</li> <li>▪ Meaning of question not properly grasped</li> <li>▪ Did not use correct theoretical framework such as effect of subsidy on SS/market failure diagram</li> <li>▪ Major conceptual errors</li> <li>▪ Answer mostly irrelevant or inaccurate</li> </ul> | <b>1 - 3</b> |

|                   |                                                                                                                                                                                                                                                                                                                                     |              |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>L2</b>         | <ul style="list-style-type: none"> <li>▪ Evidence of use of theoretical framework</li> <li>▪ Analysis linked to impact of subsidies on market failure; X-M; financing issues or efficiency issues</li> <li>▪ <b>1 Thesis and 1 Anti-thesis required</b></li> <li>▪ <b>reference to case material on issues discussed</b></li> </ul> | <b>4 - 7</b> |
| <b>Evaluation</b> |                                                                                                                                                                                                                                                                                                                                     |              |
| <b>E1</b>         | <ul style="list-style-type: none"> <li>▪ A superficial conclusion /assertion</li> </ul>                                                                                                                                                                                                                                             | <b>1</b>     |
| <b>E2</b>         | <ul style="list-style-type: none"> <li>▪ Insightful and perceptive opinion on the continuation of subsidies</li> <li>▪ Can be linked to               <ul style="list-style-type: none"> <li>▪ E for particular issue</li> <li>▪ summative substantiation on which issue [T vs AT] weighs more importantly</li> </ul> </li> </ul>   | <b>2 - 3</b> |

### **Examiners' Comments:**

*This hybrid question required candidates to have a good understanding of the issues outlined in the case. The key issues are the reduction of negative externalities as well as the macro-economic implications linked to China's export competitiveness and possible retaliation. Response to such a question requires a clear grasp of these issues as well as good microeconomics & macroeconomics knowledge that could be applied to the question. The question thus goes beyond a simplistic understanding of how a subsidy works.*

*As the scope of the question is very wide, typical responses tend to have a rather narrow scope. Some answers focused on the externalities involved – seeing both positive externalities and negative externalities arising from EV usage and production. Others saw the issue purely as a macroeconomics issue of export competitiveness leading to economic growth and the repercussions brought about by retaliation. An integration of both issues will allow candidates to score well in this question.*

*On the other hand, using pure textbook knowledge of how a subsidy works and its opportunity cost in terms of government spending earns the lower range of the marks. Such answers did not pay heed to the case material in Extract 4 and Table 3. A Case Study question requires students to apply case material to their answers as best as possible.*

### **Some Areas for Improvement:**

- *the issues of environmental problems tend to be descriptive rather than linked to a market failure framework. While it was acceptable to link the issue to sustainable growth, the discussion was again descriptive and not linked to – for example -the effects of changes in quantity of resources on AS and thus future growth*
- *some chose to narrow their focus on EVs causing negative externalities, without paying heed to the fact that Extract 4 and Table 3 gave telling evidence that EVs might reduce the market failure caused by petrol cars*
- *some chose to explain only the problem of market failure without addressing the issue of how subsidies may serve as a solution to that market failure*
- *rather narrow to focus on outcomes for firms and consumers only as these would have been addressed in part d. And the government subsidy to help firms seems more targeted at gaining a foothold in the global market*
- *in analysis of how EVs can propel growth for China, it is perhaps important to qualify that EVs are an important industry that could add significantly to exports since they account for two-thirds of global sales.*

## Question 2 Indonesia and Vietnam

### (a) With reference to Table 4:

- (i) Identify which country has a higher Gross Domestic Product in 2024. Justify your answer. [2]

#### Suggested Answer

- Indonesia has a higher GDP in 2024.
- $GDP = GDP \text{ per capita} \times \text{population}$  → Indonesia has a higher GDP/capita and a higher population than Vietnam in 2024.

#### Mark Scheme

- Correct identification – 1m
- Correct formula and explanation – 1m

#### Examiners' Comments:

- Most students were able to identify the correct country but there were a handful who did not identify the correct country because they did not know how to derive it from the information given or gave the wrong justification for the identification.

- (ii) Explain an additional piece of information that is needed to better compare living standards between Indonesia and Vietnam. [2]

#### Suggested Answer

To compare living standards between 2 countries, require information about material and non-material welfare. Data provide include GDP per capita (PPP) which allows for comparison of level of material welfare, and unemployment rate which inferences of level of non-material welfare could be drawn.

- Additional information (any 1 indicator)
  - o material welfare indicators – Gini coefficient
  - o non-material welfare indicators – literacy rate, life expectancy, pollution index, number of working hours (stress levels), etc.
  - o composite indicators – HDI, OECD better life index, etc.
- Explanation of the information (any 1 indicator)
  - o **Gini-coefficient** – gini-coefficient is a measure of income inequality within a country, where it ranges from 0 (perfect equality) to 1 (perfect inequality). This information allows for better comparison of material welfare. Even though GDP/capita (PPP) is higher in Indonesia than in Vietnam, if Gini coefficient is significantly higher in Indonesia, the GDP/capita could overstate the material welfare of citizens as only a certain proportion of the population enjoys a higher consumption level, and Vietnam could enjoy a higher material welfare with lower gini coefficient even with lower GDP/capita. Alternatively, it can also be used to ascertain non-material welfare – the higher the Gini coefficient, the lower will be social cohesion, unequal access to healthcare and worse health outcomes.
  - o **Life expectancy** – a measure of the average number of years a person at a particular age is expected to live. A longer life expectancy often indicates better access to healthcare, nutrition, and sanitation, which are essential for a good non-material standard of living. Longer life spans can be associated with a higher quality of life, including opportunities for education, work, and social engagement. If Indonesia has a higher life expectancy than Vietnam, non-material welfare is likely to be higher.

- **HDI** – includes GDP/capita, life expectancy and mean years of schooling– it is an indicator of both material and non-material welfare. The country with higher HDI will have a higher living standard – elaborate on the individual indicators and how it reflects SOL.

### Mark Scheme

- any 1 indicator with links of material or non-material welfare identified, defined and explained – 2m

### Examiners' Comments:

- This question was not well attempted.
- Some students gave too many indicators without elaborating on any one of them.
- Some gave the indicator but did not explain how to use it for comparison for SOL between countries.
- Most did not bother to define the indicator, and many did not know how to elaborate how the indicator is linked to non-material welfare.
- Those that gave composite indicators did not ascertain what is in the composite indicator, or did not give accurate indicators in the composite measure.
- Some mentioned that real GDP/capita (PPP) is required but this statistic is already available in Table 4.

**(iii) Explain the possible causes of the observed relationships between the inflation rate and unemployment rate in Vietnam and Indonesia. [4]**

### Suggested Answer

- Identify and explained the observed relationship between inflation rate and unemployment rate:
  - Indonesia – as inflation rate falls, unemployment rate falls
    - Fall in inflation rate could be due to rise in AS → fall in GPL and rise in RNY/fall in UE.
    - Ext 7: "higher value-added export revenues", "FDI" → rise in productivity through investments in more advanced equipment → increase in productivity capacity → increase AS → fall in GPL, dampens inflationary pressures, while increasing RNY/real national output → increase in DD for labour → fall in UE rate
    - Or any other plausible reason.
  - Vietnam – as inflation rises, unemployment rate falls
    - Rise in inflation rate could be due to rise in AD → increase in GPL and rise in RNY/fall in UE.
    - Ext 5: "foreign investors... have built lots of factories assembling consumer goods", "stuck as an assembly hub, adding little value", export led growth → rise in X (without significant rise in Yf) → rise in AD → rise in GPL as the economy moves towards full employment, rise in RNY/real national output → increase in DD for labour → fall in UE rate
    - Or any other plausible reason.

### Mark Scheme

- Identification and explanation of observed relationship in each country – 2m
- No use of economic framework – max 2m
- Lack use of examples – max 2m
- Identification of observed relationship of both countries ONLY – 1m

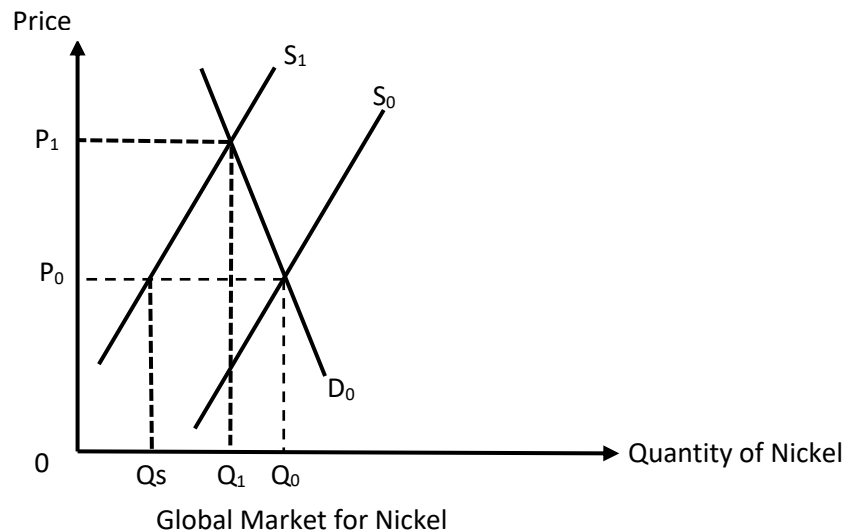
**Examiners' Comments:**

- Quite a handful of students compared the inflation rate and unemployment rate between countries rather than looking at the change in inflation rate and unemployment within the country. These scripts were not awarded any marks.
- Many students did not do well for this question because they identified the cause of the fall in unemployment rate to be the increase or fall in inflation rate – but what they should have done is to identify the cause of both falling UE rate AND rising or falling inflation rate. Depending on the analysis, students could be awarded partial credit.
- Even though we did not penalize students for the lack of application and not applying case material, the best answers were able to link “causes” to what they read in the case, such as rising FDI in Indonesia and rising exports in Vietnam.
- There also tended to be a fall in use of economic framework to justify the changes in inflation and unemployment rate.

(b) With the use of a diagram, explain why “nickel ore export curbs” by Indonesia “caused global nickel prices to soar”. [4]

**Suggested Answer**

- “nickel ore export curbs” → export ban by Indonesia
- Ext 6: Indonesia is the world's largest exporter of nickel
- This will lead to a fall in world supply of nickel from  $S_0$  to  $S_1$  → shortage of  $Q_0Q_1$  → upward pressure on price
- Given that DD for nickel is price-inelastic due to a lack of close substitutes → “crucial for making stainless steel”, “lithium batteries” where a price change will lead to a less than proportionate change in quantity demanded of Nickel
- As consumers are not responsive to price changes, it requires a significant increase in price to clear the shortage → “nickel prices to soar”
- Illustrate with use of a diagram and explain the price-adjustment process.

**Mark Scheme**

- Identify that the ban will cause a fall in world SS – 1m
- Application of PED with use of case material – 1m
- Price-adjustment process well explained – 1m
- Accurate diagram – 1m

**Examiners' Comments:**

- *This question was very well attempted with many students scoring full credit.*
- *Those who did not score full marks was due to the lack of analysis on the extent of change in price of Nickel, or not explaining why prices "soar" well – these answers usually explained that the change in price is more than proportionate but the correct analysis is because consumers are not responsive to price changes as DD is price-inelastic, it requires a significant increase in price to clear the shortage.*
- *Do note that if the question requires a diagram, diagram needs to be correctly labelled to be awarded the diagram mark. Some students had incomplete labelling of curves, and did not draw the curves such that the price change is significant.*

**(c) With reference to Table 5 and 6, discuss the extent to which "threatening tariffs" will affect Vietnam and Indonesia's economies differently. [8]**

**Suggested Answer****Introduction:**

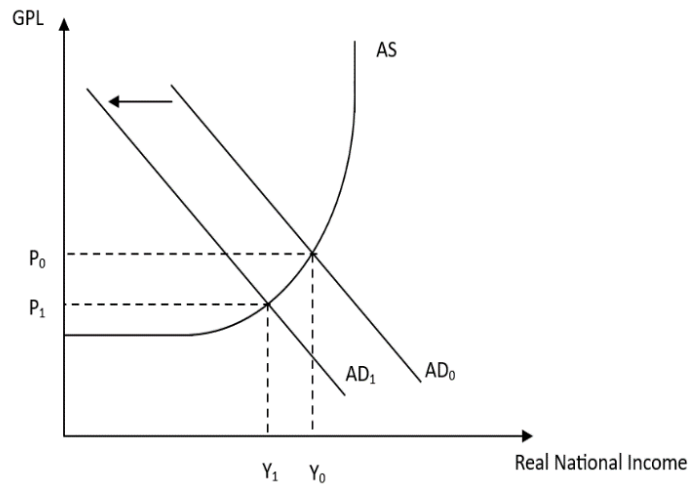
- "threatening tariffs" → imposition of tariffs by the US on imports from Vietnam and Indonesia
- This will impact Vietnam and Indonesia's BOT, economic growth, unemployment rate and inflation rate.

**Thesis: Tariffs will impact Vietnam and Indonesia's economies (2 KEIs)**

Explain how tariffs will negatively impact the economies KEIs:

*Note that a tariff diagram is not required in this question. The focus of the question is the impact on the economies.*

- Tariffs will reduce Vietnam and Indonesia's price competitiveness in the US as prices of imports increases from  $P_w$  to  $P_w + t$ .
- US will reduce Qty of imports from these countries.
- This will reduce the demand for exports from Vietnam and Indonesia and reduce export revenue.
- The fall in export revenue will worsen the countries' balance of trade where the value of net exports fall.
- As export is a component of AD, through the k-process, this will lead to a more than proportionate fall in AD and RNY due to the k-principle which states the spending creates income and income generates greater spending. The initial fall in X will lead to a fall in income, which leads to multiple rounds of fall in induced consumption, AD and RNY.
- As RNY falls, this will reduce EG rate of both countries.
- As national output falls, demand for labour will fall → reduce number of employed persons → rise in UE rate.
- The fall in AD → surpluses at the current GPL → fall in GPL → fall in inflation rate
- Illustrate the effects on the economy diagrammatically.



### Anti-thesis: impact on the economies will be different

- Vietnam vs Indonesia
  - o Table 5: exports is 82% of GDP for Vietnam while it is 22% of GDP for Indonesia → the tariff is likely to have a more significant impact on Vietnam's AD, RNY and thus EG and UE.
  - o Table 6: Indonesia – main exports are primary products and raw materials → DD for these products are likely to be price-inelastic. Even if price increases in the US → likely to lead to a less than proportionate fall in Qty dd → extent of fall in X and AD and RNY will be less significant than Vietnam – main exports are secondary products → electronics and smartphones → DD is likely to be price-elastic, and something that the US can produce → tariffs → price increase in US → more than proportionate fall in Qty DD → extent of fall in X, AD, and RNY likely to be more significant.

### Evaluation:

- The tariffs will likely impact Vietnam more significantly as US is Vietnam's second largest trade partner and it is more dependent on trade for EG as compared to Indonesia. This is also likely to be the case due to the nature of exports sold to the US.
- But other info is required e.g. information about the extent of trade with US for Indonesia, the absolute amount of exports with the US, the extent of the tariffs imposed on the different countries – US may impose higher tariffs for manufactured goods as they can produce it themselves, and less tariffs on raw materials such as Nickel.
- There are also other factors affecting how the countries could be affected differently – for example, Indonesia's downstreaming policy achieving EG can dampen the effects of the tariff, or Vietnam's rising wages and fall in competitiveness worsening the effects or government policies that may be able to counter the effects of the tariffs such as FTAs with other countries etc.

### Mark Scheme

|    | <b>Knowledge, Application, Understanding and Analysis</b>                                                                                                                                                                                                                                                                                                                                                                                                 |     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| L1 | <ul style="list-style-type: none"> <li>▪ no theoretical framework/descriptive and journalistic writing</li> <li>▪ did not use appropriate economic framework i.e. tariff and AD/AS diagram</li> <li>▪ major conceptual errors</li> <li>▪ answer mostly irrelevant or inaccurate.</li> <li>▪ One sided answer → did not look at how it may or may not impact the economies differently.</li> <li>▪ Lack of application and use of case material</li> </ul> | 1-3 |
| L2 | <ul style="list-style-type: none"> <li>• balanced response with both T and AT</li> <li>• good use of case material to substantiate arguments</li> </ul>                                                                                                                                                                                                                                                                                                   | 4-6 |



|    |                                                                                                                                                                                                                                  |   |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | <ul style="list-style-type: none"> <li>• <i>Insufficient scope – only looked at Table 5 or 6</i></li> <li>• <i>Lack depth – superficial explanation on tariffs and impact on the economy</i><br/>- max 4m</li> </ul>             |   |
| E1 | <ul style="list-style-type: none"> <li>▪ <i>not well reasoned or irrelevant to question or lacking an overall judgement.</i><br/>- <i>Statement of why Vietnam will be more adversely affected than Indonesia.</i></li> </ul>    | 1 |
| E2 | <ul style="list-style-type: none"> <li>▪ <i>well-reasoned evaluation leading to a judgement.</i><br/>- <i>Consideration of other factors that could affect difference in the extent of the effects of the tariff.</i></li> </ul> | 2 |

### Examiners' Comments:

- *Most students were able to explain the effects of the tariff on the economies but the quality of analysis differs widely. The best scripts explained how tariffs affects exports, and how that worsens EG and UE with use of economic framework. After which, these responses went on to use the data from Table 5 and 6 as stated in the question to justify the different extent of the impact.*
- *Some areas for improvement:*
  - *Lack of scope of explanation – no use of Table 6, only looked at 1 KEI*
  - *Lack of depth of analysis – no use AD/AS framework, did not define or explain how tariffs affect exports*
  - *Weak evaluation – lack insights, did not identify any points beyond what has already been analysed in response.*

(d) **Discuss whether Indonesia's resource-based-industrialisation can achieve economic growth which is also sustainable.** [10]

### Suggested Answer

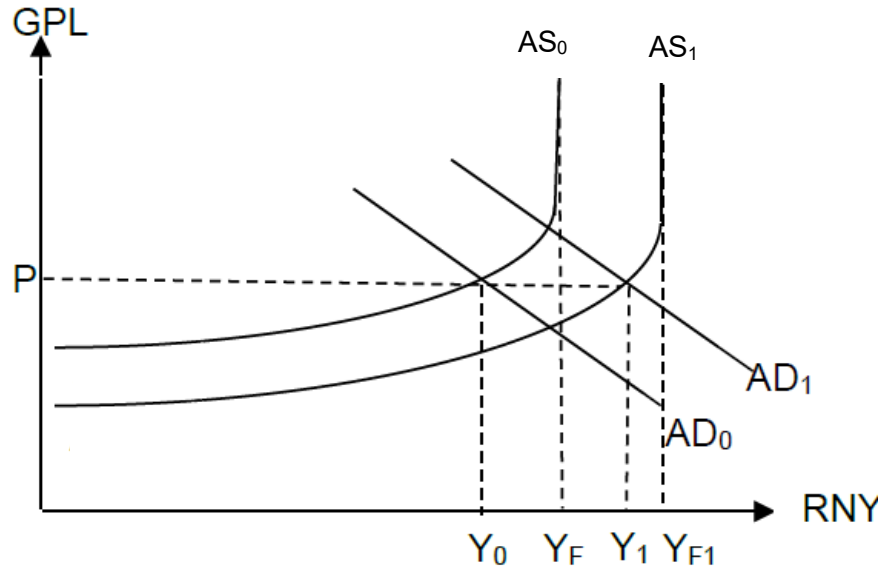
#### Introduction:

- Interpret "resource-based industrialisation"
  - Use of resources – minerals, fishery, plantation – to achieve EG
  - Ext 6: downstreaming policy – processing of all raw nickel domestically
- Achieve EG → actual growth → increase in real GDP
- Sustainable EG → actual and potential growth without depletion of resources or environmental problems and at the expense of future generations.

**Thesis: Indonesia's resource-based industrialization → achieve economic growth and sustainable EG**

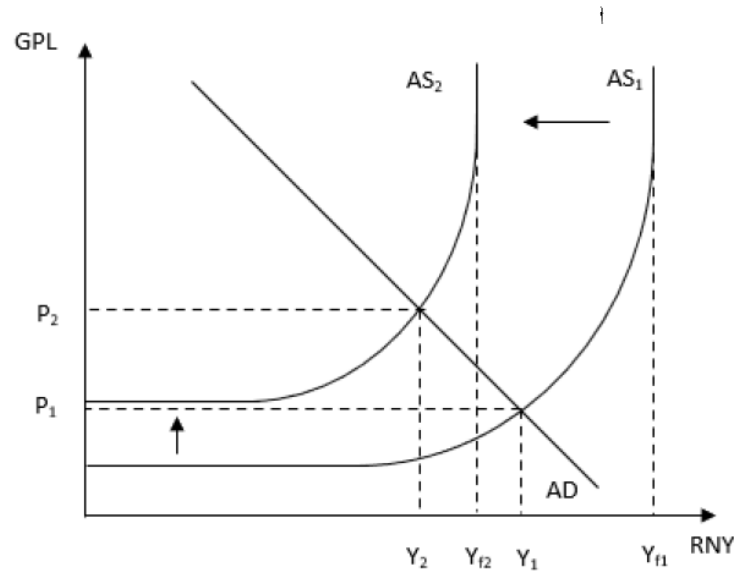
- Indonesia → rich in resources → abundant land → CA in palm oil, coal, nickel, rubber etc.
- Export of these products → source of economic growth
- Downstreaming policies → increase in Investments → "US\$8.2b to US\$25.9b"
  - Need to process resources extracted within the country → "investments in the metals sector", "Chinese capital has led to the increase in investment in Indonesia's nickel industry" and if "expanded to all minerals, plantations, agriculture and fishery sectors" → this will increase investments in Indonesia in all multiple sectors
- "higher value-added export revenues" → increase in X-revenue as compared to just exporting raw materials → "US\$2.1b to US\$33.3b"
- The increase in X and I will lead to an increase in AD → through the k-process → more than proportionate increase in AD and RNY → achieve economic growth
- The increase in I will lead to increase in K-stock, rise in K/L ratio, improvements in technology → increase in productive capacity → potential growth
- Illustrate the effects diagrammatically.
- Indonesia will be able to achieve sustained EG.

