2021 A-Level Paper 2 SAMS

1.
The market for bicycles is often said to generate external benefits such as reduced traffic congestion and reduced air pollution.

a) Explain how economic theory suggests consumers act rationally to decide whether or not to buy a bicycle, and how producers of bicycles act rationally to determine their level of output. [10]
b) Discuss how government intervention in the market for bicycles could be used to maximise social welfare and consider how likely it is that such intervention will be successful in achieving this aim. [15]

Part (a) - Question Analysis

Approach	**Command Word**	Explain how - Process
	Question Type	Rational decision-making
	Start point	Factors affecting rational decision-making
	End Point	• Whether consumer should buy a bicycle • profit maximizing level of output of a bicycle firm
Content and Context	**Content**	• Rational decision-making approach ○ Benefits, Costs, Constraints • Marginalist principle
	Context	Consumers and producers of bicycles

Introduction
State essay approach: Economic theory suggest that rational consumers and producers will seek to maximize their self-interest when making decisions using the **marginalist principle**. They will consider factors as such **constraints, benefits, costs** and consume and produce up to a point where marginal benefits (MB) equals to marginal costs (MC). Marginal benefit of an action is the increase in total benefit that results from carrying out one additional unit of the action while the marginal cost of an action is the increase in total cost that results from carrying out one additional unit of the action.

Body Point 1: How economic theory suggests consumers act rationally to decide whether or not to buy a bicycle

- Consumers of bicycles seek to maximise **utility (satisfaction)** and will consume up to a point where marginal private benefit (MPB) = marginal private costs (MPC).
- When deciding whether or not to buy a bicycle, consumers consider their budget and time constraint, which is determined by how much savings the consumer has or the income the consumer is earning while time constraint is determined by how much time consumers have for transportation.
- The marginal private benefit of using a bicycle includes the convenience it brings, especially for short distance transportation, as well as the health benefits of riding a bicycle as a form of exercise.
- The marginal private costs include the monetary cost to buy the bicycle (price of bicycle) and the opportunity costs such as the utility gain if the consumer has bought an e-scooter instead.

- A rational consumer should only buy a bicycle if and only if the benefits are greater than costs.

Body Point 2: Explain how producers of bicycles act rationally to determine their level of output

- Producers of bicycle seek to maximise **profits** and will produce up to a point where marginal revenue (MR) = marginal costs (MC).
- They consider their financial constraints such as the amount of funds available for the production process, resource constraints (availability of limited FOPs)
- Benefits of producing bicycles is the revenue gained from selling bicycles which is obtained by price multiplied by quantity.
- Costs include wages paid to workers and manufacturing costs such as costs of raw material for the different components of bicycle and costs of machinery to assemble the bicycle.

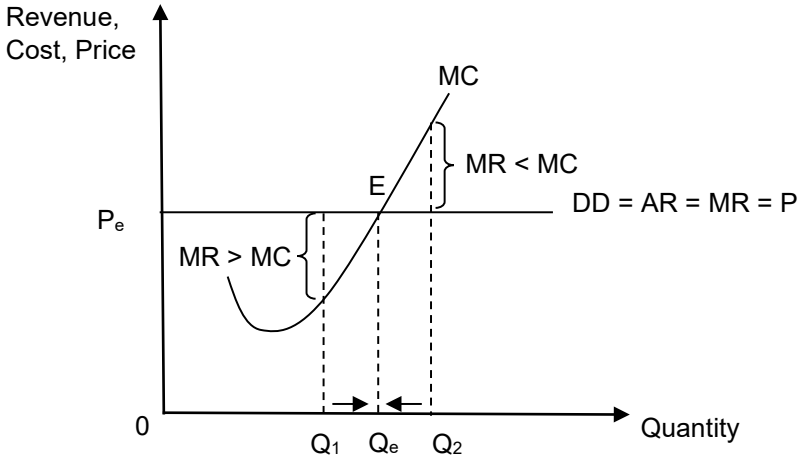


Figure 2: Profit maximising output of a perfectly competitive bicycle firm

- With reference to Figure 2, if the rational firm produces bicycle only up to Q_1 where MR > MC, his profits can be increased by producing additional unit of bicycle as it will add more to his revenue than the costs. Hence, to maximise profits, a rational producer will increase production until MR = MC at Q_e.
- On the other hand, if the rational firm produces bicycle at Q_2 where MC > MR, the additional production of bicycle has decreased his overall profits. Thus, to maximise profits, a rational producer decrease production until MR = MC at Q_e.
- The Marginalist principle states that an economic agent should pursue an activity up to the point where MB = MC. Thus, at Q_e where MR = MC, there is no incentive for the producer to either increase or reduce production hence the profit-maximising firm will produce at the output where MR = MC.