- Whether or not this growth is sustainable depends on what the Indonesian government does to manage the environment e.g. “renewable energy and provide incentives for green energy”, “reduce emissions in these sectors” → Elaborate briefly on these measures.
- If decarbonization works, resource-based industrialisation → economic growth that is sustainable



**Thesis: Indonesia’s resource-based industrialization → limitations in achieving economic growth and sustainability**

- Resource-based industrialization → production of nickel → produce wastes, causes deforestation, affecting fishing, water pollution, carbon emissions → health care costs on 3<sup>rd</sup> parties.
- Significant environmental concerns → environmental problems for the residents in the country
  - o This can be illustrated via market failure diagram – show DWL due to over-production of these goods.
  - o OR illustrate via AD/AS diagram (see below) – show fall in productive capacity due to deforestation, dwindling fish stock (less resources for future generations) → Economic growth cannot be sustained and hence not achievable in the long run and thus not sustainable as it leads to environmental problems.
- Even if Indonesian government is to intervene → market failure will still exist / government failure → “not yet have an adequate monitoring system for the mining sector”, easy to “avoid responsibility for mining violations” → unlikely to be able to achieve economic growth that is sustainable.



### Evaluation:

- Indonesia will be able to achieve economic growth due to its resource-based industrialization as the increase in  $X$  and  $I$  will lead to sustained economic growth. However, whether or not this growth can be sustainable depends on the government's efforts and success in reducing environment problems.
  - o The tax revenue earned from economic growth will ensure that investment in green energy can be sustained over time and will facilitate sustainable economic growth.
  - o But it also depends on "how the government will deal with the side effects" → at the current moment, it is likely to be unsustainable - unless government monitoring and law enforcement improves.
- Downstreaming policies where minerals are processed domestically could lead to more careful use of the resources, but in Indonesia's case, "recent concessions for nickel industry" likely leads to acceleration of environmental problems.
- Resources will be depleted eventually. Resource based industrialisation will not be able to achieve sustainable economic growth, unless the government finds a new area of comparative advantage in future.
- Any other judgement.

### Mark Scheme

|           | <b>Knowledge, Application, Understanding and Analysis</b>                                                                                                                                                                                                                                                                                                                                                                                                          |            |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>L1</b> | <ul style="list-style-type: none"> <li>▪ descriptive and journalistic writing – lifting of case material without adding value</li> <li>▪ no theoretical framework / inappropriate theoretical framework i.e. AD/AS framework and/or market failure framework to illustrate environmental problems</li> <li>▪ answer mostly irrelevant – did not link it to sustainable economic growth</li> <li>▪ grossly one-sided answer that lacks depth of analysis</li> </ul> | <b>1-3</b> |
| <b>L2</b> | <ul style="list-style-type: none"> <li>▪ balanced response i.e. with <math>T</math> and <math>AT</math> <ul style="list-style-type: none"> <li>▪ <math>T</math> – linked to <math>X</math> and <math>I</math> → AD/AS</li> <li>▪ <math>AT</math> - linked depletion of resources / environmental problems</li> </ul> </li> <li>▪ Application of case evidence with economic framework.</li> </ul>                                                                  | <b>4-7</b> |

|    |                                                                                                                                                                                             |     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E1 | <ul style="list-style-type: none"> <li>▪ Evaluation not well reasoned or irrelevant to the question or lacking an overall judgement.</li> <li>▪ Vague/ unsubstantiated judgement</li> </ul> | 1   |
| E2 | <ul style="list-style-type: none"> <li>▪ Well-reasoned evaluation leading to a judgement.</li> <li>▪ Judgement well-substantiated with reference to case evidence</li> </ul>                | 2-3 |

**Examiners' Comments:**

- A few responses were incomplete – do continue to work on time management.
- A significant number of students did not even interpret what is meant by resource-based industrialization and some treated the question as government policy to achieve sustainable growth – these responses did not address the key words in the question and are unable to do well.
- Most students were able to explain the effects of the resource based industrialization well but generally weak depth of analysis for the anti-thesis arguments across the board. Just like what we have learnt about inclusive growth – that income inequality should be explained with the DD/SS framework, sustainable growth also needs to be explained with use of economic framework – environmental problems could either be represented via negative externalities in the market failure framework or the fall in productive capacity/productivity using the AD/AS framework.
- A lot of evaluation points simply cited the case material without making a judgement on whether the policies are likely to work in the context of Indonesia – good responses looked at how economic growth means tax revenue will be available for investment in green technologies, how these policies take time so not possible to achieve in the short term, how these measures could lead to dampening of EG while achieving more sustainable growth, or how resources that are finite will eventually be depleted, and growth is not sustainable unless there is restructuring and new sources of EG are found.

**Question 1**

The usual market adjustment process does not work in the UK housing market. Rising prices tend to mean that homeowners delay putting their houses onto the market in the belief that prices will continue to rise. Rising prices also encourage buying before prices rise even more.

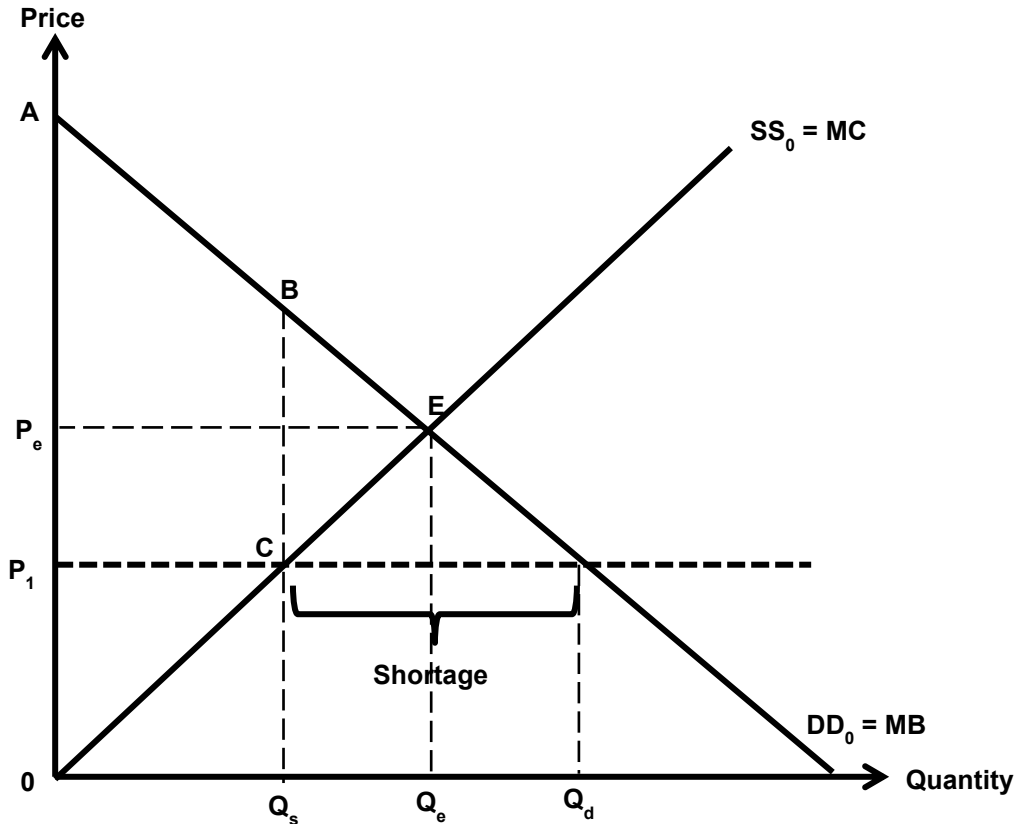
Source: The Guardian

- (a) In the absence of government intervention, explain why a shortage is not allocatively efficient and why shortages may persist despite a rise in price. [10]
- (b) Discuss whether a price ceiling is the most appropriate policy to reduce housing prices. [15]

**Part (a)****R1: Explain why a shortage is not allocatively efficient**

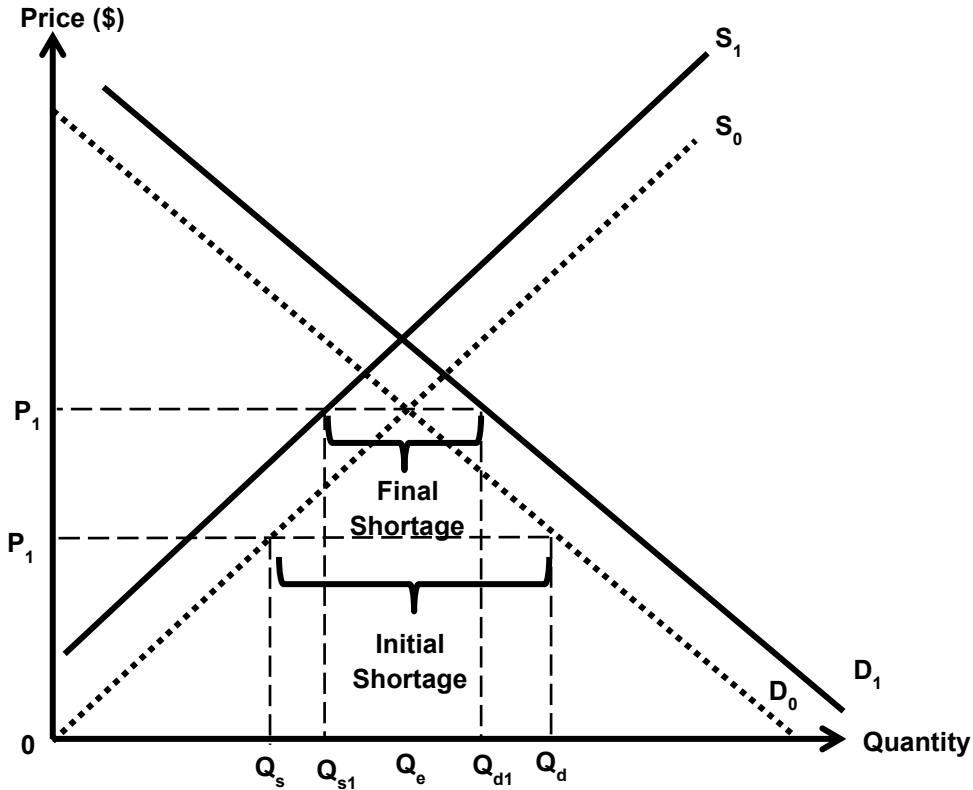
- Allocative efficiency is the situation in which society produces and consumes a combination of goods and services that maximises its welfare.
- The demand curve (DD) reflects the consumers' valuation of the good, as measured by the maximum prices they are willing and able to pay at any quantity.
  - Hence, it reflects the consumers' additional utility or marginal benefits (MB) derived from purchasing the last unit of the good or service
- Similarly, the supply curve (SS) reflects the minimum price accepted by the producers for selling it.
  - It is dependent on the marginal costs (MC) of producing the additional unit of the good or service.
- A shortage occurs when quantity demanded exceeds the quantity supplied at the prevailing price. In the absence of government intervention, this might occur when price is lower than equilibrium
- Allocative efficiency occurs at the market equilibrium  $Q_e$  and  $P_e$ .
- This is because at quantity  $Q_e$ , the Marginal Benefits equals Marginal Costs ( $MB = MC$ ), and the additional benefits the society gets from the last unit of good produced and consumed is equal to the additional opportunity costs that the society incurs from producing it
- However, when there is a shortage at  $P_1$ , quantity supplied is at  $Q_s$  and hence, consumers and producers consume and produce at  $Q_s$  instead.
- There is underallocation of resources to the housing market at  $Q_s$ .
- If quantity increases from  $Q_s$  to  $Q_e$ ,
  - The total benefits to society increase by  $BEQ_eQ_s$
  - The total costs to society increase by  $CEQ_eQ_s$
  - Hence, there would be deadweight loss of area  $BEC$ .
  - This is the excess of the total benefits over the total costs for the quantity underproduced.
- The shortage has led to a deadweight loss of area  $BEC$ , leading to allocative inefficiency.

\*Note: Students can also use consumer and producer surpluses to explain why a shortage is not allocatively efficient.



**R2: Explain why shortages may persist despite a rise in price**

- In the case of housing, shortages may persist due to expectations of consumers and producers.
- Rising prices tend to mean that homeowners (producers) delay putting their houses onto the market in the belief that prices will continue to rise
  - Homeowners are rational, if homeowners believe that housing prices will rise in the near future, they may wait to sell in hopes of getting a better return.
  - Even if some homeowners could sell at a good price, finding a new home that is affordable or desirable might be difficult.
  - Hence, as price rises from  $P_0$  to  $P_1$ , supply may decrease from  $S_0$  to  $S_1$ .
- Conversely, if new buyers (consumers) believe housing prices will rise in the future, they may rush to buy now to avoid paying more later.
  - Some consumers who view housing as an investment (not just a place to live) may want to buy early to capture more appreciation
  - The rising prices might even cause some to panic, and people may want to act quickly to secure a property
  - Hence, as price rises from  $P_0$  to  $P_1$ , this increases current demand from  $D_0$  to  $D_1$
- Thus, even as prices rise from  $P_0$  to  $P_1$ , quantity demanded exceeds quantity supplied and a shortage of  $Q_{s1}Q_{d1}$  still exists at  $P_1$ .



### Conclusion

- With an increase in price, it is still not sufficient to eliminate the shortage due to the increasing demand and falling supply as expectations form when prices rise.

### Marking Scheme

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| L1                                                     | <ul style="list-style-type: none"> <li>• Lack application of relevant economic framework and context</li> <li>• Critical errors in analysis</li> <li>• Significant conceptual gaps in explanation</li> </ul>                                                                                                                                                                                                                                                                                 | 1 - 4  |
| L2                                                     | <ul style="list-style-type: none"> <li>• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</li> <li>• Some application of context and use of examples</li> <li>• Lacking in full scope of analysis</li> </ul>                                                                                                                                                                                                                                 | 5 - 7  |
| L3                                                     | <ul style="list-style-type: none"> <li>• A well-developed answer that demonstrates:</li> <li>• Rigorous analysis for both requirements               <ul style="list-style-type: none"> <li>○ R1: Explains how a shortage causes allocative inefficiency</li> <li>○ R2: Explaining why a shortage persists despite a rise in price</li> </ul> </li> <li>• Clear analysis with diagram(s)</li> <li>• Some application of context and use of examples related to the housing market</li> </ul> | 8 - 10 |

**Examiners' comments:****R1**

- Some students attempted to answer R1 using the concept of externalities. However, this was incorrect, as positive externalities lead to underconsumption or underproduction, which is not the same as a shortage.
- Even though the question mentioned there was no government intervention, some students still explained the effects of a price ceiling.
- The focus of R1 was to explain how a shortage was not allocative efficient. Many answers wrote extensively on the price adjustment process, but only a few brief lines on how a shortage was not allocatively efficient.
- Common conceptual errors include:
  - Terminology: A shortage occurs when quantity demanded exceeds quantity supplied, not when demand exceeds supply.
  - Diagrams: Wrongly drawn upward sloping demand curves and downward sloping supply curves. Wrongly identified deadweight losses (tip: the deadweight loss is a triangle pointing to the socially optimal point).
- The weakest answers wrote descriptively without the use of economic concepts. These answers often made reference to how important housing was and included extensive explanations of homelessness or equity.

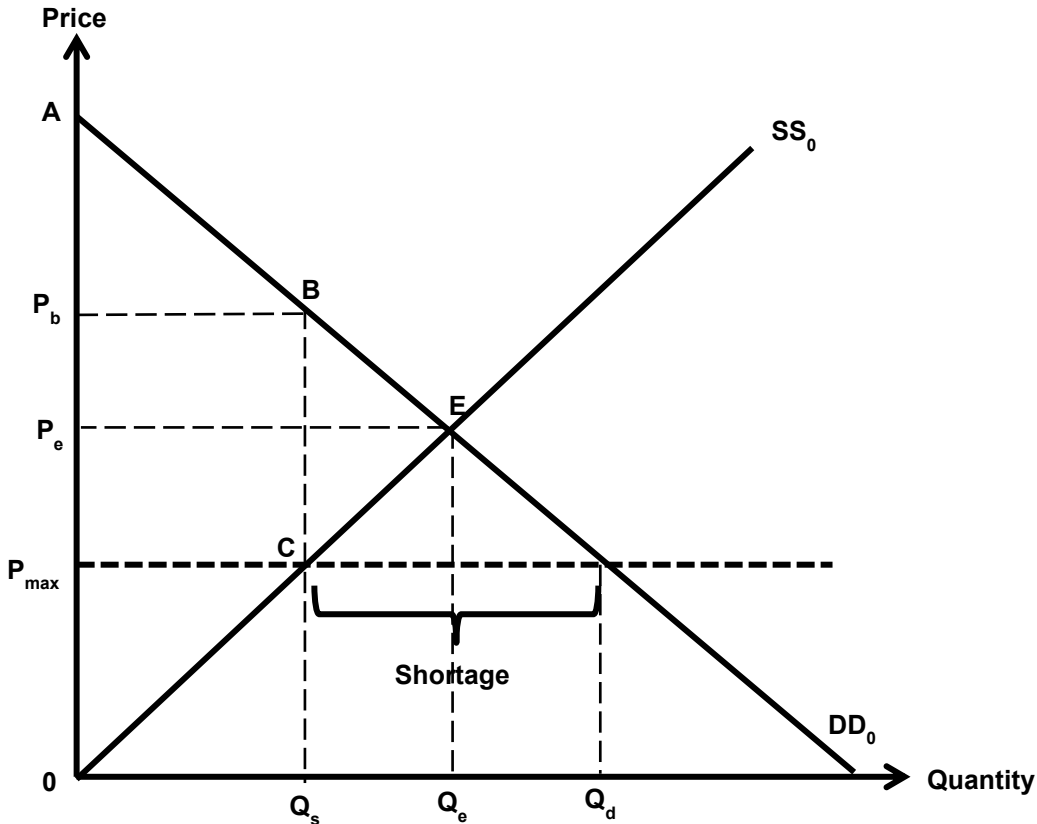
**R2**

- To answer R2, many students fell back on rehearsed responses. They explained how, if demand increased or supply decreased, a new market equilibrium can be reached. However, this does not recognize that if a new market equilibrium is reached, there would be no shortage. Thus, such an approach does not answer the question. Instead, to show how a shortage persists, one would need to show (i) an initial shortage (ii) a final shortage.
- Others correctly identified that expectations of future prices influence the housing market. However, they did not make appropriate shifts of the demand and/or supply curves to explain how shortages could thus persist.

**Part (b)****R1: Explain a price ceiling can be an appropriate policy to reduce housing prices****Thesis:**

- A price ceiling is a legally established maximum price to prevent prices from rising above a certain level.
- Producers are prohibited from selling above the stipulated price.
- To be effective, the price ceiling must be set below the market equilibrium price.
- This bypasses the price mechanism to lower prices. Hence, there is certainty in the policy.
- A maximum price is usually imposed with the aim of achieving some form of equity.
- For example, a price ceiling on housing controls may make housing more affordable, especially during times when prices are rising rapidly. This may help to ensure that low-income households can afford housing (seen as a basic right for some) and prevents other social problems like homelessness or crime.
- In the diagram below, the price ceiling would lower prices from  $P_0$  to  $P_{max}$ .
- Thereafter, an alternative form of rationing such as balloting could be used to allocate the available housing units.





#### Anti-thesis:

- However, at  $P_{max}$ , a shortage of  $Q_s Q_d$  is created. This is because at lower prices,
  - Quantity demanded increases from  $Q_e$  to  $Q_d$  (according to Law of Demand)
  - Quantity supplied decreases from  $Q_e$  to  $Q_s$  (according to Law of Supply)
  - Therefore, since  $Q_d > Q_s$ , there is a shortage, and the market is in disequilibrium.
  - This results in allocative inefficiency as mentioned in (a)
- On a related note, this also decreases the available units of housing to  $Q_s$ . Even though housing becomes affordable, it becomes less accessible as less consumers are able to enjoy the good.
- Furthermore, the policy result in unintended consequences
- Builders may build fewer units if prices are controlled and profits are limited. Some builders may even choose to exit the market, which will cause a fall in supply.
  - This will worsen the shortage in the long run.
- Moreover, builders may cut back on safety checks or use lower quality building materials which may result in poorer quality housing.
- Finally, consumers who are willing to pay more than  $P_{max}$  may turn to the black market to bypass the price restrictions.
  - This could mean payments to builders above the price ceiling, even up to the black market price of  $P_b$ . Worsens the original outcome and leads to greater inequity.
  - The government will thus have to incur higher costs to ensure compliance.

#### EV R1:

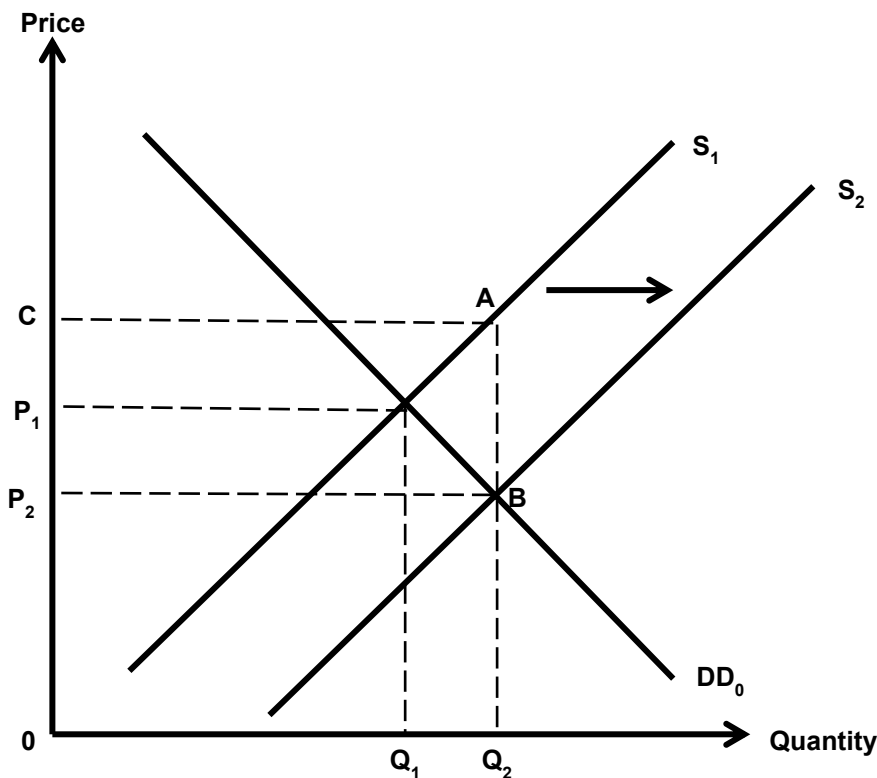
- A price ceiling is not an appropriate policy to reduce housing prices. Even though it decreases housing prices in the short run, it does not solve the root cause of high housing prices, which could be speculation or a lack of supply.