Conclusion

In a perfectly competitive market, rational consumers and producers will consume and produce at where demand equals supply. Prices will then act as a signal to allocate resources between consumers and producers. If MPC (equilibrium price) is more than MPB (as reflected by demand curve), consumers will reduce consumption until MPC = MPB based on the marginalist principle while producer will increase production since the equilibrium price (MPB) is more than its MPC

(as reflected by the supply curve). This will maximise consumer and producer surplus, resulting in maximisation of society welfare.

Mark Scheme

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Full display of AO1, AO2 and AO3 skills: For an answer that shows well-developed explanation of how consumers and producers of bicycle make rational decisions • clear and accurate explanation of the rational decision-making process and marginalist principle with appropriate diagrams • appropriate examples of costs, benefits and constraints that are related to the market for bicycle	8-10
L2	Uneven display of AO1, AO2 and AO3 skills: For an answer that shows under-developed explanation of how consumers and producers of bicycle make rational decisions • lacks depth of analysis (i.e., limited effective use of relevant economic analysis or gaps in diagrammatic analysis) • lacks scope in explaining either consumer or producers of bicycle • lacks appropriate examples of costs, benefits and constraints	5-7
L1	Limited display of AO1 and AO2 skills: For an answer that shows limited knowledge of how consumers and producers of bicycle make rational decisions • listing of points, unexplained statements, or descriptive response • many conceptual errors (i.e., using total benefit/costs instead or marginal costs/benefit when explaining marginalist principle, confusion between costs and constraints) • irrelevant response such as on market failure • smattering of points	1-4

Part (b) - Question Analysis

Approach	**Command Word**	Discuss how – balanced answer + evaluation
	Question Type	Policy evaluation
	Start point	Government intervention
	End Point	Maximise society welfare
Content and Context	**Content**	Policies to address market failure
	Context	Market for bicycles

Introduction

State essay approach: Society welfare is not maximised in the market for bicycles as the price mechanism is unable to allocate resources **efficiently**. The market for bicycles fails due to the presence of **positive externalities** and **imperfect information**. Hence government intervention is needed so that society welfare could be maximised. However, such government intervention may not always be successful in achieving this aim of maximizing society welfare.

Body Point 1: Explain how government intervention such as subsidies can address market failure due to positive externalities and maximise society welfare