- Whether or not prices will be capped at  $P_{max}$  depends on the government's ability to monitor and the penalties involved. For large countries without sufficient government budget or for large developing countries, it is unlikely that this policy is feasible.
- If the government is worried about equity, then governments might consider means-tested, targeted forms of assistance, such as providing rental housing for low-income households.

## R2: Explain a subsidy can be an appropriate policy to reduce housing prices

### Thesis:

- Another solution to tackle rising housing prices is introducing subsidies for producers.
- A subsidy is a payment made by the government to firms to produce a good or service
- For example, the government could provide monetary support to the builders to purchase equipment, hire labour or even discounts on their land purchase
- This will reduce the firms' cost of production and increase the firms' willingness and ability to supply more goods at every price.
- The supply curve shifts to the right from  $S_1$  to  $S_2$ , which results in a surplus at the prevailing price.



- Due to the surplus of  $Q_s Q_d$ , producers are incentivised to lower prices to sell off the excess supply. Hence, there will be downward pressure on prices.
- As prices decrease, this acts as a signal for consumers to increase quantity demanded
  - This is because as prices are lower, rational consumers would increase quantity demanded as marginal benefit exceeds the price they pay
- Likewise, decreasing prices also act as a signal for producers to decrease quantity supplied
  - This is because producers are profit seeking and would decrease production as it is less profitable to produce the good, leading to a fall in quantity supplied.
- This continues until the surplus is eliminated, and the new equilibrium is reached at  $P_2$  and  $Q_2$ .

- Hence, the subsidy has led to a fall in price from P1 to P2.
- This policy is appropriate as not only does price decrease, but equilibrium quantity also increases, and more consumers are able to get access to housing.

**Anti-thesis:**

- However, subsidies will incur opportunity costs as funds are given to the producers.
  - In the diagram above, the government would incur an expenditure of CABP1 to finance the subsidy. This is equivalent to the per unit subsidy multiplied by the new market equilibrium quantity of housing.
  - Funds used this way may also result in budget deficits, and this will result in heavy taxation in the future.
- Moreover, land is scarce in Singapore and thus there will be high opportunity costs incurred when land is used to develop housing.
  - This means forgoing other commercial, industrial and buildings meant to provide healthcare and education like hospitals and schools.

**EV R2:**

- On balance, subsidies help to solve the root cause of rising housing prices, which fundamentally occurs because of demand increasing much faster than supply. Moreover, there is an increase in equilibrium quantity alongside a fall in price, which means no consumer is getting cheaper housing at the expense of another.

**Conclusion & Overall Evaluation**

- In conclusion, a price ceiling and a subsidy can both lower prices. To compare, a subsidy is better than a price ceiling as it is a less disruptive policy and has a less likelihood of unintended consequences such as black markets arising in the long run.
- It is important for governments to address the root causes or problems of rising housing prices. If it remains mainly a supply issue, subsidies to producers are appropriate.
- If the issue is affordability, means-tested subsidies to consumers or offering more public housing (direct provision) may be better alternatives.

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>• Lack application of relevant economic framework and context</li> <li>• Critical errors in analysis</li> <li>• Significant conceptual gaps in explanation</li> </ul>                                                                                                                                                                                                                                                                    | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</li> <li>• Some application of context and use of examples</li> <li>• Lacking in full scope of analysis</li> </ul>                                                                                                                                                                                                                    | <b>5 - 7</b>  |
| <b>L3</b>                                              | <ul style="list-style-type: none"> <li>• A well-developed answer that demonstrates:</li> <li>• Rigorous analysis for both requirements               <ul style="list-style-type: none"> <li>○ R1: Discusses the appropriateness of a price ceiling</li> <li>○ R2: Discusses the appropriateness of an alternative policy</li> </ul> </li> <li>• Clear analysis with diagram</li> <li>• Some application of context and use of examples related to the housing market</li> </ul> | <b>8 - 10</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
| <b>E1</b>                                              | <ul style="list-style-type: none"> <li>• Unsupported judgment</li> <li>• Superficial conclusion/assertion</li> </ul>                                                                                                                                                                                                                                                                                                                                                            | <b>1-2</b>    |

|           |                                                                                                                                                                                                                            |            |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <i>E2</i> | <ul style="list-style-type: none"> <li>• <i>Substantiated judgment, recommendation and/or comparison supported by reasons</i></li> </ul>                                                                                   | <i>3-4</i> |
| <i>E3</i> | <ul style="list-style-type: none"> <li>• <i>Insightful and perceptive evaluation, recommendation and/or comparison well discussed and evaluated using economic analysis and good application to the context</i></li> </ul> | <i>5</i>   |

### **Examiners' Comments:**

- *This question was well answered. Many students made good use of well-explained supply demand diagrams as tools of analysis to support their answers.*
- *An area for improvement is the clarity of diagrams. Diagrams should be drawn large enough to clearly display all relevant coordinates, points, and details necessary for explanation. Additionally, ensure pencils are sharp; using a blunt pencil can make labels and coordinates difficult to read.*
- *Avoid writing point form responses. It does not create a strong impression and is not appropriate for Economics essays, which are assessed based on continuous prose rather than bullet points.*
- *The strongest responses demonstrated effective application of economic concepts. These essays included points specific to the housing market or tailored their explanations to contexts such as the UK or Singapore, making it clear that the answers were not simply rehearsed. Such responses left a particularly strong impression on us.*
- *Evaluation*
  - *Students should clearly signpost their evaluation by writing it as a separate paragraph. This can be done after each requirement. Evaluative statements should aim to come to a stand and should first address each individual requirement. This can then be followed by a final summative evaluation that directly answers the question.*
  - *Since the question asks which policy is most appropriate, an evaluative approach that compares both policies was preferred.*

### **Question 2**

- (a) Explain how supermarkets can tap on cognitive bias and price discrimination to increase their profits. [10]**

In supermarkets, Artificial Intelligence (AI) powers self-checkout stations and frictionless payments using cameras and sensors. Smart systems that use AI will also reduce electricity use by adjusting lighting and refrigeration. AI can also boost productivity and enable higher-value work in the labour market.

- (b) Discuss the effects on consumers and employees when supermarkets adopt the use of AI. [15]**

### **Part (a)**

#### **Introduction**

- Aim of supermarket: to maximize profits.
- Supermarkets are imperfect markets and are oligopolistic in nature due to the high barriers to entry such as setup costs.
- To increase their profits, such firms avoid price wars and prefer to engage in non-price strategies which tap on (1) cognitive bias and (2) price discrimination

**Body:****R1: Firms apply cognitive biases to increase profits**

- Cognitive bias are systematic errors in thinking which can cause the judgement of consumers to be clouded by (i) salience bias or (ii) loss aversion or (iii) sunk cost fallacy.

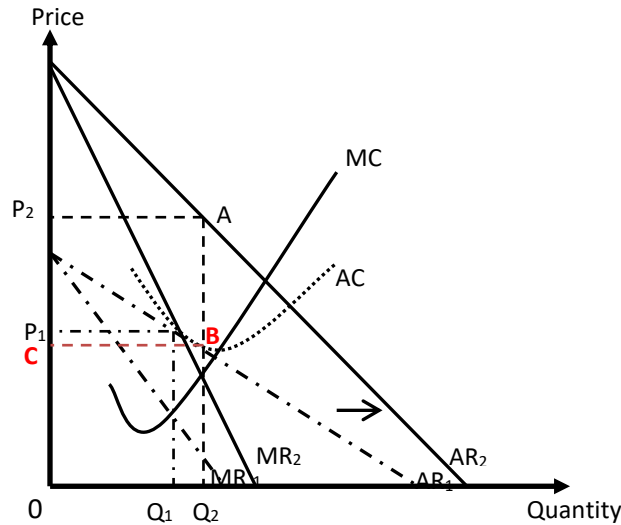
(i) Salience bias

- This refers to the tendency for consumers to focus on information that is more prominent/ outstanding/ interesting.
- For e.g., in product differentiation: supermarkets such as Cold Storage advertise themselves as selling the freshest produce out of all supermarkets in Singapore. It also makes use of red bold fonts to indicate 'discounts' or 'low price'. Such catchy terms or phrases catch the attention of the consumers. This will increase the demand for their products that causes an increase in AR and MR. If they believe that no other supermarket will offer fresh produce, their demand for Cold Storage produce will be price inelastic one.
- For e.g., in strategic placement: supermarkets place products at consumers' eye level to make them more prominent and increase their likelihood of purchasing essential items.
- For e.g., in marketing tactics: Supermarkets place emphasis on best beef quality because the cows are 'grass fed' or vegetables are 'organic'. Consumers will be more inclined to purchase such products compared to similar products that do not have such unique features.
- These key methods based on salient bias increase the demand of the consumers and reduce the substitutability of their products, illustrated by a rightward shift of the AR and MR curves as well as becoming steeper.

(ii) Loss aversion

- This describes the tendency of consumers to prefer avoiding losses to acquiring equivalent gains.
- For e.g., Giant offers 'free gift while stocks last', this creates a sense of urgency in consumers' mind as they would want to receive the free gift to minimize losses, resulting in an increase in demand for Giant's goods and become less price elastic as other supermarkets may not offer.
- For e.g., in customer loyalty rewards programs: FairPrice uses points accumulation system in the app whenever the customers make payments, and these points can be used to offset future payments. A customer who has accumulated many points might feel compelled to buy more from the store to reach the next reward, rather than switching to a different supermarket. Supermarkets leverage this by making customers feel that quitting now would mean their previous efforts were for nothing. This increases the demand for the supermarket.

These methods based on cognitive bias will increase the AR and MR faced by the supermarkets and become more price inelastic. This is illustrated by a rightward shift from AR1 and MR1 to AR2 and MR2. The profit maximizing price and output increased from 0P1 and 0Q1 to 0P2 and 0Q2. This leads to an increase in the TR of the supermarket and the initial normal profits have become supernormal profits of P2ABC.



### R2: To increase profits through price discrimination

- Price discrimination occurs when supermarkets sell the same good at different prices whereby the price difference does not reflect differences in the cost of supplying the shoppers. This captures the consumer surplus and earns higher total revenue and in turn higher profits from sales.
- Supermarket practices 3<sup>rd</sup> degree discrimination by charging different prices to different groups of consumers buying the same product by segmenting the market according to differences in PED between the groups.
- This will allow the firm to increase profits as compared to charging a uniform price.
- Supermarkets can price discriminate because they meet the following 3 conditions:
  - (1) They have market power since there are high barriers to entry such as high capital costs for infrastructure and inventories, managing complex supply chains, competing with established chains on advertising and marketing efforts.
  - (2) They must be able to identify and segment market according to differences in PED for price discrimination to be profitable. For instance, senior citizens must present their ID or CHAS cards to identify themselves. Senior citizens have a more price elastic demand for goods sold in supermarkets than the other customers such as working adults, this may be due to the prices of goods taking up a bigger proportion of the senior citizens' income than the working adults. When the seniors are given a discount, for example, FairPrice offers a 3% discount on Mondays for Pioneer Generation cardholders and a 2% discount for all Senior shoppers aged 60 years and above on Tuesday upon payment, this decreases the price of the good, the quantity demanded will increase by more than proportionately. This increases the TR of the supermarket, on top of the regular sales revenue earned from the other customers at the regular price, which in turn increases its profits. At the same time, the increase in sales volume to the seniors also allows the supermarket to benefit from economies of scale.

In another scenario, FairPrice Finest which is situated in wealthier neighborhoods e.g. Bukit Timah, where PED of their goods are relatively more price inelastic since groceries take up a smaller proportion of the income of those residents living in that neighborhood. The prices of goods here will be higher than other NTUC outlets, which leads to a less than proportionate decrease in quantity demanded, resulting in an increase in total revenue of FairPrice Finest. While the heartland FairPrice Extras in Ang Mo Kio for instance, will sell their goods at a lower price because the consumers have a relatively more price elastic demand where the groceries take up a bigger

proportion of their income. This will lead to a more than proportionate increase in quantity demanded and result in an increase in total revenue of the FairPrice Extras. In both scenarios, the increase in total revenue will increase the profits of the supermarket when the costs of the groceries sold to seniors or at different outlets of NTUC are still the same.

- (3) They must be able to prevent resale and arbitrage for price discrimination to work. Most groceries are perishable and therefore consumers will not resell such goods compared with other non-perishable items.

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                     |      |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| L1                                                     | <ul style="list-style-type: none"> <li>▪ Lack of application of relevant economic framework and context</li> <li>▪ Critical errors in analysis</li> <li>▪ Significant conceptual gaps in explanation</li> </ul>                                     | 1-4  |
| L2                                                     | <ul style="list-style-type: none"> <li>▪ Some economic analysis for both R1 and R2 but with some gaps or lapses in explanations</li> <li>▪ Some applications of context and use of examples</li> <li>▪ Lacking in full scope of analysis</li> </ul> | 5-7  |
| L3                                                     | <p>A well-developed answer that demonstrates</p> <ul style="list-style-type: none"> <li>▪ Rigorous analysis for both R1 and R2</li> <li>▪ Good scope of coverage</li> <li>▪ Good application of contextual examples</li> </ul>                      | 8-10 |

**Examiners' Comments**

- Many students did not identify the oligopolistic market structure of supermarkets - which is the reason for them tapping on cognitive bias and price discrimination. A few erroneously identified the market as monopolistic competition.
- It is important to link examples of cognitive bias with the effects on Demand/AR and PED. Many answers did not integrate their examples of cognitive bias with Demand and PED changes. In addition, examples used were sometimes generic and did not apply to the context of supermarkets.
- Detailed explanation of the diagrams is often ignored. Far too many times, the answers merely stated 'price' and 'output' rose without a rigorous link to changes in profit maximizing equilibrium. The area representing the profits earned by supermarkets is also often not well-illustrated. Many wrote (P1-C1) as the total profits when that referred only to profit per unit.
- For price discrimination, many left out the most important criteria i.e. 'for the same good/service' and 'not due to differences in cost'.
- It is a bit simplistic and unrealistic to assert that 'elderly have  $PED > 1$  and supermarkets charge them a lower price and a higher price for working adults whose  $PED < 1$ '. Realistically speaking, it is less likely that there are different price tags for the same good for different groups of customers. The correct description is to articulate that discounts are applied upon payment when they present their 'senior citizen card' for identification.

**Part (b)**

**Introduction:**

- AI or Artificial Intelligence involves building computer systems that can perform tasks typically requiring human intelligence, such as learning, problem-solving, decision-making, and language understanding. These systems use data and algorithms to perceive their environment, adapt, and

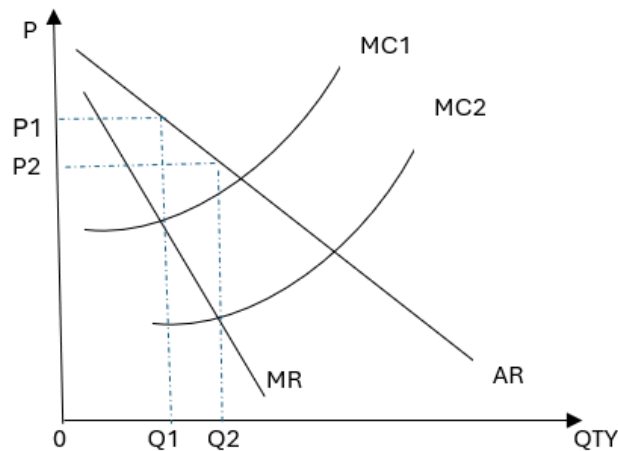
achieve goals, appearing in various forms from recommendation systems and chatbots to self-driving cars and advanced search engines. AI is a transformative technology that drives innovation, automates processes, and enhances efficiency across many industries and aspects of daily life.

### Body:

#### R1: Discuss the effects on consumers when supermarkets adopt the use of AI (TAT)

##### Thesis:

- Supermarkets make use of AI to power self-checkout counters and frictionless payments to replace cashiers. This helps to reduce labour costs, which is a type of variable costs as more cashiers will have to be employed in larger supermarkets which sell larger quantity of goods.
- In addition, AI also helps to adjust lighting and refrigeration and thereby reducing the costs of electricity which is also a type of variable costs which increases with the size of the supermarket.
- Therefore, the use of AI reduces the TVC and therefore TC. Since MC accounts for additional costs when an additional unit of output is produced, a decrease in TVC will decrease the MC of the supermarket. A decrease in TC will also decrease AC and MC. This is illustrated by the downward shifts of the MC curves.



- The original equilibrium price and output was  $OP_1$  and  $OQ_1$ . While the new profit maximizing price and output becomes  $OP_2$  and  $OQ_2$ . There is a decrease in price and an increase in the quantity demanded enjoyed by the consumers. Since supermarkets are in an oligopoly environment where firms are mutually interdependent, when 1 supermarket passes on the cost savings to the consumers, other supermarkets will follow suit. Therefore, the consumers are going to benefit from lower prices and increase in the quantity demanded. This results in an increase in consumers welfare.

##### Anti-thesis

- Due to the convenience in payment, it attracts more customers like Gen Z who do not like interactions with cashiers, this will increase the demand for supermarket groceries and lead to an increase in AR and MR. This will result in an increase in the price of the goods. The higher price may have an adverse impact of those in the lower-income group.
- AI may require maintenance and upgrading costs, as well as the training costs of the employees in using the AI system. As a result, the supermarket incurs an increase in MC and AC in the short run. Hence the cost savings arising from wages and electricity bills may not be passed onto the consumers. The price of groceries remains high. In fact, when supermarkets are in an oligopoly market, they might be fearful of price war.

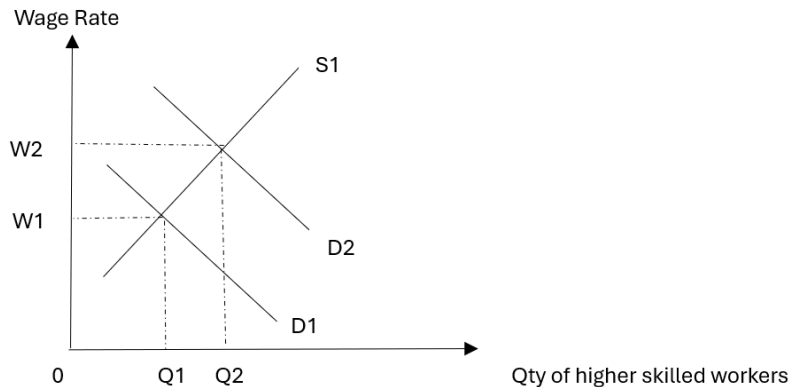


**EV R1**

- However, senior citizens who are not so IT savvy may find difficulty in self-checkout counters. They may be anxious in doing the checkout and payment by themselves. They miss the human support kind of shopping. Their demand may hence fall. To solve this problem, most of the supermarkets in SG maintain at least 1 cashier manned counter and many self-checkout and payment counters. This helps to cater to the needs of all kinds of customers. This is also beneficial to the firms as they get to retain their customer base – most of which might be the elderly and housewives who are not IT-savvy.
- The profits earned by the supermarkets might be used to carry out R&D to improve the service offered to consumers such as better quality shopping carts to make it easier for consumers to push them around.
- Though the setting up of AI systems in the supermarkets may involve significant fixed costs which increase their total costs and reduce their supernormal profits at the beginning, however, the cost savings that come later with the adoption of AI remain attractive to the supermarkets.

**R2: Discuss the effects on employees when supermarkets adopt the use of AI****Thesis:**

- Workers who know how to operate the AI system will remain employed. In fact, they are the higher skilled workers. Other job opportunities that arise with AI include software engineers, data analytics engineers etc., hence demand for such highly skilled labour increases. This will be illustrated by a rightward shift of the demand curve for these higher skilled workers from D1 to D2.



- At the original wage W1, there will be a shortage of such higher skilled labour. This leads to an upward pressure on wages which in turn causes an increase in the quantity supplied and a decrease in the quantity demanded of such workers. The upward pressure of wages continues until the shortage is eliminated. The new equilibrium wage will be higher at W2. Hence, higher skilled workers benefit from the use of AI with higher wages and more will be employed.
- In fact, when the supply of such highly skilled workers is price inelastic because it takes time to train such workers, the increase in demand for them will result in a more than proportionate increase in their wages.

**Anti-thesis:**

- Increasing self-checkout counters will eliminate cashiers' roles and when AI can take over physically demanding and repetitive tasks, other roles such as stock checkers would also be eliminated. The demand for these lower skilled workers will therefore be reduced.
- This will result in a leftward shift of the demand curve for such lower skilled workers. By the same DD/SS framework as explained in the higher skilled workers section, the surplus of these lower skilled workers at the original wage level will result in a downward pressure on wages.

At the new equilibrium, the lower skilled workers will be getting a lower wage compared to the higher skilled workers and less will be employed.

**EV R2:**

- Those repetitive tasks which can be replaced by AI will free up employees to more complex roles such as customer service, they can dedicate more time to providing personalized customer service. This means that employees can change job scope.
- However, employees who lost their jobs and lack the skills to seek employment in other areas or industries could potentially be unemployed and cause an increase in structural unemployment in the economy. Firms or the government need to invest in training and reskilling programs to help employees to master new skills so as to transit to AI augmented roles and ensure they can leverage the new technology effectively. Firms are likely to invest in such training as it may be easier to train existing workers than recruit new workers – especially if there is a tight labour market.
- There will also be a widening income gap among the employees as the higher skilled workers will be getting higher wages while the lower skilled workers will get lower wages.

**Overall Evaluation:**

- While AI may disrupt certain roles, it will produce new ones, and this could result in a net gain of jobs overall. Employees should continuously upskill to mitigate the risks of being replaced by AI. Alternatively, employees can focus on soft skills such as human relations which may not be replicable by technology at least up till now.