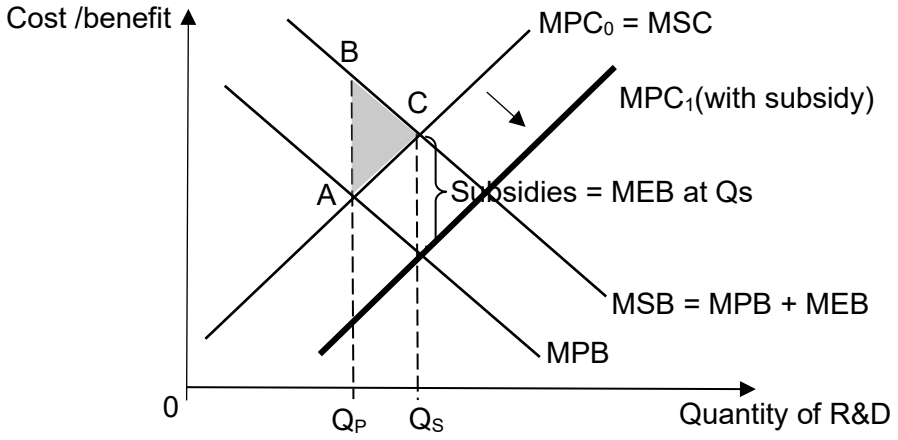


Figure 3: How subsidies correct positive externality

- There are external benefits in the consumption of bicycles due to reduced traffic congestion and reduced air pollution, where third parties such as the residents living near the road can enjoy cleaner air and experience reduction in healthcare costs or greater productivity which earn higher income. Due to the presence of positive externalities, there is a **divergence between MPB and MSB** and MSB = MPB + MEB.
- In the pursuit of self-interests, the consumer considers only his private benefits and costs when riding bicycle. This leads to the market equilibrium output Q_P, where MPB=MPC. However, the socially optimal output is given by Q_S, determined by the intersection of the MSB with the MSC. Since $Q_P<Q_S$, there is an **under-consumption** of bicycles, leading to an **under-allocation of resources**. Between Q_P and Q_S, marginal benefit to society is greater than marginal cost to society. This means that societal welfare could have been gained by increasing quantity of bicycle up to the socially optimal output of Q_S. This

forgone societal welfare is the **deadweight loss** (area ABC), leading to **allocative inefficiency** and hence society welfare is not maximised.

How subsidies work

- To maximise society's welfare, governments can provide **subsidies** to producers. The provision of subsidies to producers (e.g., firms producing bicycles) will lower the cost of production, shifting the supply of bicycle rightwards, hence reducing the price of bicycle for the consumer (bicycle rider). The consumer now internalises the external benefit in his decision-making. The consumer enjoys a lower price and thus his MPC falls, **shifting MPC_0 down to MPC_1**, assuming **subsidies provided equals to the amount of MEB at Q_S**. The new private equilibrium is where MPC_1=MPB, and the **quantity rises from Q_P to the socially optimal output level Q_S, eliminating the deadweight loss and hence society welfare is maximised**.

Intermediate EV – Limitations of subsidies

However, the government might not be able to give an accurate value of MEB due to imperfect information. This will result in government implementing a subsidy that is either too high, resulting in overconsumption, or a subsidy that is too low, which means there will still be underconsumption of bicycle. Moreover, this policy **does not tackle imperfect information** as consumers may not ride bicycle even if it is cheaper if they do not know the actual benefits of riding bicycles.

Body Point 2: how government intervention such as public education can address market failure due to imperfect information and maximise society welfare

- Bicycle riders lacks critical information to make rational decision. They may be unaware of the full health benefits of riding bicycle and thus **underestimate their actual marginal private benefit** from riding bicycle, causing **MPB(Actual) to be higher than MPB(Perceived)**.

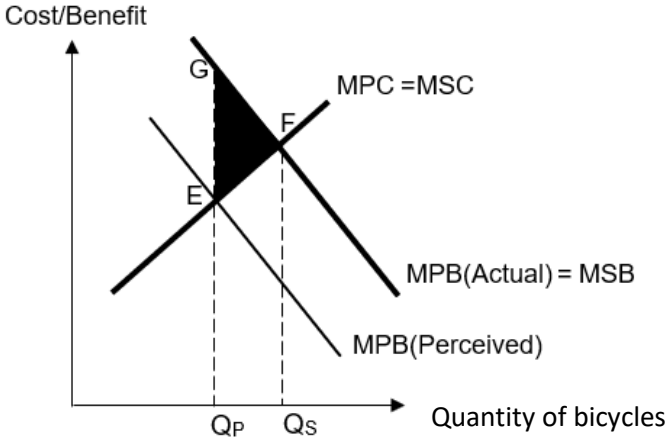


Figure 4: How public education correct imperfect information

- Assuming no externalities, MPB(Actual) equals to marginal social benefit (MSB), and marginal private costs equals to marginal social costs (MPC=MSC). Due to imperfect information, rational consumers will consume up to Q_P where MPB(Perceived)=MPC. However, the socially optimal output is Q_S where MSB=MSC. Hence, **imperfect**

information causes an under-consumption of Q_PQ_S. Between Qp and Qs, Area Q_PGFQ_S which is the total social benefit is greater than area Q_PEFQ_S which is the total social cost. This means that societal welfare could have been gained by increasing quantity consumed up to the socially optimal output of Q_S. This forgone societal welfare is the **deadweight loss** (area EFG) due to under-consumption of and under-allocation of resources to bicycle, leading to **allocative inefficiency** and hence society welfare is not maximised.

How public education works

Government can provide information of the actual MPB of riding bicycles through **public campaigns** to correct the MPB from MPB(Perceived) to MPB(Actual) and help consumers make more informed choices. For example, LTA can hold talks or exhibition to inform the public about the benefits of riding bicycles. When MPB(Perceived) is corrected to MPB(Actual), the socially optimal amount Q_S where MSB=MSC will be achieved since consumers will consume up to where MPB(Actual)=MPC. Hence, deadweight loss is eliminated, and society welfare is maximised.

Intermediate EV – Limitations of public education

However, public education is a **long-drawn process** that requires time to **change mind-sets**, which can be challenging especially when it involves changing travelling habits. For example, despite knowing the potential benefits of riding bicycles, drivers who already owned cars will find it difficult to switch to riding bicycles. Hence underconsumption of bicycle still exists and society welfare is not maximised.

Summative Evaluation

- Recommendation: All in all, it is more likely for government intervention to maximise society welfare in the market for bicycles when complementary policies are being implemented.
- Justifications: The combination of policies - subsidies and public education, can help to tackle both root causes of positive externalities and imperfect information respectively, hence ensuring that society welfare can be maximised by increasing the market output level to the socially optimal output level. Moreover, with the advancement of technology, more accurate and timely data could be collected to ascertain whether the subsidy given is optimal. The Singapore government could also educate the youth about the actual benefits of riding bicycles so that they are less encouraged to buy cars in the future.
- Further insights: Furthermore, there are also other policies such as Electronic Road Pricing (ERP) and the building of more cycling paths to further disincentivise driving and encourage switching to riding bicycle instead as an alternative in Singapore. While all these policies require government spending, the taxes raised from ERP could be used to fund the subsidy, public education and building of cycling paths.

Mark Scheme

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Full display of AO1, AO2 and AO3 skills: For an answer that shows well-developed and well-balanced explanation of how government intervention can maximize society welfare in the market of bicycle • clear, accurate explanation on how the market of bicycle fails and the policies that government could implement to address the market failure • well-supported with diagrammatic analysis • well-contextualise to the market of bicycle	8-10
L2	Uneven display of AO1, AO2 and AO3 skills: For an answer that shows under-developed explanation or one-sided explanation of how government intervention can maximize society welfare in the market of bicycle • lacks depth of analysis (i.e. limited effective use of relevant economic analysis or gaps in diagrammatic analysis) • lacks scope in explaining government intervention • lacks appropriate examples	5-7
L1	Limited display of AO1 and AO2 skills: For an answer that shows limited knowledge of how government intervention can maximize society welfare in the market of bicycle • with listing of points, unexplained statements, or descriptive response • many conceptual errors • Smattering of points	1-4

	Evaluation	Marks
E3	For an answer that arrives at an analytically well-reasoned judgment about whether government intervention can maximize society welfare in the market of bicycle.	4-5
E2	For an answer that make some attempt at a judgment about whether government intervention can maximize society welfare in the market of bicycle.	2-3
E1	For an unsupported statement about whether government intervention can maximize society welfare in the market of bicycle.	1

Suggested answer for 2021 A-Level Paper 2 Question 2

In recent years the United States (US) has increased tariffs (import taxes) on a wide range of imported goods from China.

(a) With the aid of a diagram, explain what is meant by consumer surplus and producer surplus. [10]

(b) Discuss the view that all economic agents in the US economy will lose from the introduction of tariffs on imported goods from China. [15]

Part (a) (Question Analysis)

Approach	**Command Word**	Explain the meaning of … using a Demand and Supply diagram
	Start Point	This is a 'concept' question, so there is no typical start and end point in the form of an argument
	End Point	
Content and Context	**Content**	Consumer Surplus Producer Surplus
	Context	Not provided (to provide own)

Suggested Answer and Mark Scheme

Introduction

- Define Consumer Surplus: The difference between the maximum price that consumers are able and willing to pay, and the price they are actually paying (market price)
- Define Producer Surplus: The difference between the minimum price that producers are able and willing to sell at, and the price they are actually receiving (market price)

Body

Point 1 - Consumer Surplus

- The maximum price that consumers are willing and able to pay for every quantity of a good is illustrated by a downward sloping demand curve as seen in Figure 1).
- This is according to the law of diminishing marginal utility, which states that the additional utility from each additional unit of good consumed decreases as consumption increases. (For example, the utility derived from a 1st car is lower than a 2nd car, due to increasing satiation). Thus, the price that consumers are willing and able to pay for each additional car falls with increasing levels of consumption.