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                     |             |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>○ No use of relevant framework</li> <li>○ The answer is mainly descriptive or mere listing of points</li> <li>○ Significant conceptual errors</li> <li>○ Only R1 and R2 T or AT</li> </ul>                   | <b>1-4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>○ Some applications of relevant economic concepts and framework in analysis</li> <li>○ Some use of contextual examples</li> <li>○ Lacking in full scope analysis</li> <li>○ Only R1 TAT or R2 TAT</li> </ul> | <b>5-7</b>  |
| <b>L3</b>                                              | A well-developed answer that demonstrates <ul style="list-style-type: none"> <li>○ Rigorous analysis for both R1 and R2</li> <li>○ Good application of contextual egs.</li> <li>○ Good application of relevant framework</li> </ul>                 | <b>8-10</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                     |             |
| <b>E1</b>                                              | <ul style="list-style-type: none"> <li>○ Unsupported judgement</li> <li>○ Superficial conclusion/assertion</li> </ul>                                                                                                                               | <b>1-2</b>  |
| <b>E2</b>                                              | <ul style="list-style-type: none"> <li>○ Substantiated judgement, recommendation supported by reasons / economic analysis</li> </ul>                                                                                                                | <b>3-4</b>  |
| <b>E3</b>                                              | <ul style="list-style-type: none"> <li>○ At least 2 well explained insights covering both R1 and R2 and with a summative evaluation at the end</li> </ul>                                                                                           | <b>5</b>    |

**Examiners' Comments:**

- Many students did not know the difference between fixed and variable costs. They also failed to identify that 'need for less cashiers and reduced electricity use' are essentially variable costs as they vary with the level of output. These costs reduce SRMC as well as the profit-maximizing price.
- AT is often couched in a descriptive way such as 'the elderly facing inconvenience'. While the point is valid, there could have been ideas linked to economic analysis such as rise in AR due to greater convenience affecting the lower-income or a rise in MC due to costs of maintaining AI. They can then use this to weigh against the T of a lower price for a good evaluation.
- Many answers did not use a DD-SS framework for effects on employees. Such answers were descriptive and were sometimes poorly linked to structural and even cyclical unemployment. Some linked to welfare and effects on living standards.
- Many answers simply mentioned that the firm or the government should train the unemployed workers by providing subsidies or encourage workers to make use of their SkillsFuture Credits to upskill to seek employment. Instead, students should first explore the extent of unemployment caused by AI before introducing such intervention measures. It might also be more insightful to consider if firms are willing to do so instead of a rather simplistic evaluation of governments stepping in to intervene.

**Question 3**

**Governments employ different strategies to tackle the over-consumption of alcohol. In Singapore, alcohol taxes can be as high as \$88 per litre of alcohol content while certain states in India ban alcohol to reduce social harm.**

- (a) Explain one reason why governments intervene in the market for alcohol and how an increase in alcohol tax is likely to affect tax revenue. [10]**
- (b) Discuss whether it is possible for government policies to address the market failure in the market for alcohol without causing unintended consequences. [15]**

**Introduction:**

- Governments intervene when there is market failure, which is the failure of the free market to achieve an efficient allocation of resources that maximises society's welfare.
- Define information failure: In economics, information failure refers to imperfect knowledge and asymmetric knowledge. Information failure occurs when people have inaccurate, incomplete or misunderstood data and so make potentially choices which do not result in allocative efficient outcomes which maximizes social welfare.

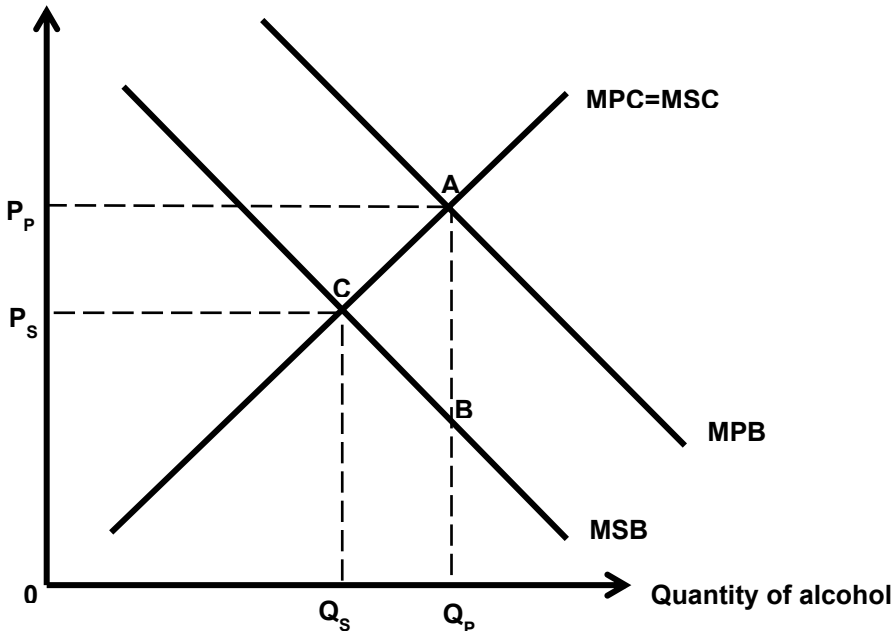
**Body:****R1: Explain one reason why governments intervene in the market for alcohol**

- Governments intervene in the market for alcohol due to the negative externalities present, which result in market failure.
- By consuming alcohol, there are negative externalities which are spillover costs on 3rd parties who are not involved in the consumption or production of the goods.
- For example,
  - Drunk driving leads to fatal crashes, injuries, and property damage. Pedestrians and other drivers and owners of property bear the consequences of costs (explicit/implicit) which may not be compensated by the drunk drivers.
  - Increased incidence of alcohol-related illnesses (e.g. liver disease, cancer, heart disease) and even alcohol poisoning. This increased use emergency services and hospital

admissions increases public healthcare burden and costs to other patients seeking medical treatment in hospitals and taxpayers

- This causes MSB to be less than MPB due to MEC or negative MEB → negative externalities in consumption
- The free-market equilibrium output is at  $Q_p$  where  $MPC = MPB$ .
  - This is because producers and consumers, out of their own self-interest, take into account only their own private costs and benefits and ignore any external costs

Price, benefits, costs



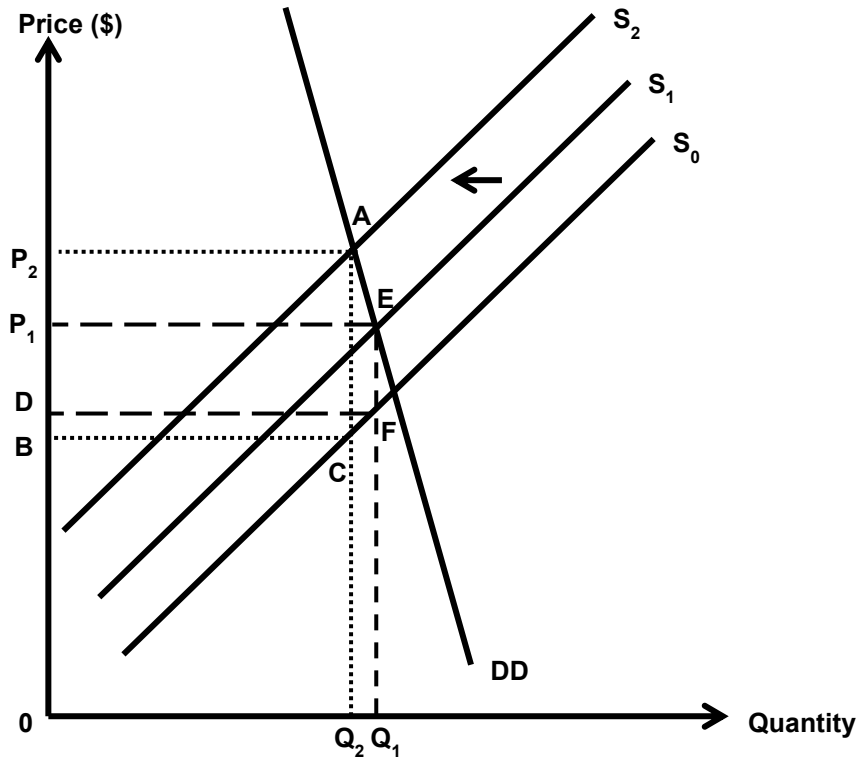
- However, the socially optimal output of the society is at  $Q_s$  where  $MSC = MSB$ .
- As  $Q_p$  is more than  $Q_s$ , this suggests that there is an overconsumption of alcohol
- This leads to a deadweight loss of ABC.
  - The deadweight loss is because the total social benefits from consuming ( $CBQ_pQ_s$ ) is less than the total social cost ( $CAQ_pQ_s$ ) of producing  $Q_sQ_p$  units of alcohol.
- This results in market failure as the resources are not allocated at the socially optimal level.
- This is one reason why governments intervene in the market for alcohol.

*[Students can also explain how imperfect information causes market failure]*

## R2: Explain how an increase in alcohol tax is likely to affect tax revenue

- A tax is a payment made by the government to firms to produce a good or service
- Assuming that  $S_0$  is the supply curve without the imposition of a tax, and  $S_1$  is the supply curve with the initial tax
- The initial tax revenue is area  $P_1EFD$ . This is equal to the per unit tax  $EF$  multiplied by the equilibrium quantity  $Q_1$ .
- If the government increases the tax, this will increase the firms' cost of production and decrease the firms' willingness and ability to supply more goods at every price.
- The supply curve shifts to the left from  $S_1$  to  $S_2$ , which results in a shortage at the prevailing price.
- Due to the shortage, some consumers cannot obtain the good but are willing and able to pay higher prices.
- Hence, there will be upward pressure on prices.

- As prices increase, producers increase quantity supplied and consumers reduce quantity demanded.
- This continues until the shortage is eliminated, and the new equilibrium is reached at  $P_2$  and  $Q_2$ .
- As DD for alcohol is likely to be price-inelastic, the rise in price leads to a less than proportionate fall in Qty demanded and overall fall in quantity.



- Tax revenue is now  $P_2ACB$  and is an increase from  $P_1EFD$ . This is because the per unit tax has increased to  $AC$  but quantity only fallen to  $Q_2$ .
- Note that application of PED is important to show the change in tax revenue → rise in tax revenue from the increase in unit tax is more than the fall in tax revenue from the fall in quantity demanded of the good → rise in tax revenue

*Note: Students may also explain draw one single SS curve shift to explain how the increase in alcohol tax is likely to affect tax revenue*

**Mark Scheme:**

| <b>Knowledge, Application, Understanding and Analysis</b> |                                                                                                                                                                                                                                                              |      |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| L1                                                        | <ul style="list-style-type: none"> <li>• Lack application of relevant economic framework and context</li> <li>• Critical errors in analysis</li> <li>• Significant conceptual gaps in explanation</li> </ul>                                                 | 1-4  |
| L2                                                        | <ul style="list-style-type: none"> <li>• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</li> <li>• Some application of context and use of examples</li> <li>• Lacking in full scope of analysis</li> </ul> | 5-7  |
| L3                                                        | <ul style="list-style-type: none"> <li>• A well-developed answer that demonstrates:</li> <li>• Rigorous analysis for both requirements</li> </ul>                                                                                                            | 8-10 |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | <ul style="list-style-type: none"> <li>- R1 point about negative externality in consumption has clear monetised costs, divergence between MPB and MSB, conditions for private and social equilibrium quantities and the derivation of DWL</li> <li>- R2 point has application of PED concept and clear links on how tax revenue increases when tax rises</li> <li>• Clear analysis with diagram(s)</li> <li>• Some application of context and use of examples related to the alcohol market</li> </ul> |  |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

### Examiners' Comments:

- Stronger responses had more in-depth analysis for both Rs while average responses had gaps in their analysis. Many students misread the question and explained how tax addressed market failure in the market for alcohol which was more appropriate for (b). Hence, they failed to answer the question which then had repercussions in part (b) where they simply mentioned that 'the tax will remove the overconsumption of the good and DWL as explained in part (a)'.
- Pointers regarding R1 depth
  - A considerable number of responses did not write their external costs in monetised terms which was important.
  - Likewise, the conditions for private and social equilibrium quantities were omitted as well.
  - Lastly, the derivation of the DWL triangle was missing or not explained properly.
- Pointers regarding R2 depth
  - There were a handful of responses that inaccurately analysed the tax on alcohol as a direct tax and shifted DD/MPB curves. Instead, the tax was an indirect one on producers and thus should affect SS/MPC curves.
  - Most responses also omitted the price adjustment process to show the change in price and quantity after the rise in alcohol tax.
  - Some responses also wrongly assumed that the tax was 0 at first but the question was a rise in alcohol tax rather than an imposition of an alcohol tax.
  - PED application was generally on point with many choosing to explain  $PED < 1$  for alcohol. However, the link from  $PED < 1$  to a rise in tax revenue collected when tax rose was commonly weaker. Responses usually just explained that the rise in price caused a less than proportionate fall in quantity demanded, thus a rise in tax revenue. This only shows a rise in consumer expenditure or pre-tax producer revenue. Thus, it is vital to explain further that the gain to tax revenue from a rise in taxes is greater than the fall in tax revenue from a limited fall in quantity. The best responses also showed this clearly by referring to the changes in tax revenue on their diagrams.

### Part (b)

#### Introduction:

- Policies that a government can use to address market failure in the alcohol market without causing unintended consequences are taxes or a ban.
- Unintended consequences are defined as possible side-effects that arise and are not the objectives of the policies.

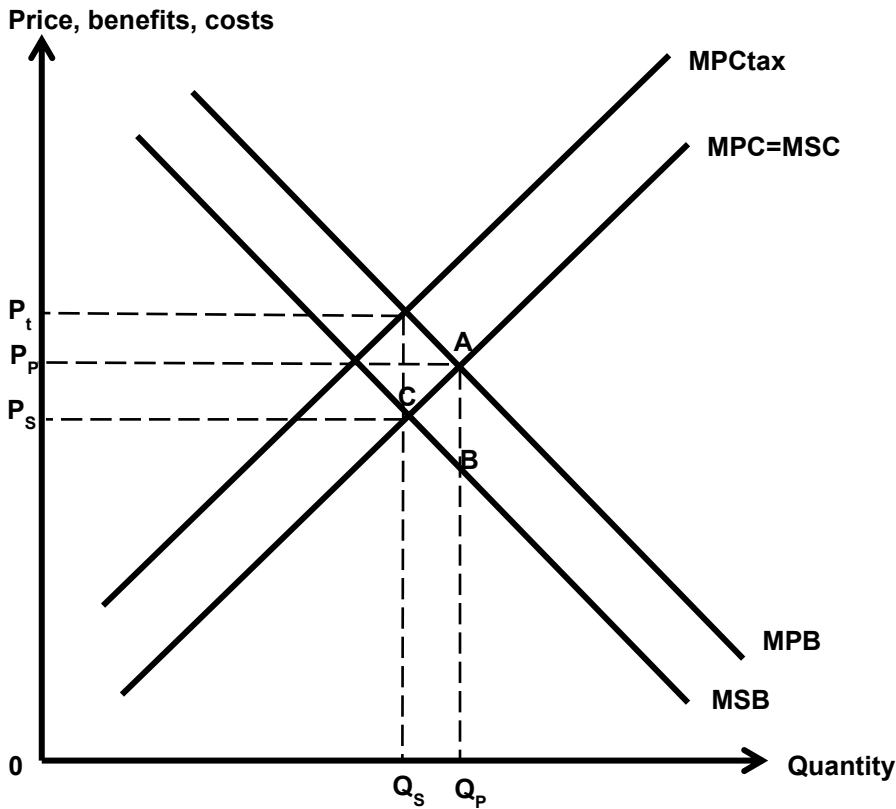
#### Body:

**R1: Explain how a tax addresses the market failure in the market for alcohol without causing unintended consequences.**

#### Thesis:

- A government can impose a tax on producers that is equivalent to the MEC or negative MEB.
- This increases the cost of production to producers, and the MPC curve shifts leftward (to MPC<sub>tax</sub>), internalising the negative MEB.

- The tax has resulted in a higher price ( $P_e$  to  $P_t$ ) which will cause a lower equilibrium quantity ( $Q_e$  to  $Q_s$ ), which is also the socially optimal quantity, where  $MSB = MSC$ .

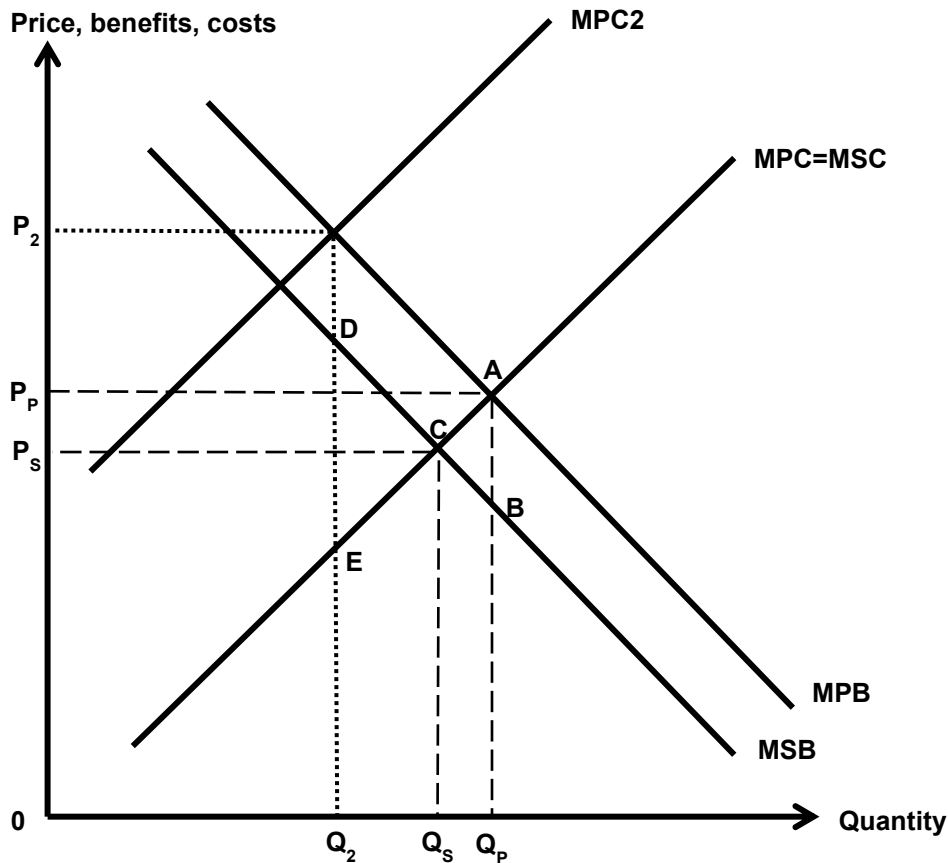


- This eliminates the deadweight loss arising from overconsumption.
- The new equilibrium quantity is hence allocatively efficient.
- Because the tax is equivalent to the negative MEB at  $Q_s$ , quantity decreases from  $Q_p$  to  $Q_s$  which is the socially optimal output level. This addresses the market failure in the market for alcohol without causing unintended consequences.

#### Anti-thesis:

- However, a government faces imperfect information in estimating the true size of the MEC or negative MEB in the alcohol market. First, causality is hard to isolate, since 3rd party harms sustained from drunk driving accidents may not be solely due to alcohol but other factors like reckless driving or poor enforcement. Secondly, many external costs are difficult to monetise, as medical bills are measurable but losses in productivity, emotional trauma and reduced social

cohesion are less tangible. Hence, a government may overestimate the value significantly, resulting in a tax that is too high [tax > MEC at  $Q_s$ ] which may cause unintended consequences.



- For example, if the tax is excessive due to overestimation of the monetary value of the negative externalities, this will cause MPC to shift left to MPC2 instead. At the new market equilibrium where  $MPB = MPC2$ , equilibrium quantity of alcohol decreased from  $Q_p$  to  $Q_2$ , which is lower than  $Q_s$ .
- This will create a new deadweight loss of area DCE.
- This deadweight loss exists because at  $Q_2$ , the marginal social benefit of the last unit consumed exceeds its marginal social cost.
- This means society is forgoing alcohol consumption that would have been beneficial even after considering all social costs
- This deadweight loss of area DCE is larger than area ABC leading to an unintended consequence.
- Moreover, high alcohol taxes are also regressive. This means lower-income individuals pay a larger share of their income toward these taxes compared to higher income individuals.
- Since demand for alcohol is price inelastic, quantity demanded of alcohol will fall less than proportionately to the rise in its price. To continue to consume alcohol means that poorer households might cut spending on essentials (food, healthcare) in order to pay these taxes.
- This can exacerbate economic inequality, which is also an unintended consequence.
- In addition, when people consumers buy less alcohol, businesses like breweries, distilleries, bars, restaurants, and liquor stores may see lower revenues.
- To cut costs, these businesses might reduce staff or slow hiring, potentially increasing unemployment.
- Hospitality, tourism, and entertainment sectors also rely on alcohol sales.

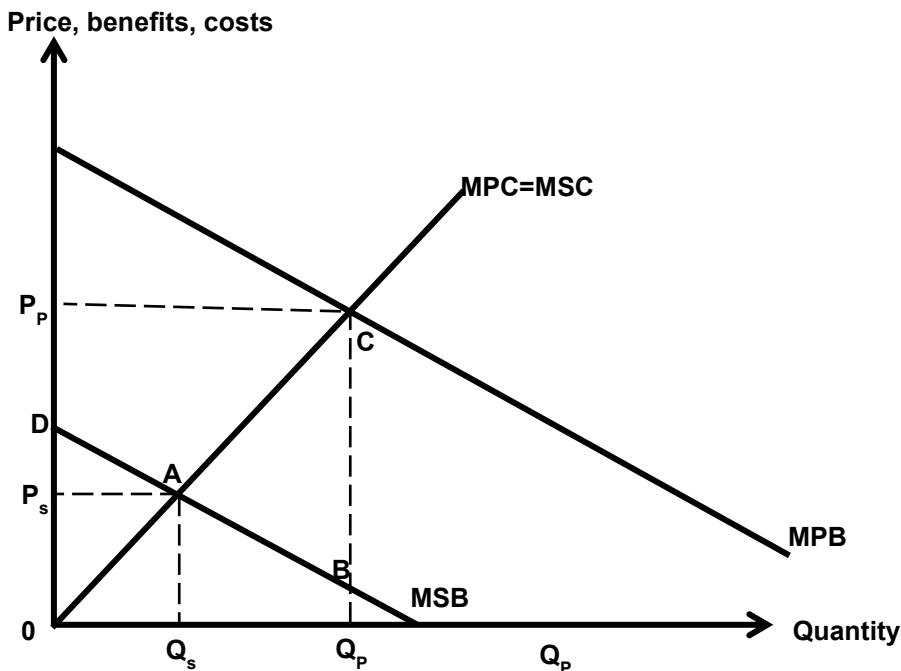


- If alcohol consumption in these related industries drop significantly due to high taxes, these sectors might also suffer, possibly leading to wider spread in job losses in the economy, which is also an unintended consequence.

**EV R1:**

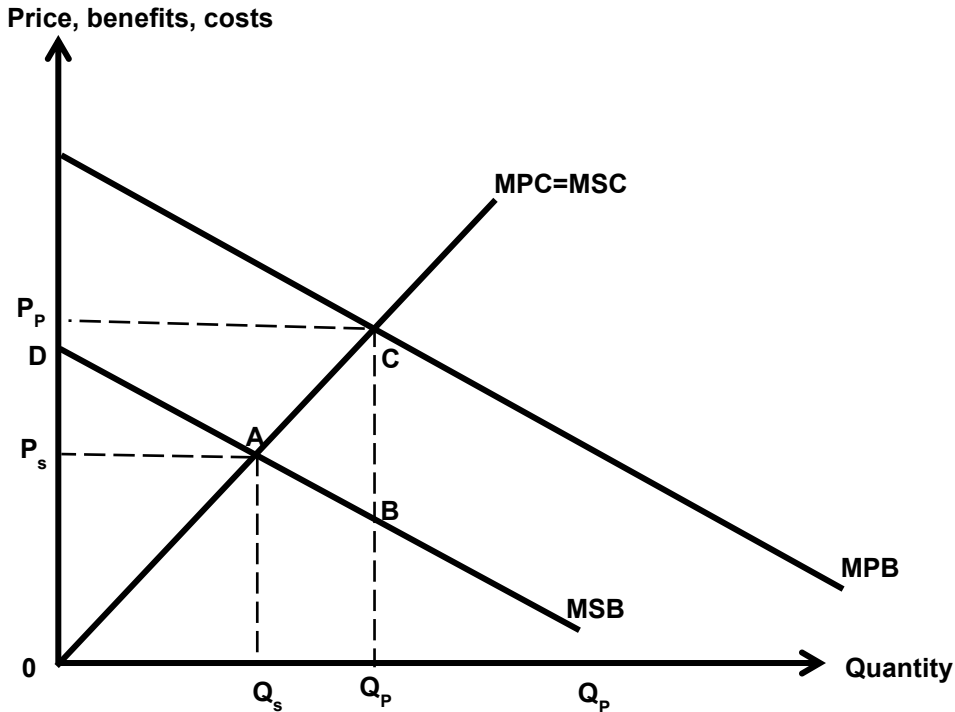
- On balance, completely avoiding unintended consequences is very difficult, but governments can minimize them.
- Governments should avoid imposing heavy taxes initially and instead regularly review and adjust tax rates or policies in response to changes in external costs, such as drink-driving fatalities or reports of public disturbances.
- They can also combine taxes with education campaigns and invest tax revenue in healthcare and addiction treatment.
- Furthermore, SG is considered a technocratic country with advanced technology and data collection processes, combined with a relatively small population, the government can collect more accurate information regarding the true size of the negative MEB, thus the likelihood of government failure from significant underconsumption is very unlikely.
- This is in contrast with India which has a vastly larger and more diverse population that makes data collection on alcohol-related harms far more complex and uneven across regions. Moreover, it has a weaker administrative capacity and less advanced technological infrastructure which reduces her ability to track and quantify external costs accurately, thus having a greater likelihood of government failure.

**R2: Explain how a ban addresses the market failure in the market for alcohol without causing unintended consequences.**



- A government can also impose a ban on alcohol consumption.
- A ban would decrease equilibrium quantity from  $Q_p$  to zero.
- This would remove the existing deadweight loss of area ABC, which occurred due to overconsumption.
- Such a policy would be appropriate if the negative MEB is significantly large.
- For example, governments may see alcohol as a driver of domestic violence, health problems, and poverty.

- Even though banning would create a new deadweight loss of area DA0, this deadweight loss is smaller than the initial deadweight loss of area ABC.
- Hence, banning would reduce the degree of allocative inefficiency as it leads to a smaller welfare loss
- Moreover, alcohol consumption can be addictive or habitual ( $PED < 1$ ), so taxes may not always reduce consumption significantly to correct for the large negative MEB.
- Banning alcohol is hence viewed as a faster and more assured way to reduce consumption.



- However, banning alcohol may lead to unintended consequences.
- Firstly, banning causes the equilibrium quantity to be 0. This is less than the socially optimal output at  $Q_s$ , where  $MSB = MSC$ .
- This deadweight loss exists because at quantity of 0, the marginal social benefit of the last unit consumed exceeds the marginal social cost.
- This means society is forgoing alcohol consumption that would have been beneficial even after considering all social costs
- In some countries, the negative MEB may not be significant. If so, the ban might create a deadweight loss (area DA0) that is even larger than the original deadweight loss (ABC) due to the overconsumption of alcohol.
- Hence, the ban has caused government failure, which is an unintended consequence.
- Moreover, black markets and illegal alcohol production may flourish when alcohol is banned. Enforcement can also be costly and difficult to maintain.
- Illegal sources of alcohol are also unsafe or toxic, leading to even more serious health risks and deaths.
- Thus, the ban may lead to unintended consequences.

#### EV R2:

- On balance, if external costs are large, restricting consumption might increase overall welfare despite a new deadweight loss. In this case, there may be no unintended consequences.
- However, this is extremely difficult in practice. Bans require heavy policing and legal enforcement, and it is unlikely that the equilibrium quantity will be zero.

- In fact, such a policy can strain government resources and may even encourage corruption. In India, strict and consistent enforcement is difficult due to a weaker fiscal capacity and an under-resourced police force. As a result, illegal production and consumption of alcohol may persist, with insufficient monitoring enabling a thriving black market that exacerbates social harms.
- Furthermore, even when legal supply is cut off, demand does not disappear as alcohol generates benefits to consumers and are generally more addictive to alcoholics → incentivises black market activities where people may turn to smuggled or homemade alcohol, which is even more unsafe.

*Note to students: Education and campaigns is another valid policy to use when imperfect information is present. As for the unintended effects, it is important to explain that due to the limited effectiveness or unexpected long time/prolonged period of educational campaigns, a government may incur increasingly greater costs to finance this which incurs an increasingly larger opportunity costs and give an example of the large forgone benefits. Another valid unintended consequence could be campaign fatigue from the targeted audience which led to them become apathetic or indifferent towards other government campaigns such as further skills training.*

### Conclusion and Overall Evaluation

- In conclusion, unintended consequences can arise in both policies. However, severe unintended consequences are less likely to arise using alcohol taxes.
- Taxes allow consumers to consume alcohol legally, which is less likely to lead to consumption of unsafe, unregulated alcohol.
- They also generate government revenue that can fund addiction treatment and public campaigns.
- Finally, governments can adjust taxes gradually and monitor impacts to reduce negative effects.

### Mark Scheme:

| Level             | Knowledge, Application/Understanding and Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| L1                | <ul style="list-style-type: none"> <li>• Lack application of relevant economic framework and context</li> <li>• Critical errors in analysis</li> <li>• Significant conceptual gaps in explanation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 – 4  |
| L2                | <ul style="list-style-type: none"> <li>• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</li> <li>• Some application of context and use of examples</li> <li>• Lacking in full scope of analysis</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5 – 7  |
| L3                | <ul style="list-style-type: none"> <li>• A well-developed answer that demonstrates:</li> <li>• Rigorous analysis for both requirements               <ul style="list-style-type: none"> <li>- For taxes to address negative externality in consumption, the tax was clearly explained to be equal to negative MEB or MEC and clear links on how Qs was reached. Additionally, the antithesis should focus heavily on unintended effects like government failure rather than just generic limitations on effectiveness which is not the crux of the question.</li> <li>- For ban, there needs to be an explanation of how a ban leads to equilibrium quantity to be zero, preferably by banning both consumption and production. Furthermore, there should be reasoning of why negative MEB or MEC is significantly large for a government to consider implementing a ban so that a less allocative inefficient outcome is attained. The same approach for antithesis in taxes applies to ban as well.</li> </ul> </li> <li>• Clear analysis with diagram</li> <li>• Some application of context and use of examples related to the alcohol market</li> </ul> | 8 – 10 |
| <b>Evaluation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |

|    |                                                                                                                                                                                                             |       |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| E1 | <ul style="list-style-type: none"> <li>• <i>Unsupported judgment</i></li> <li>• <i>Superficial conclusion/assertion</i></li> </ul>                                                                          | 1     |
| E2 | <ul style="list-style-type: none"> <li>▪ <i>Substantiated judgment, recommendation supported by reasons/ economic analysis</i></li> </ul>                                                                   | 2 - 3 |
| E3 | <ul style="list-style-type: none"> <li>▪ <i>Insightful and perceptive evaluation and recommendation well discussed and evaluated using economic analysis and good application to the context</i></li> </ul> | 4 - 5 |

### **Examiners' Comments:**

- Stronger responses had 2 well explained policies that showed how each policy could resolve the market failure without causing unintended effects and the antithesis was focused on how it may lead to unintended effects before evaluating for each policy. Average responses had some gaps in their analysis and their antithesis generally focused on limitations that hindered effectiveness of the policy rather than focusing heavily on the unintended consequences.
- Students are reminded to keep to the R1 and R2 formats where relevant and avoid over-elaborating by choosing to analyse 3 different policies. This resulted in each policy being cursory rather than in-depth.
- Furthermore, some responses wrote too briefly for their thesis and wrote too extensively for their antithesis. This approach is not recommended as thesis is more important than antithesis. There is always greater weightage placed on thesis arguments.
- Pointers regarding policy on taxes
  - Some responses did not clearly state that the tax was equal to the negative MEB or MEC. In addition, there should be analysis of how this would affect producers by increasing COP and increasing MPC such that it intersects MSB at  $Q_s$ , thus removing DWL and resolving market failure without causing unintended effects.
  - For antithesis, since the focus is on unintended effects, responses need to be modified to explain this clearly rather than writing a pre-rehearsed limitation. Common approach was explaining how the tax could be too little or too much, thus not attaining  $Q_s$ . A much better approach would be to explain clearly how due to imperfect information on the value of negative MEB or MEC, a government may end up overtaxing significantly, thus causing a significant underconsumption which generates a DWL area greater than the initial DWL from overconsumption, thus leading to government failure.
- Pointers regarding policy on ban
  - Average or weaker responses generally did not explain how a ban results in an equilibrium quantity of zero. It is also important to explain that the size of negative MEB or MEC was significantly large such that a government decides to ban alcohol, thus resulting in a less allocative inefficient outcome.
  - For antithesis, responses were generally better with good explanation of the negative implications of a black market with regards to unsafe and very expensive unregulated alcohol. Another good unintended effect was how a ban could result in government failure if the size of negative MEB or MEC was much smaller than estimated. Thus, the large net benefits of consuming alcohol in terms of revenue/profits for firms and jobs created were lost due to the ban and this outweighed the initial DWL from overconsumption.
- Stronger evaluation generally had good judgements about the extent of unintended effects by using criteria such as the nature of alcohol, characteristics and economic developments of countries like SG and India. Lastly, alcohol is usually viewed as a demerit good, thus recommending subsidies to address inequity caused by alcohol tax is a weaker point.
- Diagrams are integral in the answers.
- Students should aim to provide their analysis within an appropriate economic framework, meaning a good, clear diagram, explanation [which includes thesis and anti-thesis using the diagram. Anti-thesis points that make use of the framework should always be given priority over those that tend

*to be more cursory or descriptive. For e.g. in the case of indirect tax, a point such as overestimation of MEC leading to a large tax and hence underconsumption of the good is preferred to a point on loss of revenue and profits of producers of alcohol which then tend to spiral out of control into firms' shut down, job losses and AD/AS analysis of negative EG with the multiplier process thrown in.*

- *Always check the question - the focus is addressing market failure without causing unintended consequences hence the significant underconsumption of the good and new DWL from the over-large tax creates an unintended consequence of a new aspect of market failure. Job losses and negative growth are valid points for selected countries where the alcohol industry and its related industries are significant contributors to its GDP → hence you need to use the relevant evidence to make your stand and not a generic one for all countries.*

**4 In 2022 and 2023, many economies experienced high inflation, slowing economic growth, low unemployment and widening trade deficits simultaneously.**

**(b) Explain the possible impact of 'widening trade deficits' on a country's standard of living.**  
[10]

**(b) Discuss whether achieving price stability or full employment should be prioritised by a government.**  
[15]

**Part (a)**

**Introduction**

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

- Material SOL refers to the amount of goods and services an average individual can consume, proxied by real GDP per capita, while
- non-material SOL refers to other less tangible, qualitative aspects of life pertaining to physical, social, environmental well-being of people, proxied by various indicators such as life expectancy, crime rates and pollution indices.

**R1: The widening trade deficit could worsen a country's material SOL.**

- A trade deficit means that the country is spending more on import expenditure than it is earning from export revenue.
- A widening trade deficit could be caused by a further rise in import expenditure, or a fall in export revenue, or both, further worsening the trade deficit. This could be due to:
  - a fall in competitiveness of the country's exports, resulting in falling demand for its exports from trading partners and a fall in  $Q_{dx}$ .
  - Or a rise in taste and preference towards imported goods and service by domestic consumers, leading to a rise in demand for imports and a rise in  $Q_{dm}$ .
- The rise in  $Q_{dm}$  and fall in  $Q_{dx}$  will contribute to a fall in the  $(X-M)$  component of AD. This fall in AD will lead to a more than proportionate fall in RNY via the reverse multiplier process.
  - As AD falls, the firms in the economy will experience an unplanned buildup of inventories. Firms will scale back production by hiring fewer factors of production, including labour, resulting in a fall in wages paid to workers.
  - As the households receive less income, they spend less on consuming goods and services.
  - This triggers multiple rounds of falling spending and re-spending and fall in job and income creation because one person's cut in spending in another's fall in income.

- Each round gets smaller due to the presence of leakages in the form of savings, taxes and import expenditure.
- The process will stop eventually when the total cumulative fall in leakages is equal to the initial fall in AD due to falling (X-M).
- Overall, there will be a multiplied fall in AD from AD1 to AD2 and a more than proportionate fall in RNY from Y1 to Y2.
- Assuming constant population size, the average real income of households, measured by real GDP per capita, will decrease when real national income falls. The average household's purchasing power falls, and people will be less able to consume as many quantities of goods and services as before, experiencing a fall in material SOL.

*Optional but possible to consider:*

- *However, the rise in Qdm for imports can potentially lead to a rise in material SOL for the average household.*
- *For example, Singaporeans' material SOL can improve when they can enjoy greater access a variety of good quality imports such as cars like Tesla from the US, Toyota from Japan and food items from various countries like pork from Indonesia, Korea and Japan and vegetables and fruits from Malaysia, China and Australia.*

## **R2: The widening trade deficit could also affect a country's non-material SOL.**

*Note: choose any two aspects of non-material SOL to elaborate with linkage to at least one non-material SOL indicator. The list is non-exhaustive.*

Option 1:

- As the widening trade deficit results in falling real national output from Y1 to Y2, the country could experience better non-material SOL due to falling pollution levels.
- With falling production, the factories require less burning of carbon-emitting fossil fuels to run their machinery. Less emissions from land, air and sea transportation of goods and services will also be resulted. This leads to a lower level of air pollution in the country and falling Pollution Standards Index (PSI).
- People are less likely to get sick from lung diseases and will be more able to enjoy blue skies and fresh air, improving their quality of life and non-material SOL.

Option 2:

- As the real national output falls, firms require less labour in the production process. The derived demand for labour falls, leading to higher levels of demand-deficient unemployment. The rise in unemployment could worsen people's non-material SOL.
- With no stable income from employment, the breadwinners in the families worry about how they would be able to make ends meet and whether they will struggle to afford daily essentials like food, utilities and shelter. The young worry about how they would even start a career when even the experienced and skilled are unable to find jobs.
- Some people may take their anxiety and anger to the streets where in extreme situations, rampant riots and looting can turn violent or even deadly. The heightened social instability and higher levels of crime rates add to the negative effects on the country's non-material SOL.

Option 3:

- Falling real GDP and income in the economy can decrease tax revenue collected by the government in the form of income, consumption and possibly carbon taxes.
- With a more strained budget, the government will have less funds to spend on the provision of various public services such as healthcare and education.

- This will negatively affect the average household's access to medical care and quality education. For example, shortage of hospital wards can result in long queues for patients, making it difficult for people to get timely treatment for their illnesses.
- In the long run, this could negatively affect the country's non-material indicators such as life expectancy, and worsening non-material SOL.

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ Lack application of relevant economic framework and context (e.g., widening BOT deficit and AD/AS analysis)</li> <li>▪ Critical errors or conceptual gaps in explanation</li> </ul>                                                                                                                                                                                                                                         | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Some economic analysis of both requirements (R1 and R2) but with gaps or lapses in explanations               <ul style="list-style-type: none"> <li>- Incomplete reverse multiplier elaboration</li> <li>- Lack of explicit link between RNY per capita to mSOL</li> <li>- Lack of explicit elaboration of indicators to at least two aspects of nmSOL</li> </ul> </li> <li>▪ Lacking in full scope of analysis</li> </ul> | <b>5 - 7</b>  |
| <b>L3</b>                                              | A well-developed answer that demonstrates: <ul style="list-style-type: none"> <li>▪ Rigorous analysis of BOTH requirements</li> <li>▪ Good scope of coverage</li> <li>▪ Good application of context</li> </ul>                                                                                                                                                                                                                                                       | <b>8 - 10</b> |

**Examiners' Comments:**

- Part (a) is the generally better attempted part of this essay.
- One common gap is for students to miss out addressing what "widening trade deficit" means. Many just took it as a trade deficit without addressing the "widening" part of the question.
- One common gap in R1 is the lack of explicit link to real GDP per capita. Bringing across the idea of real income change for an average household or person in the economy is critical when analysing material SOL.
- Some students had significant gaps in the explanation of reverse k process. Some need to better organise the sequence of their explanation for reverse k process.
- R2 is considerably worse than R1 for most students. Many students only provided a brief statement about stress level rising from unemployment or spending on education and healthcare falling due to lack of income or tax revenue for R2. However, without detailed explanations with examples and linkages to some clear non-material SOL indicators, the quality will be subpar at the best.

**Part (b)**

**Introduction**

Price stability refers to a low and stable rate of inflation where GPL increases in a slow and predictable manner while full employment refers to the full and efficient utilization of available labour resources, with the absence of cyclical unemployment. Both are key macroeconomic objectives of a government.

**R1(T): A government should prioritise achieving price stability because it is the foundation for an economy to achieve sustained economic growth in the long run.**

- A low and stable inflation provides greater certainty of prices in the future.

- Both domestic and foreign firms are better able to predict their future sales revenue, costs of production and hence profits. They will thus be more confident in pledging their money into undertaking long-term capital investments such as building more plants and purchasing more advanced production equipment, increasing  $I$  in AD.
- Households are also better able to predict cost of living in the future, without needing to worry about unpredictable fluctuations in prices and increasing precautionary savings. This allows households to make consumption plans with greater confidence, such as purchase of big-ticket items such as cars, furniture and household appliances, ensuring a healthy increase in  $C$  in AD.
- A lower and more stable inflation in a country (than in its trading partners' economies) also helps to improve price competitiveness of its exports. Foreign countries will be more willing to buy the relatively cheaper exports, causing  $X$  in AD to increase.

*Note: to explain sustained economic growth, the increase in  $I$  is the most important. While  $C$  and  $X$  rising is possible too, they are less critical in this question.*

- An increase in  $I$ ,  $C$  and  $X$  results in an increase of autonomous AD represented by the AD curve shifting rightwards. The firms will experience an unplanned rundown of their inventories. They will step up production by hiring more factors of production, including labour, leading to higher wages for households.
  - The households will spend more on consumption and this triggers the multiplier process where one person's spending is another's income.
  - There will be multiple rounds of increase in induced spending and job and income creation in the economy.
  - Each round gets smaller due to the presence of savings, taxes and import expenditure. The process will eventually stop when all the initial increase in AD is completely leaked out.
- Overall, assuming presence of spare capacity, there will be a multiplied increase in AD from AD1 to AD2 and a more than proportionate increase in RNY.
- Furthermore, the increase in  $I$  will stimulate potential economic growth in the long run.
  - With more machinery and plants available for production in the next period, the economy is accumulating more capital factors of production that can be used for production. This will increase the maximum level of output that the economy can produce at full employment, expanding its productive capacity as AS shifts rightwards.
  - The increase in capital to labour ratio further increases the labour productivity in the economy with higher output per unit labour. This reduces the unit cost of production and shifts its AS downwards.
- As the AS shifts outwards from AS1 to AS2, and the AD increasing from AD1 to AD2, the economy will experience actual economic growth with RNY increasing from  $Y_1$  to  $Y_2$  and potential economic growth with full employment level of output rising from  $Y_{f1}$  to  $Y_{f2}$ .
- Thus, price stability should be prioritized by the government as it can help the economy achieve sustained economic growth in the long run.

**R1(AT): However, achieving price stability may not always be the priority of a government.**

Choose one option from the following AT and EV pairs:

**Option 1:** The government should not prioritise price stability if there are other more urgent and serious economic problems that the economy is suffering from.