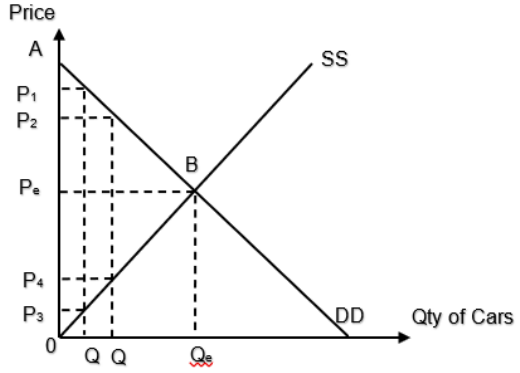


Fig 1. Market for Cars

- The market price (P_e) for cars is determined by the intersection of the demand and supply curves, and the market transacts at the equilibrium quantity Q_e

- For the 1st car consumed, the consumer surplus is thus equivalent to $P_1 – P_e$. For the 2nd car consumed, the consumer surplus is thus equivalent to $P_2 – P_e$…… and so on.
- Since the market transacts Q_e cars, **the consumer surplus accruing to the entire market will be the summation of these individual consumer surpluses and illustrated by the triangle P_eAB.**

Point 2 - Producer Surplus

- The minimum price that consumers are willing and able to sell for every quantity of a good is illustrated by an upward sloping supply curve (as shown in Figure 1).
- As production increases, producers will have to hire more workers to produce cars and beyond a certain level of production, the workers hired will be less and less suited to producing cars (less suitably trained) and the marginal cost of producing each additional car increases. Thus, the price that producers are willing and able to accept for each additional car increases with higher levels of production.
- For the 1st car produced, the producer surplus is thus equivalent to $P_e – P_3$. For the 2nd car produced, the consumer surplus is thus equivalent to $P_e – P_4$…… and so on
- Since the market transacts Q_e cars, **the producer surplus accruing to the entire market will be the summation of these individual producer surpluses and illustrated by the triangle P_eB0.**

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	● Analytical explanation of both consumer surplus and producer surplus with good use of diagrams ● Exemplification ● Coherent flow and organisation	8-10
L2	● Cursory explanation of both consumer surplus and producer surplus ● Diagrams are used but not well referred to ● Lacks Exemplification ● Contains some inaccuracy	5-7
L1	● Many conceptual errors ● Failed to use diagrams to illustrate ● Lack of clarity, coherent flow and organisation	1-4

(b) Discuss the view that all economic agents in the US economy will lose from the introduction of tariffs on imported goods from China. [15]

Part (b) (Question Analysis)

Approach	**Command Word**	Discuss: Balanced + EV (Intermediate EV + Summative EV)
	Start Point	Introduction of tariffs on imported goods from China
	End Point	Impact on different agents: Consumers, Producers (Importers, Domestic producers), Governments
Content and Context	**Content**	Impact on consumer surplus Impact on producer surplus Impact on social welfare (Summation of CS and PS)
	Context	Market for imported goods from China, Market for domestically produced goods

Introduction

- Tariffs are duties or taxes levied on imports.
- The imposition of a tariff will thus affect different economy agents (consumers, producers, and governments in different markets)

Body

Point 1 - Consumers of imported goods will lose from the introduction of tariffs

As the United States attempts to improve its trade balance with respect to China, tariffs have been imposed on a wide range of goods, such as steel, from China. These tariffs act as a tax and essentially increase the cost of providing imported steel in the US domestic market. Assuming the import tariff imposed is equivalent to specific tax (t), the supply of imported steel will fall from SS_0 to SS_1. This results in shortage in the domestic steel market, resulting in an upward pressure on prices and an increase in equilibrium price from P_0 to P_1 and a fall in equilibrium quantity from Q_0 to Q_1.