- For example, Sri Lanka has been experiencing a combination of deep recession, rising unemployment rate and high cost-push inflation since the start of the COVID-19 pandemic, when its bustling tourism sector faced a sudden and drastic fall in demand.
- The fall in  $X$  of tourism services, and hence  $AD$ , led to a more than proportionate fall in  $RNY$  via the reverse  $k$  process (explained in (a)) and rising cyclical unemployment. *[link to a diagram]*
- The resultant fall in demand for Sri Lanka rupee in the forex market led to drastic depreciation of its currency, leading to high levels of imported cost-push inflation as imported raw materials became more expensive in rupee.
- With many households struggling to afford daily essentials like food and fuel without stable sources of income and employment, Sri Lanka should prioritise the recovery of its export sectors to boost demand and real national income to better tackle the root cause of their economic crisis, instead of solely focusing on lowering cost-push inflation.

**EV R1:**

Overall, whether the government should prioritise price stability depends on the current state of the economy as well as the root cause of the economic problems.

- If an economy is currently in a deep recession, the more immediate remedy for the hardships experienced by its economy and its people could be to find ways to grow its  $RNY$  as soon as possible, such as the case of Sri Lanka. While price stability is the foundation for long-term growth, it should be deprioritised temporarily to address more immediate and urgent issues in the economy.
- However, of course, if high inflation (or deflation) is the root cause of the immediate economic crisis in a country, such as the money printing induced hyperinflation experienced by Zimbabwe, then the government should aim to target restoring price stability in the short run too.

**Option 2:** In attempting to achieve price stability in the long run, the government may face conflicts between macroeconomic objectives in the short run and hence should reconsider whether price stability is the key.

- For example, countries like Singapore often adopt long term supply-side policies such as spending on infrastructure and R&D facilities and grants to encourage private sector investments to constantly expand the economy's productive capacity and maintain long-term price stability.
- However, such long-term capacity expanding policies often involve a trade off with slightly higher short-term inflation as the government increases its spending or firms increase their investment.
- The increase in  $G/I$  can lead to higher  $AD$  *[link to a diagram]*. As  $AD$  rises closer to the full employment level of output, the firms will be experiencing supply bottlenecks. The rise in aggregate quantity supplied will not be able to catch up with the rising demand, leading to shortages of goods and services in the economy. Consumers will compete to get hold of the limited available goods and services and bid up the general price levels in the economy, leading to higher short-term inflation.

**R1 EV:**

Overall, whether the government should prioritise price stability depends on whether the government feels that it is worth sacrificing the short term for longer term gains, and whether it feels certain that the long-term capacity expansion is going to be realised.

- For countries like Singapore with a track record of good economic and political stability, the governments usually have higher levels of confidence that partaking in long-term projects will yield positive outcomes, despite short-term sacrifices. Most investment projects will see fruition, instead of being cancelled half-way due to sudden withdrawal of funding by firms or change of government. These countries should prioritise long-term price stability because any short-term inflation will likely be offset by rising productive capacity over time.
- However, if a country is prone to economic and political instability such as those involved in civic wars and frequent changes of government like Sudan or Myanmar, targeting long-term price stability may be too far-fetched a goal. The governments may find it more fruitful to focus on

addressing more immediate economic problems as and when they come, instead of betting on sustained growth through price stability which requires longer term commitment and efforts.

**Option 3:** In attempting to achieve price stability in the long run, the government may face conflicts between macroeconomic objectives in the short run and hence should reconsider whether price stability is the key.

- In countries experiencing high levels of demand-pull inflation, such as the US during the COVID-19 economic recovery, the governments need to temporarily adopt contractionary demand-management policies.
- For example, the US Fed raised interest rate repeatedly between 2022 and 2023 to increase costs of borrowing and discourage consumption and investment spending. Falling AD meant falling inflation and cooling prices across the overheating economy.
- However, as AD falls and shifts away from full employment level of output *[link to a diagram]*, the falling GPL could be accompanied by some falling RNY and rising demand-deficient unemployment in the economy too.
- Thus, in achieving price stability, the governments may often need to trade-off slightly on short-term growth and employment.

**EV R1:**

Overall, however, it is still beneficial for such countries to prioritise price stability.

- This is because short-term slowdown of an overheated economy is usually more beneficial to the economy than harmful. Overheating can create many economic problems such as labour shortages, rising wages and slower growth.
- The government's ability to tackle such issues with appropriate contractionary demand management policies will send a positive signal. The consumers and investors will feel that the government is prudent and competent in addressing signs of economic problems and is serious about nibbling any problems in the bud.
- Thus, instead of being a policy conflict, the short-term slowdown is a benefit to the economy in times of overheating.

**R2(T): A government should prioritise full employment because of its benefits.**

Choose one of the following options:

**Option 1:** Productive efficiency and higher material SOL via PPC

- Achieving full employment will ensure that all available labour resources in the economy are fully and efficiently utilised to produce goods and services. This allows the economy to operate on the PPC, producing the maximum combination of goods and services possible at the current level of technology.
- For example, South Africa recorded a 33% unemployment rate in 2023. With a third of its labour force not gainfully employed, South Africa can only produce at a point inside its PPC curve, such as at point A. This is far below its productive capacity (e.g., point B on the PPC), with fewer quantities of goods and services produced and a forgone output of X1X2 units of consumer goods and Y1Y2 units of capital goods.
- As any loss in output arising from unemployment is irreversible. The output forgone due to unemployment is permanently lost and cannot be recovered in the future.
- By achieving full employment, however, South Africa can ensure that all its scarce resources are fully and efficiently employed and achieve productive efficiency. The country will be producing a maximum combination of goods and services represented by point B on the PPC curve.
- As the quantity of consumer goods and services produced increased from X1 to X2, the material SOL of an average household in the economy can also improve due to higher quantity of goods and services available for consumption.

**Option 2:** Prevention of hysteresis and shrinking productive capacity

- Very high levels of demand-deficient unemployment take time for the government to resolve, heightening the risks of hysteresis.
- For instance, the US took almost a decade to fully recover from the devastation of the 2008-2009 global financial crisis, during which many workers remained unemployed for months or even years, living on unemployment benefits.
- Many of these displaced workers experience deskilling when they start to lose the expertise they used to have overtime. Some become discouraged by repeatedly failing to secure a job and hence leaves the labour force altogether. As its labour force shrinks, the US experiences lower productive capacity as the maximum level of output that it can produce is now lower with fewer labour to employ.
- While some long-term unemployed workers do not leave the labour force, they may become structurally unemployed where they no longer have relevant skills that match the requirements of the recovering US economy, making unemployment even harder to resolve.
- And even when these workers with deteriorating skills are re-employed into jobs, they may experience decreasing productivity with lower output per unit of labour hour. With lower quality of labour, the US economy faces higher average cost of production for firms and even lower productive capacity.
- This is represented by an inward shift of the AS curve from AS1 to AS2. As a result, the US economy experiences lower actual growth as real national income falls from Y1 to Y2 and lower potential growth as productive capacity falls from Yf1 to Yf2.
- Achieving full employment will help to reduce such risks of hysteresis and falling productive capacity.

**Option 3:** higher actual economic growth via AD/AS (*not preferred due to lack of scope with R1 and part (a)*)

- Full employment allows individuals and households to find jobs and earn income, which is used for consumption, savings, paying taxes and buying imports.
- As households receive stable income, they are more confident that they can sustain their consumption in the future and do not need to save up too much for precautionary purposes. This in turn helps to generate a healthy increase in C in the economy which is essential in bringing about actual economic growth.
- As C in AD increases, it will generate more than proportionate increase in RNY via the k process, assuming available spare capacity. *[link to a diagram]*
- Assuming constant population size, the average income of households, measured by real GDP per capita, will increase, giving them higher ability to consume more goods and services and improve their material SOL.
- High levels of employment provide a broader tax base for the government to raise government tax revenue. These tax revenues go towards the provision of various public services such as education, healthcare, homeland security and national defence which contributes to various non-material aspects of SOL such as literacy levels, access to medical care, crime rates and national security and sovereignty.

**R2(AT):** However, achieving full employment may not always be the priority of a government.

Choose one option from the following AT and EV pairs:

**Option 1:** The government should not be fixated on prioritising full employment if there are some more important economic issues that need to be addressed first.

- For example, after years of being “the world’s factory”, China is slowly losing its comparative advantage in low-to-medium value-adding manufacturing as its endowment of cheap labour is being eroded by rising wages. Many of its trading partners are switching to buying from Vietnam and Indonesia which are gaining comparative advantage over China and producing the same output with lower opportunity costs and selling at a more competitive price.
- The fall in  $X$  would lead to a multiplied fall in AD and a more than proportionate fall in RNY in China via the reverse  $k$ . As output falls, more Chinese workers are becoming unemployed due to falling derived demand from the export sectors.
- However, instead of addressing these rising levels of unemployment, China should first prioritise economic restructuring to gain CA in other areas of trade such as its EV sales and move towards higher value-adding industries if it wants to truly achieve full employment and growth in the long run.
- However, economic restructuring could come at the trade-off of rising short-term to medium-term unemployment (both cyclical and structural).

#### EV R2:

Overall, if unemployment is caused by more fundamental economic problems such as losing CA by China, the government should address the root cause of the lack of demand for labour first, instead of blindly prioritising reducing unemployment immediately.

**Option 2:** Achieving full employment, without accompanying productive capacity expansion, can lead to higher risks of wage-price spiral due to overheating. Thus, the government needs to reconsider whether it is beneficial to prioritise full employment.

- When the economy is achieving full employment, it will operate at an output level that is close to  $Y_f$  or its productive capacity.
- At this level of output, the labour market is tight with increasing risks of labour shortages, such as the situation experienced by the US in 2022 and 2023. Any further increase in derived demand for labour due to rising AD and RNY will result in a significant shortage of labour and increase in wages.
- Increase in wages results in an increase in COP and firms could become less willing and able to produce goods and services at each GPL level, leading to a fall in AS and an upwards shift of AS curve from  $AS_1$  to  $AS_2$ .
- Profit maximizing firms will attempt to pass on some of this increase in COP to households, resulting in an increase in GPL from  $P_1$  to  $P_2$  and a decrease in RNY from  $Y_1$  to  $Y_2$  due to wealth, interest rate and international substitution effects.
- Thus, achieving full employment may not be beneficial for the economy if productive capacity is not expanding at the same time.

#### EV R2:

Overall, achieving full employment can be good for the productive efficiency and SOL of an economy. But to better reap the full benefits of getting most of its labour force gainfully employed, the government needs to accompany full employment with policies to encourage potential growth too, such as infrastructure building, investment promoting and productivity enhancing supply-side policies.

**Option 3:** The government should not prioritise full employment if achieving full employment necessitates the government to boost environmentally damaging sectors and trade-off sustainable growth.

- Some countries may trade-off full employment if it can only be achieved through employment in environmentally unsustainable industries.
- For example, many workers working in coal mining industries are losing their jobs globally because the global economies are shifting away from heavily polluting coal-powered production.
- In countries like the US and the UK, many of such workers are becoming structurally unemployed as their skills as coal miners do not match the requirements of other rising industries. If the

governments in such countries want a quick fix for unemployment, they could achieve full employment through revival of such polluting industries.

- However, this will result in unsustainable exploitation of non-renewable resources like coal and emissions of toxic greenhouse gases, resulting in higher air pollution and resource depletion.

#### EV R2:

Given the larger context of global warming and climate change, governments should better prioritise sustainable economic growth, even if it comes at a short-to-medium term sacrifice of higher structural unemployment for people in selected industries. To better support these people's livelihoods, the governments should provide sufficient social safety nets in terms of more transfer payments and higher subsidies and programs for retraining and upskilling.

#### Overall Evaluation

- Between price stability and full employment, a normally functioning economy is likely to prioritise price stability. Most central banks in the world, such as European Central Bank in the EU and MAS in Singapore, have their default goal as achieving price stability because it is a pre-requisite to achieving sustained economic growth. Risking price instability to achieve full employment is typically not attempted by most economies.
- Under exceptional circumstances, the goal of price stability is compromised to allow the short run pursuit of other macroeconomic objectives such as during times of deep recession and very high unemployment.
- In fact, there are some central banks in the world that aim for a dual mandate of pursuing price stability and maximum employment simultaneously – most notably example being the Federal Reserve Bank of the US. These central banks stress more flexibility in managing their monetary policies to boost employment, even if it risks a short-term price surge. However, such exceptions are still more short-term and once-off.
- Low and stable inflation remains the key macroeconomic priority in the long term.

#### Mark Scheme:

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ No use of relevant economic framework               <ul style="list-style-type: none"> <li>□ Benefits/Costs of achieving macro-objectives</li> <li>□ AD/AS framework</li> </ul> </li> <li>▪ Answer is mainly descriptive or mere listing of points</li> <li>▪ Significant conceptual errors in explanation</li> <li>▪ Omission of key points, e.g., key benefits of low inflation / full employment</li> </ul> | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Some application of relevant economic concepts and framework in analysis</li> <li>▪ Some use of examples</li> <li>▪ Lacking in full scope of analysis, e.g., one-sided answer or only one requirement addressed</li> </ul>                                                                                                                                                                                     | <b>5 - 7</b>  |
| <b>L3</b>                                              | A well-developed answer that demonstrates: <ul style="list-style-type: none"> <li>▪ Rigorous analysis for BOTH requirements</li> <li>▪ Good application of examples</li> <li>▪ Good application of relevant economic framework</li> </ul>                                                                                                                                                                                                               | <b>8 - 10</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
| <b>E1</b>                                              | <ul style="list-style-type: none"> <li>▪ Largely unexplained judgment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                        | <b>1</b>      |

|           |                                                                                                                                                                     |              |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|           | ▪ <i>Superficial conclusion/assertion</i>                                                                                                                           |              |
| <b>E2</b> | ▪ <i>Well explained judgment, supported by reasons/economic analysis for both one requirement</i><br>▪ <i>Insightful conclusion/assertion reflecting real world</i> | <b>2 - 3</b> |
| <b>E3</b> | ▪ <i>Summative judgment covering both R1 and R2</i>                                                                                                                 | <b>4 - 5</b> |

### Examiners' Comments:

- *Part (b) was not well done for most students attempting this question.*
- *A surprisingly large number of students rushed into providing an answer about how a government can achieve price stability and full employment with various policies and provided detailed analysis of the effects and the limitations of the policies. However, this is not answering the question.*
- *Whether a government should prioritise the achievement of a macroeconomic objective depends on the benefits and costs of achieving the goal, not directly the benefits and costs of the policies used.*
- *For R1:*
  - o *One common gap is the lack of explanation of how price stability can help to achieve potential growth when  $I$  increases. Note that sustained economic growth (which is both actual and potential growth) is the key benefits of achieving price stability.*
  - o *The above problem is critical because missing the potential growth argument led many students to argue that achieving price stability will lead to higher demand-pull inflation, which is not acceptable (unless the time frame is specified).*
  - o *In explaining how price stability leads to rising  $I$ , many students missed out explaining how a predictable price/cost/profit can encourage investments by firms.*
  - o *Similarly, in explaining how  $C$  will rise, some students confused the effects of "expectations on future prices" with "higher certainty in future prices and purchasing power" and hence led to indefinite conclusion on change of  $C$ .*
- *For R2:*
  - o *The most common conceptual mistake is to claim that falling unemployment will increase supply of labour and lead to a rise in productive capacity in the economy. This is wrong. Unemployed people are still in the labour force. Falling unemployment will NOT increase the size of labour force.*
  - o *Some students thought full employment means zero unemployment rate in the economy and argued that achieving full employment is impossible for a government to aim for. This is also not correct because full employment in economics is often measured by non-accelerating inflation rate of unemployment (NAIRU). With NAIRU, only cyclical unemployment will be fully resolved while frictional and structural unemployment can still be present in the economy.*
  - o *Many students cited supply-side policies as the best policy to achieve full employment without specifying that they are using it for structural unemployment. Please note that if the type of unemployment is not specified, cyclical unemployment is usually the default choice and demand-management policies should be used, not SSP.*
  - o *Some students also confused the meaning of productive efficiency with the meaning of allocative efficiency (or at least were confused about how each can be shown on a PPC). Note that achieving full employment can lead to productive efficiency, but it cannot guarantee allocative efficiency.*
- *For overall evaluation,*
  - o *Many students offered some weighing between the benefits and costs of the two macro-objectives.*
  - o *Some provided a very superficial argument saying that when the economy has high inflation, it should prioritize price stability and when the economy has high unemployment,*

*it should prioritise full employment. Such arguments are not very insightful. Students should try to go deeper into the root causes of the problems to provide more insight.*

- *Many students argued the price stability is more important for small and open economies (SOEs) than for large and less open economies (LLOEs). While the idea itself is acceptable, many explanations fall short of expectations. Simply arguing that “price stability can lead to a rise in (X-M) while full employment will not, and hence price stability is more important for SOEs” is not the best. This is because price stability will first and foremost lead to rise in I and C which are important to the LLOEs too. Students should think more carefully about how SOEs, which tend to be very import-reliant for their key FOPs, are more subjected to inflationary pressures out of their immediate control. As a result, to maintain their growth and X competitiveness, prioritising price stability and spending more time and efforts on achieving this difficult-to-achieve goal is important.*
- *Many students wrote AT for this question based on the idea that “because it is very hard for the government to achieve a goal, so the government should not prioritise it”. This is not very convincing. In life, difficult but worthy challenges should be prioritised and actively pursued. Spending the time and efforts to achieve worthy goals, no matter how challenging it can be, will help you, and in this context, the economy, to grow.*

### Question 5

**In many countries, interest rate policy is a key monetary tool used to influence inflation, but its effectiveness varies depending on the nature of inflation and the country’s economic context.**

- (a) **Using appropriate examples, explain how an economy can experience high inflation and economic growth while another experiences high inflation and negative economic growth.** [10]
- (b) **Discuss how effectiveness of interest rate policy is influenced by the type of inflation and an economy’s characteristics.** [15]

### Part (a)

#### Introduction:

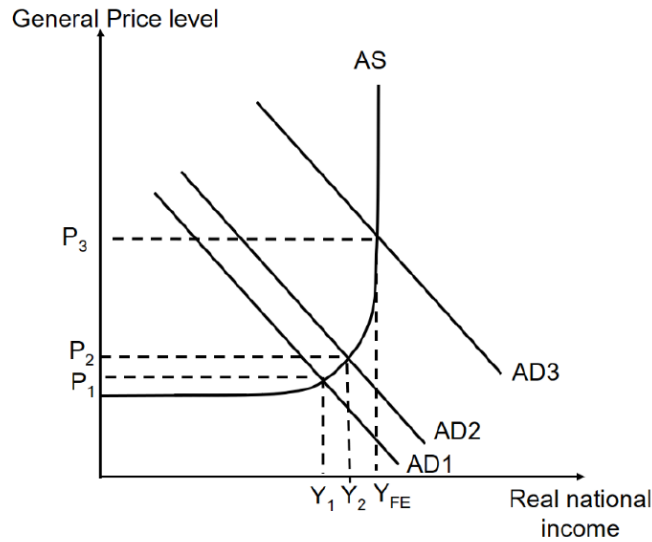
- Inflation refers to a sustained increase in the general price level and there can be demand pull or cost push inflation.
- Economic growth refers to the increase in real national income of an economy over a given period of time.
- High inflation and economic growth is due to increase in aggregate demand (AD), whereas high inflation and negative economic growth is due to a fall in aggregate supply (AS).

#### Body:

#### **R1: High inflation and economic growth due to an increase in AD**

- Post-COVID economic rebound in major trading partners of Singapore, such as US, has lead to an increase in real GDP in US and hence average household income of US residents has increased. Hence, there is an increase in purchasing power where US households are able and willing to buy more goods and services, causing C to increase. The rise in consumption in US includes imports from her trading partners, like Singapore.
- Consequently, there is an increase in demand for exports from Singapore, causing a rise in Singapore export revenue and net exports in AD. Since  $AD = C + I + G + (X-M)$ , AD increases for Singapore from AD1 to AD2 as shown in Figure 1.
- This increase in AD will lead to a shortage as total spending is more than output.

- This will signal to firms to hire more FOP to increase output, which results in higher factor incomes and rise in real national income.



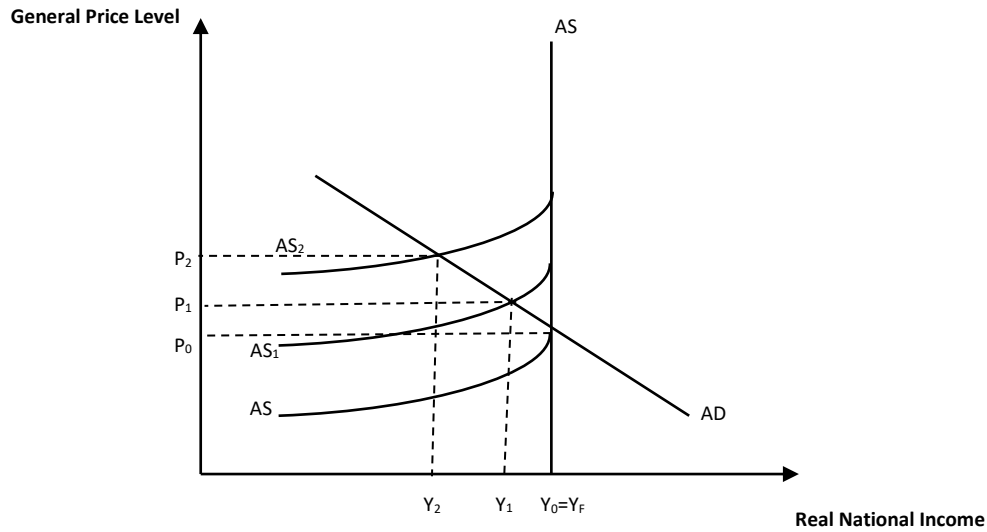
**Figure 1: High inflation and positive economic growth**

- This triggers the multiplier process, creating many rounds of increase in induced consumption and AD as one person's spending is another person's income and income generates more spending. The multiplier process ends when the initial autonomous increase in AD is fully withdrawn either in the form of savings, taxes and import expenditure (or initial increase in injections = total sum of increase in withdrawals) at AD3 and YFE.
- The rise in X will lead to a more than proportionate increase in real national income from Y1 to YFE leading to actual economic growth.
- However, as the economy moves towards full employment level of national income where there is lack of spare capacity, firms will start to face shortage of FOPs and supply bottlenecks. To increase output, firms will have to hire more inefficient FOPs and as a result, firms are only willing to increase output at a higher GPL, causing an increase in GPL from P1 to P3 as national output increases from Y1 to YFE.
- Thus, an economy can experience high inflation and economic growth.

## **R2: High inflation and negative economic growth due to a decrease in AS**

- The Russian-Ukraine war has resulted in higher prices of crude oil and natural gas in the world market. As sanctions are imposed on Russian oil and gas, this lead the fall in supply in the global market, resulting in shortages and rise in prices. Crude oil and natural gas are key factor inputs for industrial activities, hence energy importing countries such as the UK will face higher cost of importing energy sources, leading to a rise in unit COP as most if not all firms require energy as FOP. As a result, firms experience a fall in profitability and become less willing and able to produce output at each GPL, firms will pass on the rise in cost of production in the form of higher prices, causing a fall in AS and an upward shift of AS curve from AS0 to AS1 as shown in Figure 2.





**Figure 2: high inflation and negative economic growth**

- This fall in AS will cause shortages at the prevailing price level  $P_0$ . Sectors of the economy will bid up prices and firms will raise prices to increase output, causing an increase in GPL. GPL will rise until the shortage is eliminated at the higher GPL of  $P_1$  and the lower equilibrium level of income at  $Y_1$ .
- As GPL rise, this will cause real GDP to fall as total spending for goods and services will fall due to the wealth, interest rate and international effects. For example, the international substitution effect describes how goods become less price competitive in the international markets (due to the rise in GPL), allowing the economy to sell less X. This is reflected by a downwards movement along AD and a corresponding fall in output and RNY from  $Y_0$  to  $Y_1$ .
- If workers expect prices to continue to increase, they will start asking for higher nominal wages to maintain their purchasing power and this will cause a further rise in the cost of production, reflected by a further upward shift from the AS curve from  $AS_1$  to  $AS_2$ . As a result, the general price level will increase further from  $P_1$  to  $P_2$ , resulting in higher cost-push inflationary pressures and a further fall in real GDP from  $Y_1$  to  $Y_2$ .
- Due to the wage price spiral, rise in GPL will be sustained.
- Thus, UK can experience high inflation and negative economic growth.

### Conclusion

- An economy can experience high inflation and economic growth with an increase in AD near full employment level while another can experience high inflation and negative economic growth with a fall in AS.

### Mark Scheme:

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                              |              |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ Lack application of relevant economic framework and context</li> <li>▪ Critical errors in analysis</li> <li>▪ Significant conceptual gaps in explanation</li> </ul>                                                 | <b>1 - 4</b> |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</li> <li>▪ Some application of context and use of examples</li> <li>▪ Lacking in full scope of analysis</li> </ul> | <b>5 - 7</b> |

|           |                                                                                                                                                                                                                                                         |               |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L3</b> | <i>A well-developed answer that demonstrates:</i> <ul style="list-style-type: none"> <li>▪ <i>Rigorous analysis for BOTH requirements</i></li> <li>▪ <i>Good scope of coverage</i></li> <li>▪ <i>Good application of contextual examples</i></li> </ul> | <b>8 - 10</b> |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

**Examiners' comments:**

- Overall, this question was generally well done although it had responses of varying quality due to differences in quality of question interpretation and depth of analysis. Stronger responses clearly understood that the focus was on how the events led to R1: demand pull inflation and EG and R2: cost push inflation and negative EG, with good depth of analysis in explaining changes in GPL and RNY. Weak responses tended to have gaps or lack analysis in explaining the events and adjustment process.
- Students are reminded to label all diagrams clearly with axes, AD, AS and changes in GPL and RNY.
- For R1
  - Many students did not explain why components of AD increased, and merely stated that C/I and AD increased. These answers would not score higher than a 'C' for R1.
  - Some students identified economic growth in the economy leads to an increase in AD without recognising that EG increases induced consumption and not autonomous consumption, and is part of the multiplier process.
  - While multiplier process was generally well written, there was a tendency to omit details for the price adjustment process to link to GPL.
  - Explanation of the state of the economy being near  $Y_f$  is lacking in explaining dd-pull inflation. Note that just because there is a shortage does not mean that GPL will increase.
- For R2:
  - Some responses lacked rigour in analysing event that affected AS e.g. stating Russia-Ukraine war leading to increase in COP but without elaborating how the war led to a shortage of key factor inputs in industrial activities such as natural gas and hence increase in price
  - Many students did not explain why a higher COP leads to a fall in AS i.e. a fall in profitability for firms, hence they are less willing and able to produce output at each GPL
  - Many responses lacked detailed analysis on how a fall in AS leads to a fall in RNY/GDP. Explanations was often reduced to a mere statement.
  - Some scripts focused extensively on a decrease in productive capacity using generic events such as ageing population. Just because a country has ageing population does not mean that it will always achieve inflation and negative economic growth. Students need to note that EG and inflation is measured in a given time period, usually a year. The analysis should be more focused on specific events.
  - Conceptual errors were present where students explained that Russia Ukraine war leading to a fall in supply of oil or natural gas leads to a fall in productive capacity of importing country. The shortage of oil or natural gas leads to increase in price of imported oil/natural gas but productive capacity of importing country remains unchanged.
  - To obtain full credit, students need to explain the sustained increase in GPL. This is generally missing for R2 where students did not explain a spiraling effect on price due to wage price spiral.

**Part (b)**

**Introduction:**

- Types of inflation: An economy can experience demand pull inflation and/or cost push inflation.
- Economy characteristics: Large economy with high domestic consumption and investment vs small

and open economy with small domestic consumption and investment.

- The government can increase interest rate as a form of contractionary monetary policy to lower the rate of inflation.

### R1: Effectiveness of i/r policy is dependent on different types of inflation

#### Thesis: Effective in tackling demand pull inflation

- The central bank can increase the interest rates to reduce the level of inflation caused by a high and increasing AD when the economy is already near or at full employment, tackling demand-pull inflation.
- Interest rate is the cost of borrowing and returns to savings.
- With the higher interest rates, households now find it more costly to obtain loans from the banks to finance the purchase of big-ticket items and consumer durables such as cars, thus reducing consumption spending.
- Based on the MEI theory, firms are left with fewer investment projects with expected rate of return that is at least equal to the higher cost of borrowing. As number of profitable investments projects fall, investments will fall.
- *Note: the impact of interest rate on hot money and E/R and NX is not required in this part of the question.*
- With an increase in interest rate, there will be a fall in C and I. The decrease in AD will shift the AD curve from  $AD_1$  to  $AD_2$ , as shown in Figure 3. This leads to a buildup of surplus inventories of goods and services. There is a downwards pressure on GPL since firms are more willing to reduce prices to clear excess inventories given fall in supply bottlenecks, causing a fall in GPL from  $P_0$  to  $P_1$ . The general price level is now at  $OP_2$ . Thus, inflationary pressures have been dampened.

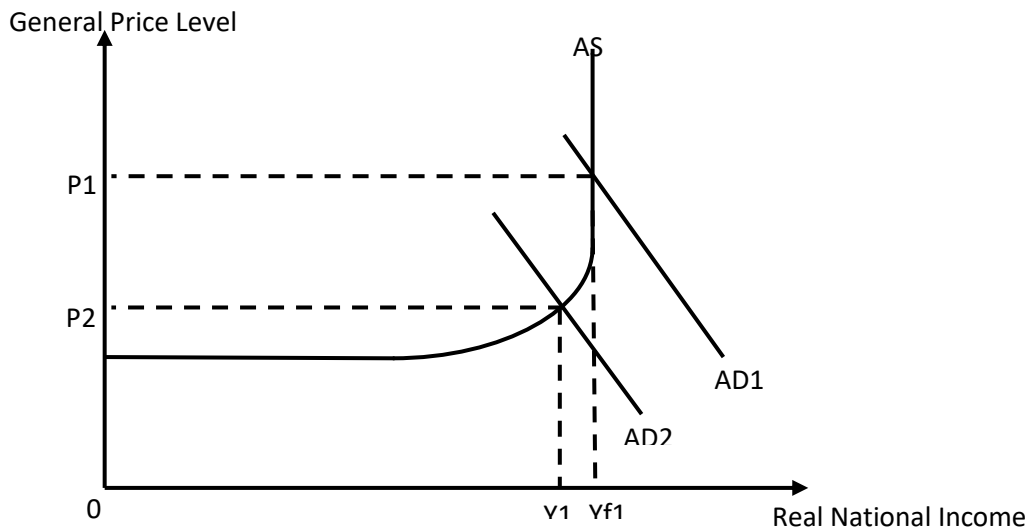
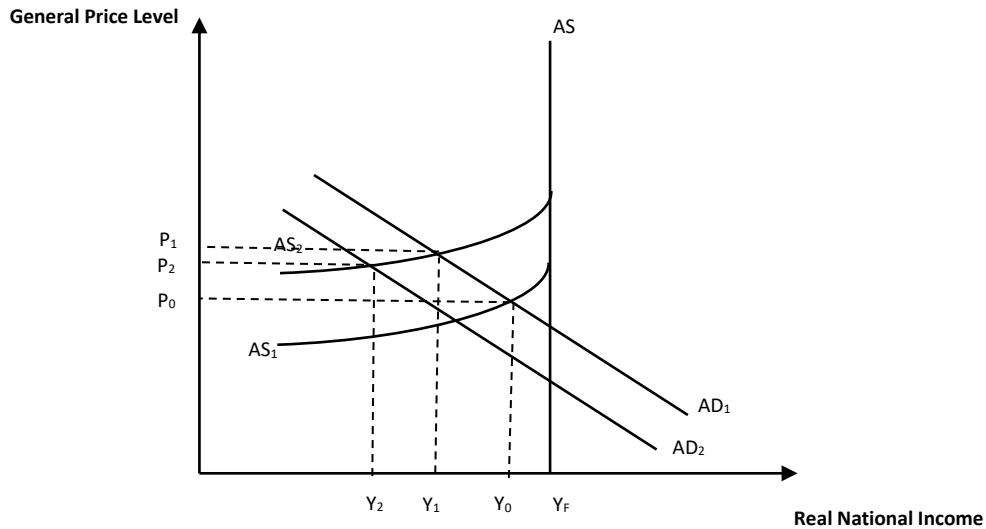


Figure 3: Contractionary monetary policy

#### Anti-thesis: Ineffective in tackling cost-push inflation

- While interest rate policy can decrease inflationary pressure in general, it is ineffective in tackling cost push inflation as interest policy is a demand management policy that decreases AD and is unable to affect prices of factor inputs or cost of production experienced by firms.
- It does not tackle the root cause of inflation.



**Figure 4: Contractionary monetary policy tackling cost push inflation**

As shown in Figure 4, with the decrease in AD from AD1 to AD2 due to the increase in interest rate as explained earlier, there is only an insignificant decrease in general price level from P1 to P2. Hence, interest rate policy is ineffective in decreasing cost-push inflation.

- There is also a greater fall in real GDP from Y1 to Y2, which worsens actual economic growth and hence cyclical unemployment in the economy. The presence of these trade-offs indicates that there is a limit to how much the central bank can increase interest rates to reduce inflation, thus reducing the effectiveness of interest rate policy.
- *Note: for students explaining how  $i/r \rightarrow$  hot money  $\rightarrow E/R \rightarrow$  price of imports in dc falls  $\rightarrow$  reducing imported inflation  $\rightarrow$  this analysis is accepted. But note that you will still require a balanced analysis and provide an alternative AT.*

### R1 Evaluation

- Effectiveness also depends on economic outlook: If consumers and investors have positive economic outlook due to strong recovery from post-covid pandemic, the increase in interest rate is unlikely to deter increase in C and I. Hence AD will continue to increase and there is limited effectiveness in tackling demand pull inflation.
- Other policies such as supply side policy of subsidies given to producers to reduce cost of production can be used to tackle cost-push inflation more effectively as firms could pass on the cost savings to consumers in terms of lower prices.
- For economies that have a high reliance on imported factor inputs due to its small economy with little raw materials or natural resources for example Singapore, it is more effective to use exchange rate policy to reduce vulnerability to M inflation by directly reducing M prices instead of interest rates policy  $\rightarrow$  rise in AS  $\rightarrow$  fall in GPL  $\rightarrow$  reduce M inflation.

### R2: Effectiveness of $i/r$ policy is dependent on different economic characteristics

#### Thesis: Effective for large and less open economies

- For countries that are large and dependent on domestic consumption and investment for growth like US/UK where consumption and investment forms about 80% of total aggregate demand,

interest rate policy is effective in decreasing AD significantly to lead to a significant decrease in general price level.

### **Anti-thesis: Ineffective for small and open economies**

#### **Explain any 2 of the anti-thesis:**

For countries such as Singapore:

- Due to Singapore's small domestic market and population size, domestic consumption and investment forms only a small percentage of GDP. With an increase in interest rate there is a less significant decrease in AD and hence GPL. Thus, interest rate policy is less effective.
- Even if the interest rate policy works, with an increase in interest rate, there will be an inflow of hot money, increasing demand for SGD and hence appreciating SGD. As Singapore is dependent on exports for growth, this could lead to a fall in balance of trade and economic growth as exports loses its price competitiveness. This presence of tradeoff could limit the extent to which interest rates can be increased to reduce GPL.
- High reliance on X: X takes up a larger proportion of GDP. DD-pull inflation heavily influenced by increase in external DD. More strategic to target X reduction by using exchange rate policy to dampen strong X growth and AD → fall in GPL → reduce DD-pull inflation and interest rate policy is ineffective.

#### **R2 Evaluation:**

- Even for large economies, effectiveness could be limited by other things such as the value of MPS. For example both US and China are large economies, China has a higher MPS due to the Asian thrift culture whereas US has a low MPS due to consumerism culture. Hence the size of multiplier for China, where  $k = 1/(mps+mpt+mpm)$  is smaller than US, and the increase in interest rate is less effective in decreasing AD and hence GPL for China than US.
- Depends on MEI elasticity: If the country has an interest inelastic MEI as FDI has their own source of funding instead of borrowing from local banks → given an increase in  $i/r$  → less significant decrease in investment to decrease AD and hence GPL.

#### **Conclusion & Evaluation:**

- Overall, interest rate policy is effective in tackling demand pull inflation, but not cost-push inflation. Thus other policies such as supply side and exchange rate are required to be used together with interest policy to tackle both demand and cost push inflation.
- Apart from effectiveness, other considerations such as feasibility of changing interest rates, extent of tradeoffs, sustainability of policy are also important. An economy characteristic is likely to be a more important factor than types of inflation as it impacts the type and effectiveness of policy that can be implemented for the economy without significant unintended consequences on the other objectives of the government. For example, as SG has a SOE and is vulnerable to imported inflation, such constraints limit the choice of policy that can be implemented, which is mainly exchange rate preferred more than interest rate policy.
- Given the highly open nature of the SG economy, although SG is unable to use interest rate policy, changes in interest rates in other countries especially that of major economies like the U.S would have overall significant impact on its economy. Assuming that US adopts an increase in interest rate, it will lead to a decrease in RNY and hence decrease demand for SG exports, hence dampening the demand pull inflation experienced by Singapore.

**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                         |               |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>No use of relevant economic framework</li> <li>Answer is mainly descriptive or mere listing of points</li> <li>Significant conceptual errors in explanation</li> </ul>                                                                                                           | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>Some application of relevant economic concepts and framework in analysis</li> <li>Some use of contextual examples</li> <li>Lacking in full scope of analysis, e.g., lacks details for ineffectiveness in terms of both types of inflation and economy characteristics</li> </ul> | <b>5 - 7</b>  |
| <b>L3</b>                                              | A well-developed answer that demonstrates: <ul style="list-style-type: none"> <li>Rigorous analysis for BOTH requirements</li> <li>Good application of contextual examples</li> <li>Good application of relevant economic framework</li> </ul>                                                                          | <b>8 - 10</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                                                                                         |               |
| <b>E1</b>                                              | <ul style="list-style-type: none"> <li>Unsupported judgment</li> <li>Superficial conclusion/assertion</li> </ul>                                                                                                                                                                                                        | <b>1 – 2</b>  |
| <b>E2</b>                                              | <ul style="list-style-type: none"> <li>Substantiated judgment, recommendation supported by reasons/ economic analysis</li> </ul>                                                                                                                                                                                        | <b>3 - 4</b>  |
| <b>E3</b>                                              | <ul style="list-style-type: none"> <li>Insightful and perceptive evaluation and recommendation well discussed and evaluated using economic analysis and good application to the context</li> <li>At least 2 well explained insights covering both R1 and R2 and with a summative evaluation at the end</li> </ul>       | <b>5</b>      |

**Examiners' Comments:**

- There was a flawed understanding of the use of interest rate policy influenced by 'type of inflation' whereby responses thought it meant inflation versus deflation. Type of inflation is a continuation from part (a) where it refers to demand pull versus cost-push inflation and has been hinted in the preamble.
- In general, there were stronger responses for R1-thesis where student could explain the impact of increase in interest rate on C, I and net exports rigorously. R1-anti-thesis has a much weaker response where students merely stated that interest rate policy cannot tackle the root cause of cost-push inflation without further explanations. Stronger responses went on to illustrate the insignificant extent of decrease in GPL using a diagram, and/or explained the unintended consequences on a fall in Real GDP hurting economic growth and unemployment. However, the link back to effectiveness of policy due to the presence of tradeoffs was contrived.
- There was an unbalanced scope where R1-thesis was extensively analysed but R1-anti-thesis and R2 was lacking due to lack of time.
- There were poor responses where students explained the use of a decrease in interest rates (expansionary monetary policy) to tackle cost-push inflation and that policy is highly effective in tackling cost-push inflation. Such a policy will lead to a worsening of GPL in the short run, and the effects of increasing I and hence increasing AS is a secondary and indirect effect of tackling cost-push inflation. Hence, students should use increase in interest rate to elaborate on effects on cost-push inflation, albeit its limited effectiveness.
- R2 had varying quality due to differences in quality of question interpretation and depth of analysis. Stronger responses clearly understood that the focus was on comparing between small and open economy with a small domestic C and I versus large economies with large C and I as a percentage of AD. Such candidates successfully elaborated on the relative impact on AD and hence GPL, linking to effectiveness of policy. However, average responses simply stated "size of multiplier,

interest elasticity and state of economy could affect effectiveness of policy” but lacks rigour in analysis of how factors can be compared between economies and linked back to effectiveness of interest rate policy.

- Structuring of answers was messy for this question and some students had confusing explanations that mixed both R1 and R2 within same analysis.
- Due to a lack of time, some students were lacking final evaluation. There should be a comparison or weighing of whether economy is affected by which factor more and justifying the answer.
- The following points are with regards to depth of analysis and choice of points.
  - o It is important to have a summative statement at the end of the analysis of the policies to fully address the question. Many responses merely stated how an increase in interest rates leads to fall in AD without finally linking to how the issue of inflationary problems has been addressed or partially addressed.
  - o As a continuation of the above point, the adjustment processes for how GPL changed was largely omitted or explained partially or explained with some inaccuracy. It is important to explain the proper mechanism for these changes and not just state from the diagrams.

### Question 6

The US has leaned towards protecting domestic industries and re-shoring manufacturing activities, while Singapore continues to champion free trade through open markets and trade agreements. These contrasting approaches reflect differing economic priorities.

(a) Explain how the imposition of tariffs results in economic inefficiencies. [10]

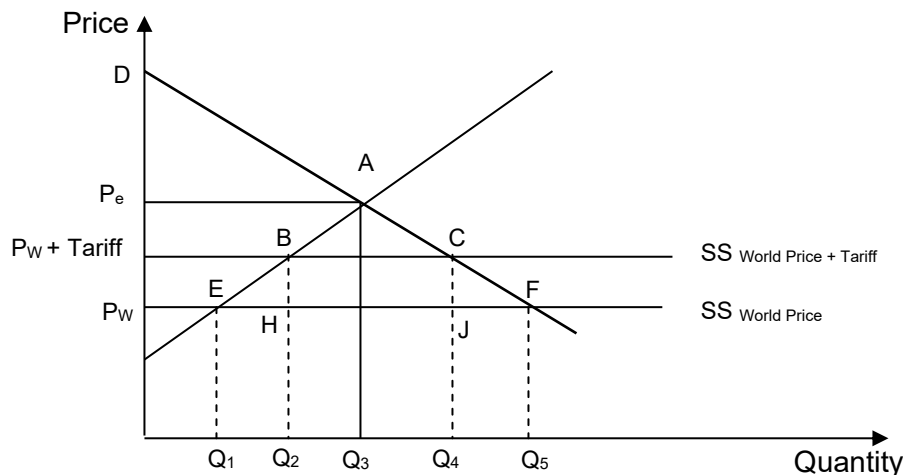
(b) Discuss the appropriateness of the US and Singapore’s approaches to globalisation. [15]

#### Part (a)

##### Introduction

- Tariffs are taxes imposed on imported goods and services to shelter domestic industries from foreign competition.
- Economic inefficiencies comprises:
  - Productive inefficiency.
    - Producing above LRAC.
  - Allocative inefficiency.
    - Loss in social welfare arising from inefficient allocation of resources in the production of goods and services.

##### Body:



- With free trade, country is able to access imports, for example steel, at  $P_w$ . World supply is perfectly price elastic assuming that importing country is a small price-taking buyer which does not affect world price.
- With the imposition of tariffs,
  - World supply decreases represented by the supply curve shifting upwards vertically.
  - Price of the good increases from  $P_w$  to  $P_w + \text{tariff}$  represented by upward shift of world supply curve.  
(Note: Price of good – both domestically produced and imported goods, increases to  $P_w + \text{tariff}$ . There is no relatively cheaper domestically produced goods being sold in the market.)
  - Consumption of the good decreases from  $Q_5$  to  $Q_4$  due to fall in purchasing power (income effect) and switch to relatively cheaper substitutes (substitution effect).
  - Domestic production increases from  $Q_1$  to  $Q_2$  as profit maximizing domestic producers are incentivized by higher profitability brought about by increase in price from  $P_w$  to  $P_w + \text{tariff}$
  - Amount of imports decreases from  $Q_1Q_4$  to  $Q_2Q_3$  due to the increase in domestic production and fall in consumption of good. This reduction is brought about by a decrease in the amount consumed ( $Q_4Q_5$ ) and an increase in domestic production ( $Q_1Q_2$ )

### R1: Tariff results in productive inefficiency

- With the imposition of tariff, domestic price of the imported good increases from  $P_w$  to  $P_w + \text{tariff}$ .
- Domestic firms now face less competition from more efficient foreign producers because imports are now priced at  $P_w + \text{tariff}$ .
- Selling more goods at higher prices allow domestic firms to make higher revenue and profits. Domestic firms may become complacent and wasteful in production.
- Domestic firms may become productive inefficient, produce above its LRAC and yet be able to survive.
- Due to this sheltering from foreign competition, domestic firms may also have lesser incentive to R&D to process innovate to improve technology level of production to lower its per unit cost of production, incurring relatively higher cost of production over time.