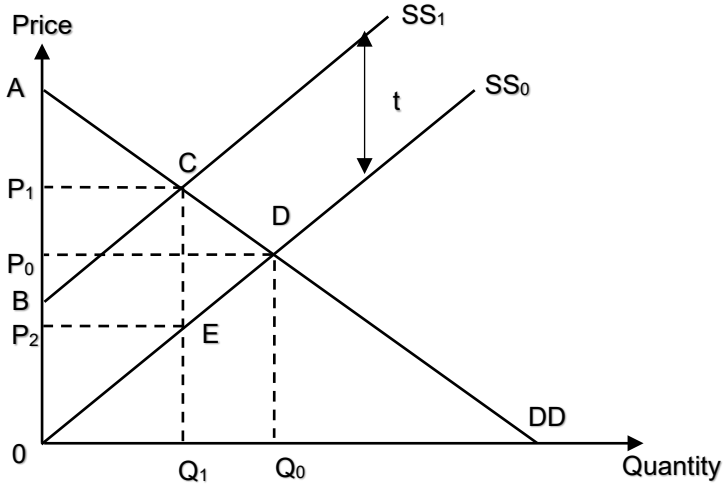


Fig 2. Market for Imported Steel

For consumers of imported steel, such as US car manufacturers, consumer surplus will fall from area ADP_o to area ACP_1, making them worse off.

Note: the producer surplus in Fig 2 refers to producer surplus for foreign producers, not US producers, and should not be considered in the analysis.

Point 2 - Consumers and producers of domestic goods that use imported FOPs will lose from the introduction of tariffs

The imposition of tariffs on goods such as steel will increase the cost of production of US steel importers, such as car manufacturers, that use these imported FOPs. The supply of cars will fall as profits fall, as producers become less willing and able to produce cars. This will lead to a shortage, and an increase in equilibrium price and fall in equilibrium quantity, resulting in lower consumer and producer surplus for car buyers, making them worse off.

Note: DD/SS diagrams should be used to analyse the above paragraph also. It will be the same as to Fig 2. Students just have to identify the changes in CS and PS correctly.

Intermediate EV: However, the extent of fall in producer surplus and consumer surplus of goods that uses imported FOPs will depend on the size of the tariff being imposed. As goods such as steel are an important raw material in many economies, imposing such a tariff risks creating severe cost push inflation in an economy. With the ongoing Ukraine crises already stoking inflation, it is likely that the US will ease such tariffs and the fall in both consumer and producer surplus is likely to be less significant in the long run.

Other possible EV point: extent of impact also depends on degree of reliance on imported FOPs.

Point 3 – Producers of domestic goods may not lose from the imposition of tariffs

Using the same example, with tariffs being imposed on imported steel, domestic US consumers will now turn to purchasing relatively cheaper domestically produced steel.

This will result in an increase in demand for domestically produced steel, shifting the demand curve from DD_0 to DD_1. A shortage is created at the current market price, P_0, resulting in an upward pressure on prices. Equilibrium price and quantity will increase from P_0 to P_1 and Q_0 to Q_1 respectively. This leads to an increase in total revenue from $0P_0AQ_o0$ to $0P_1BQ_10$ for domestic producers of steel. Producer surplus will also increase from $0P_0A$ to $0P_1C$. Thus, domestic producers of steel are better off from the imposition of the tariffs on imported goods from China.

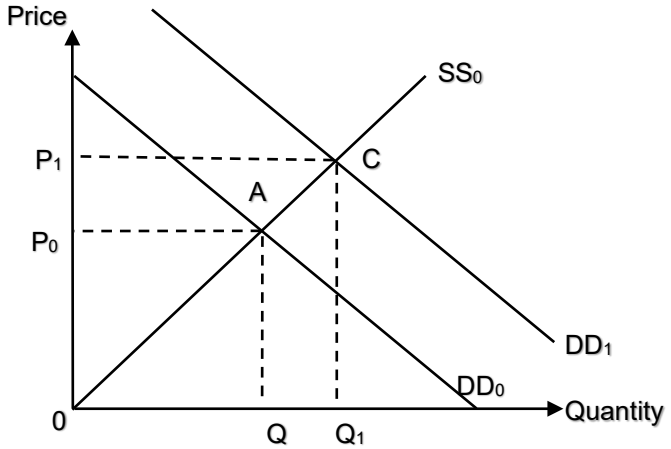


Fig 3. Market for domestically produced steel

Intermediate EV: For basic raw materials such as steel, the extent for product differentiation is likely to be small. Thus, domestically produced steel will likely be seen as close substitutes for imported Chinese steel i.e., positive XED >1. Thus, the increase in the price of imported steel form China is likely to lead to a more than proportionate increase in demand for domestically produced steel, resulting in a significant rise in total revenue and producer surplus. Thus, domestic producers are likely to benefit significantly, instead of losing from the imposition of the tariffs.