### R2: Tariff results in allocative inefficiency

- Tariff results in allocative inefficiency which results in loss of social welfare represented by DWL areas – BEH and CFJ
  - Area BEH is DWL arising from production distortion effect
    - Before tariff,  $Q_1Q_2$  is produced by efficient world producer which incurs marginal cost of  $Q_1EQ_2$  in producing these additional units of the good. After tariff, production of  $Q_1Q_2$  is diverted to the less efficient domestic producer which incurs marginal cost of  $Q_1EBQ_2$  in producing these additional units of goods. The extra marginal cost of BEH incurred represents a loss of welfare to the society for shifting production from the more efficient world producer to the less efficient domestic producer which incurs greater opportunity costs, uses more resources and incurs higher COP in producing  $Q_1Q_2$ .
  - Area CFJ is DWL arising from consumption effect
    - Before tariff, additional  $Q_4Q_5$  of goods are consumed. The marginal benefit of consuming these goods is  $Q_4CFQ_5$  and the marginal cost of producing these goods is  $Q_4JFQ_5$ . Society is better off as consumer surplus of CFJ is reaped in the consumption of additional  $Q_4Q_5$  of goods
    - After tariff, consumption of  $Q_4Q_5$  does not take place. As a result, this loss of consumer surplus of CFJ represents a loss of welfare to the society due to a reduction in consumption the good.



**Mark Scheme:**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |               |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ Lack application of relevant economic framework and context               <ul style="list-style-type: none"> <li>• Tariff diagram</li> <li>• PE/AE concepts</li> </ul> </li> <li>▪ Critical errors in analysis</li> <li>▪ Significant conceptual gaps in explanation</li> </ul>                                                                                                                                             | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations               <ul style="list-style-type: none"> <li>• gaps in explaining how tariffs result in productive and allocative inefficiency</li> <li>• did not make good use of tariff diagram in explaining inefficiencies</li> </ul> </li> <li>▪ Some use of examples</li> <li>▪ Lacking in full scope of analysis</li> </ul> | <b>5 - 7</b>  |
| <b>L3</b>                                              | <p>A well-developed answer that demonstrates:</p> <ul style="list-style-type: none"> <li>▪ Rigorous analysis for BOTH requirements</li> <li>▪ Good scope of coverage</li> <li>▪ Good application of examples</li> </ul>                                                                                                                                                                                                                                              | <b>8 - 10</b> |

**Examiners' Comments:**

- Focus on analysing effects of tariffs. Some responses spent too much time explaining the effects of free trade. When it came to analysing tariffs, the analysis became significantly shorter due to time constraint.
- Some responses incorrectly analysed that consumers switch from more expensive tariffed imports to relatively cheaper domestically produced goods. Note that after imposition of tariff, price of good increases to  $P_w + \text{tariff}$  - both domestically produced and imported goods. There are no relatively cheaper domestically produced goods being sold in the market.
- Economic efficiency refers to productive and allocative efficiency. Dynamic efficiency could become relevant if process innovation portion of dynamic efficiency is analysed. In such an instance, focus should be on improvement in technology resulting in more efficient methods of production and lower per unit COP over time.
- Some responses focused on indirect effects of tariffs. For example, how tariffs increase the market power of domestic firms causing allocative inefficiency. Such approaches are second best. Always focus on immediate and primary effects first. This is especially so given that this is a 10m "Explain" type of question, not a 15m "Discuss" type of question. "Discuss" questions allow for greater play of secondary effects. Sometimes this is even required in the construction of AT and EV components of 15m questions. However, even in such instances, primary effects must be thoroughly analysed as part of T.
- A small handful of students explained how tariffs helped to achieve efficient outcome, which is not what the question is asking for. Question is asking how tariff results in inefficiencies. Some even provided T/AT arguments that tariffs could on one hand help to achieve efficient outcomes while causing inefficiencies on the other hand. This is unnecessary as arguments about how tariffs help to achieve efficient outcomes are irrelevant and not credited. Please do not adopt T/AT approach for 10m questions, unless the question is an "Explain whether" type of question.
- Many responses cannot accurately define the concepts of PE and AE:
  - There are two types of PE. PE from firm's perspective, which is production without wastages, producing on LRAC. PE from society's perspective is the reaping of internal economies of scale to produce ideally at  $Q_{mes}$ . In this question, the relevant PE concept to use is PE from firm's perspective. Also, take time to explain and define PE from firm's

*perspective / society's perspectives. Do not assume examiner to know what is PE from firm's perspective versus society perspective by merely stating the terms.*

- *In this context, AE is defined as the allocation of resources to produce goods such that social welfare is maximized, meaning there is no DWL. Note that there are two conditions for AE, which are not directly applicable to this question's context:*
  - *Production/consumption at where  $MSB=MSC$  is used typically for market failure due to externalities.*
  - *Pricing last unit of good such that  $P=MC$  is used typically for market failure due to market dominance.*

## Part (b)

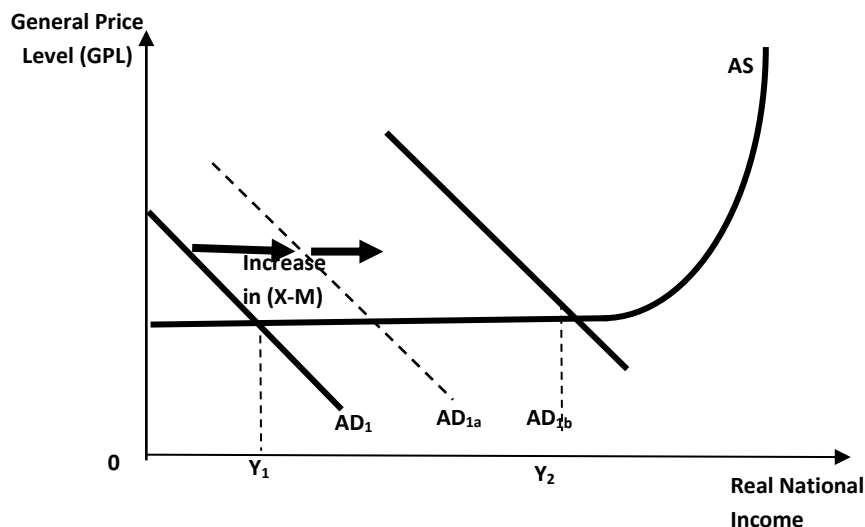
### Introduction

- US adopts protectionism and encourages the re-shoring of manufacturing activities
- Singapore adopts free trade policy through signing FTAs which facilitates the movement of goods/services, capital and labour

### R1(T): US protectionist and re-shoring approach is appropriate because it helps to:

(Choose 1 or 2 points, aiming for good explanation of why US adopts protectionism and in-depth analysis using economics framework – tariff diagram, AD/AS framework.)

- Address structural unemployment
  - Decline in traditional manufacturing (steel, textiles, coal) due to loss of CA to emerging economies, automation and offshoring. Growth in tech, healthcare, and services results in rising demand for STEM, digital, and healthcare skills. Workers from declining sectors lack the skills to transit from sunset industries to technology and knowledge intensive industries.
  - Protectionist measures such as tariffs shelter sunset industries from foreign competition and slow down the decline of these industries, alleviating the severity of structural unemployment in US. From tariff diagram, it can be seen that production by domestic producers increases from  $Q_1$  to  $Q_2$ , increasing the derived demand for labour in these protected industries. Moreover, the push to re-shore manufacturing eases the retraining required to equip workers with the skills to be re-employed.



- Improve balance of trade deficit and economic growth

- US experiences large trade deficits which requires financing through borrowing from the external sector or currency depreciation
- Trade deficit also reduces (X-M) component of AD causing RNY to decrease, which in turn increases unemployment.
- By imposing a tariff, there is a fall in amount of imports from Q1Q5 to Q2Q4. M expenditure decrease from Q1Q5FE to Q2Q4JH. Assuming X revenue remains constant, BOT improves, reducing US BOT deficit.
- By imposing a tariff, there is a switch away from imported goods to domestically produced goods. Demand for domestically produced goods increases from Q1 to Q2. This is represented as an increase in (X-M) component of AD which increases AD from AD1 to AD1a, which in turn triggers the multiplier effect to cause a more than proportionate increase in RNY and a corresponding fall in unemployment as derived demand for labour increases due to an increase in domestic production. (Elaboration of multiplier effect is required to show more than proportionate increase in RNY.)
- Retaliate against unfair trade practices – dumping and currency manipulation
  - US trade partners could have engaged in unfair trade practices. China has provided generous steel and EV subsidies to Chinese producers which has allowed these producers to dump steel and EV in the US markets. By selling below MC, Chinese steel and EV drive out US producers.
  - An increase in M of Chinese steel and EV, reduces the AD for domestically produced substitutes. This causes a fall in AD which in turn triggers the multiplier effect to cause a more than proportionate increase in RNY and a corresponding fall in unemployment as derived demand for labour increases due to an increase in domestic production.
  - To retaliate against such unfair trade practice US has to impose tariffs on Chinese steel and EV to protect its domestic industries and economy.
- Raise tax revenue
  - Tariffs imposed by the US government go towards tax revenue collected by the tax authorities. Tariff revenue of HBCJ is significant given if tariff rates are high and tariffs are imposed on a broad range of imports. The tariff revenue collected can help to reduce the budget deficit run by the US government, helping to reduce borrowing to finance these deficits, reducing interest costs in the long run.
- Production of critical goods for national security – national defence equipment, medical equipment, telco equipment

### **R1(AT): US protectionist and re-shoring approach has limitations**

(Choose 1-2 points)

- Loss in consumer surplus
  - Tariffs result in higher prices paid by consumers as price of tariffed goods increase from  $P_w$  to  $P_w + \text{tariff}$ .
  - Consumer surplus falls from  $DFP_w$  to  $DCP_w + \text{tariff}$  as the difference between the price paid by consumers and the actual price they pay has reduced, and the amount of goods consumed has also fallen.
- Inflationary pressure
  - Tariffs on imported goods generally increases COP in the US as some industrial production in US will use imported raw material and intermediate goods. Such an increase in COP results in a decrease in AS which is represented as an upward shift of AS curve. With an increase in COP, profit maximizing firms will attempt to pass on some of this increase in COP to consumers, resulting in an increase in GPL.

- Loss of competitiveness of industries depending on import
  - Tariff on imported raw materials such as steel will cause an increase in cost of production for industries such as automobile industry. This causes affected US industries to lose price competitiveness in the international market which reduces the amount of car exports sold. This reduction in X causes US AD to fall, negatively affecting RNY, unemployment and BOT.

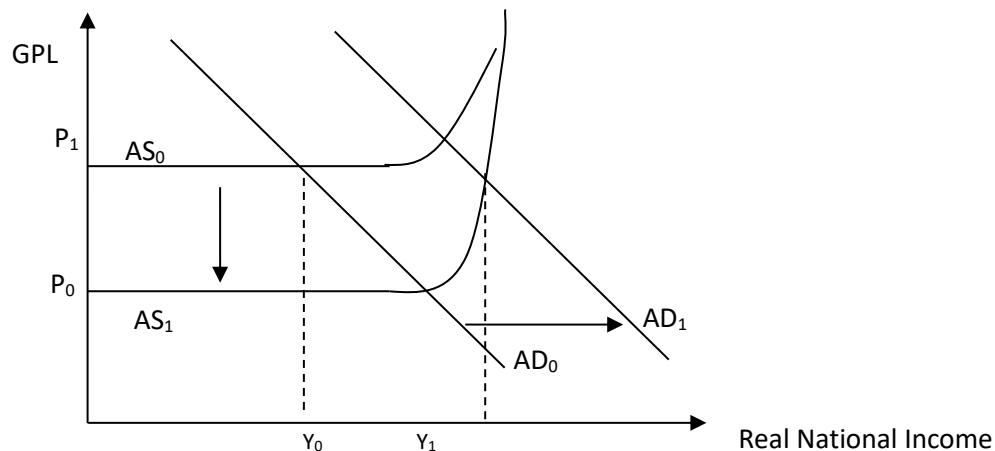
### R1(EV):

- Given the severity of its structural unemployment issue and perceived unfair trade practices of its trade partners, US has judged that the benefits of imposing tariffs outweigh its costs. US is also using threat of punitive tariff to negotiate deals for trade partners to FDI into US and/or to purchase US exports.
- In the long term, US cannot rely on tariffs to address its economic issues. Other countries are forming trading blocs to facilitate free trade even as US adopts a protectionist approach. To address the root of its structural unemployment issue, US has to look to SSP of skills upgrading and retraining as the use of tariff to address this issue comes with high costs and does not directly address the root cause.

### R2(T): Singapore free trade, FTA approach is appropriate:

(Choose one or two to analyse in detail.)

- Leverage on Theory of CA to realise the benefits of free trade
  - As Singapore has CA in high value-added goods and services such as financial services, R&D, technology and knowledge intensive industries, it is able to enjoy a favourable terms of trade which magnifies the benefits of specialization and trade.
  - Singapore adopts a free trade policy to fully reap the benefits of specialization and trade as postulated in Theory of CA.
  - Theory of CA recommends that a country should specialize in the production of goods which it incurs a lower opportunity cost in producing. In doing so, Singapore will be able to maximise its production of goods and services.
  - Following which, Singapore engages in voluntary trade with other countries specializing in the production of other goods it has CA in.
  - In doing so, Singapore is able to consume more goods and services beyond its PPC.



- Leverage on the size of global markets to drive sustained economic growth

- As a small economy with small domestic markets, Singapore needs to adopt free trade policies to access larger global markets to increase X and to reap iEOS. Through increasing X, sale of exports to the rest of the world becomes a key engine of actual economic growth for Singapore. AD increases from AD<sub>0</sub> to AD<sub>1</sub>. Through reaping technical iEOS such as spreading high fixed cost of advanced machineries over large quantities and division and specialization of labour, its domestic producers are able to enjoy lower per unit cost of production to compete with larger international competitors. AS increases from AS<sub>0</sub> to AS<sub>1</sub>. This allows Singapore producers to achieve price competitiveness, increasing sale of Singapore exports in international markets. An increase of AD and AS markets allow Singapore to achieve sustained economic growth where RNY increases with price stability over the long term.
- Leverage on the resource diversity and technology of global markets to drive economic growth.
  - As a small economy with limited diversity of resources, Singapore needs to adopt free trade policy to access imported raw material and technologically advanced capital goods.
  - With access to lower priced imported raw material, per unit COP of Singapore's industries will fall causing its AS to increase. This is represented as a downward shift of the AS curve. Profit maximizing producers will increase production as a fall in per unit COP improves profitability. This increase in production in turn increase in Singapore's RNY. The ability to access cheaper imported raw material also moderates cost push inflation.
  - With access to technologically advanced capital goods, level of technology and productivity of production process in the Singapore economy increases. This results in a fall in per unit COP and an increase in production capacity as the same amount of resources can produce more goods. AS increases, represented by a downward and outward shift of the AS curve. This helps Singapore to achieve potential growth. Potential growth also allows Singapore to achieve sustained economic growth with low inflation assuming AD increases in tandem with AS in the long run.

**R2(AT): Singapore free trade, FTA approach has limitations:**

- Increased volatility of economic performance. Adopting free trade policies means relying on X and M as its key economic drivers. This increases volatility of Singapore's economic performance which are dependent on external factors beyond its control.
  - Singapore is more susceptible to DD pull inflation in times when the global economy is booming and its trade partners RNY are increasing. Increasing purchasing power of trade partners will increase Singapore's X which causes its AD to increase. Assuming that the Singapore economy is operating at or near full employment levels, there will be shortages of goods in the economy which causes an upward pressure on GPL.
  - Conversely, recessions in trade partners' economies will cause Singapore X to fall, triggering the reverse multiple effect, causing its RNY to fall more than proportionately, cyclical unemployment to increase and BOT to worsen.
- Constant international competition. Adopting free trade policies exposes domestic producers to international competitors. Competitors are always improving to move up the value chain to generate economic growth. Singapore will need to constantly improve its international competitiveness through offering lower prices, better quality and more innovative products.
  - To achieve price competitiveness, domestic producers must constantly R&D to achieve process innovation which helps to improve technology level and lower per unit cost of production.
  - To produce better quality products and offer innovative products, domestic producers must constantly R&D to achieve product innovation.
  - Singapore labour force must also constantly upgrade its skills to improve its productivity and support its R&D activities.

- The above SSP requires significant subsidy expenditure from the government. It also creates significant pressure on domestic industries to continually improve its processes and products and workers to upgrade their skills.

**R2(EV):**

- Constrained by its small markets and poor diversity of resources, Singapore has no choice but to adopt free trade policies in order to drive its economic development. X, M and FDI play a critical role in its economic success.
- Free trade policies alone do not bring about superior economic outcomes. There must be comprehensive SSP to improve the productivity and competitiveness of domestic industries to reap the benefits of access to international markets. Skills retraining SSP are also critical in helping to avoid the issue of structural unemployment as Singapore seeks to move out into new CA industries in anticipation of competitors emerging to erode the competitiveness of Singapore's current CA industries.

**Overall EV:**

- US and Singapore adopt different approaches to globalization due to differences in its country characteristics and economic priorities at this point in time. Nevertheless, the benefits of specialization and trade arising from the theory of CA are significant and countries should carefully consider how to leverage on globalization to realise these benefits while finding ways to mitigate its negative effects.

**Mark Scheme**

| <b>Knowledge, Application, Understanding, Analysis</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>L1</b>                                              | <ul style="list-style-type: none"> <li>▪ No use of relevant economic framework               <ul style="list-style-type: none"> <li>• Benefits/Costs of protectionism</li> <li>• AD/AS</li> <li>• KEIs</li> </ul> </li> <li>▪ Answer is mainly descriptive or mere listing of points</li> <li>▪ Significant conceptual errors in explanation</li> </ul>                                                                                  | <b>1 - 4</b>  |
| <b>L2</b>                                              | <ul style="list-style-type: none"> <li>▪ Some application of relevant economic concepts and framework in analysis</li> <li>▪ Lack US/SG contextualization               <ul style="list-style-type: none"> <li>• Current economic conditions</li> <li>• Economic characteristics</li> </ul> </li> <li>▪ Lacking in full scope of analysis               <ul style="list-style-type: none"> <li>• One-sided answer</li> </ul> </li> </ul> | <b>5 - 7</b>  |
| <b>L3</b>                                              | A well-developed answer that demonstrates: <ul style="list-style-type: none"> <li>▪ Rigorous analysis for BOTH requirements</li> <li>▪ Good application of examples</li> <li>▪ Good application of relevant economic framework</li> </ul>                                                                                                                                                                                                | <b>8 - 10</b> |
| <b>Evaluation</b>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
| <b>E1</b>                                              | <ul style="list-style-type: none"> <li>▪ Explained judgment</li> <li>▪ Superficial conclusion/assertion</li> </ul>                                                                                                                                                                                                                                                                                                                       | <b>1 – 2</b>  |
| <b>E2</b>                                              | <ul style="list-style-type: none"> <li>▪ Well explained judgment, supported by reasons/economic analysis</li> <li>▪ Insightful conclusion/assertion reflecting real world</li> </ul>                                                                                                                                                                                                                                                     | <b>3 - 4</b>  |
| <b>E3</b>                                              | <ul style="list-style-type: none"> <li>▪ Summative judgment covering both R1 and R2</li> </ul>                                                                                                                                                                                                                                                                                                                                           | <b>5</b>      |

**Examiners' Comments:**

- Many responses did not secure the highest end of the marks because they failed to fulfil the below 2 requirements:
  - To clearly identify and explain the reasons why US prefer protectionism and re-shoring and SG prefers globalization, AND
  - To rigorously analyse the effects of protectionism/FTAs using economic framework.
- Many responses either did the former or the latter well. Some responses provided very good reasons why US/SG preferred one approach over the other based on their economic characteristics or priorities at this present point in time but failed to analyse how protectionism or FTAs worked to achieve macroeconomic objectives. On the other hand, many went directly into explaining the positive and negative effects of tariffs/FTAs without clearly identifying US/SG economic characteristics and priorities.
- Merely stating that US is large and less open while SG is small and open does not constitute sufficient explanation of why US preferred protectionism and SG FTAs. For example, responses have to go on to explain that due to small population and small domestic markets, SG need to leverage on X to drive its AD and actual economic growth. Hence, FTAs are appropriate for SG. Another example, being small and possessing mainly skilled labour endowment, SG has to rely on free access to imported raw material for many of its industries, as such the FTA approach is appropriate for SG.
- Many responses claim that US adopts a protectionist approach to nurture its infant industries. This is not reflective of the real-world situation. US adopts a protectionist approach mainly for the following reasons:
  - Large BOT deficits
  - Structural unemployment, especially in manufacturing sectors
  - Purported unfair trade practices, including dumping by trade partners
  - Purported national security reasons
- Rigour in analyses implies using the tariff diagram and AD/AS framework whenever possible. Below are various examples:
  - When explaining how US AD increases due to tariffs, make reference to the increase in consumption of domestically produced goods in the tariff diagram and link it to the AD/AS framework.
  - When explaining how US tariff improves BOT, make reference to the reduction in M expenditure in the tariff diagram.
  - When explaining how tariff revenue can help US government finance its government spending, make reference to tariff revenue in tariff diagram.
  - When explaining how increase in X from SG FTA increases actual economic growth, use and draw the AD/AS diagram and provide some elaboration of multiplier effect as to how RNY increases more than proportionately.
  - When explaining how access to imported raw material improves SG economic performance, analyse it as an increase in AS represented by a downward shift of AS curve. Then explain how this increases RNY.

\*\*\*\*\*END\*\*\*\*\*

“Everything is hard before it is easy” ~ Goethe J.W.