Point 3 - Governments may/may not lose from the imposition of tariffs

With reference to **Fig 2**, the imposition of tariffs will allow governments to collect tax revenue equivalent to P_1CEP_2, and this tax revenue can be used to improve societal welfare in the provision of both public goods and merit goods such as education and healthcare, improving allocative efficiency in the process.

In addition, governments can also use the revenue collected to improve productivity of its domestic industry through sponsoring R&D and training. This will help to improve the price and non-price competitiveness of domestically produced goods in the long run, enabling governments to remove these tariffs. This will help to reduce the loss in CS and PS explained earlier.

Summative Evaluation

Ceteris paribus, producers are not necessarily made worse off (especially in the case of domestic producers). Consumers will generally be made worse off due to higher prices for both imported goods and domestic substitutes.

However, the imposition of tariffs by the United States is likely to invite retaliation from China in the long run, and this will reduce the demand for US produced goods in China, resulting in lower revenue and producer surplus for US goods in China.

Thus, in the long run, imposition of tariffs is likely to lead to negative outcomes for both consumers and producers.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	● Analytical explanation of negative and positive impacts of tariffs on consumers, importers, domestic producers. ● Good use of diagrams ● Exemplification ● Coherent flow and organisation	8-10
L2	● A mix of analytical and cursory explanations of negative and positive impacts of tariffs on consumers, importers, domestic producers. ● Diagrams are used but not well referred to ● Lacks Exemplification ● Contains some inaccuracy	5-7
L1	● Many conceptual errors ● Failed to use diagrams to illustrate ● Lack of clarity, coherent flow and organisation	1-4
Level	**Evaluation**	**Marks**
E3	Insightful judgment substantiated with analyses, including but not limited to the following considerations: ● long vs short term ● intended vs unintended consequences	4-5

	● other factors ● different contexts ● underlying assumptions	
E2	Judgment substantiated with analyses that were explained mostly in the body	2-3
E1	Judgment with poor substantiation	1

2021 A level H2 Economics Paper 2 Question 3

Singapore's telecommunications (telco) market is dominated by four firms - SingTel (32%), Starhub (25%), M1 (22%) and new entrant MyRepublic (15%). Commentators argue that Singapore's telco market might be considered as an oligopoly.

(a) Explain why Singapore's telco market might be considered to be an oligopoly and how economic theory suggests this market structure would affect the firms' pricing and output decisions. [10]

(b) Discuss how government intervention in Singapore's telco market could protect consumers, and consider the extent to which such intervention will be successful. [15]

Suggested answer for part (a)

Question Analysis

Approach	**Command Word**	Explain why → Provide reasons Explain how → Outline process
	Question Type	Type of market structure, firms' pricing & output decisions
	Start Point	Key characteristics of oligopoly
	End Point	Firms' pricing and output decisions
Content and Context	**Content**	Key characteristics of oligopoly, economic theory of profit-maximization, price rigidity due to firms' mutual interdependence.
	Context	Telco market in Singapore

Introduction

- Economic theory: Assume firms aim to maximise profits where MC=MR.
- Focus of essay: Justify SG's telco market is an oligopoly by examining its key characteristics and explain how this market structure will affect its profit-maximising firms' pricing and output decisions.

Development

(1) Key characteristics of SG's telco market → Oligopoly

- **A few dominant firms which are mutually interdependent:**

➢ Dominant firms such as SingTel, Starhub, M1 and MyRepublic constitutes 94% of market share. Assume that these firms are the 4 largest telco firms in SG → 4-firm market concentration ratio is 94%. As SG's Telco market is dominated by 4 dominant firms, it can be considered an oligopoly.

- Few dominant firms → actions of one firm significantly impact and influence the others → firms in an oligopoly are mutually interdependent.

  - **High barriers to entry and exit:**
    - The government decides on a few licenses for telco firms to operate in SG → significant legal barrier to entry → limits number of telco firms in SG.

  - **Differentiated products:**
    - Telco firms sell different telecommunications packages→ product differentiation → each Telco firm faces a downward sloping demand curve → possesses large market power and price setting ability (i.e., ability to set price by restricting output along its DD curve)
    - Possess ability to exercise market power, however, limited by the mutual interdependence between the few dominant firms in the telco market.

(2) **Mutual Interdependence between telco firms** → price rigidity in the telco market

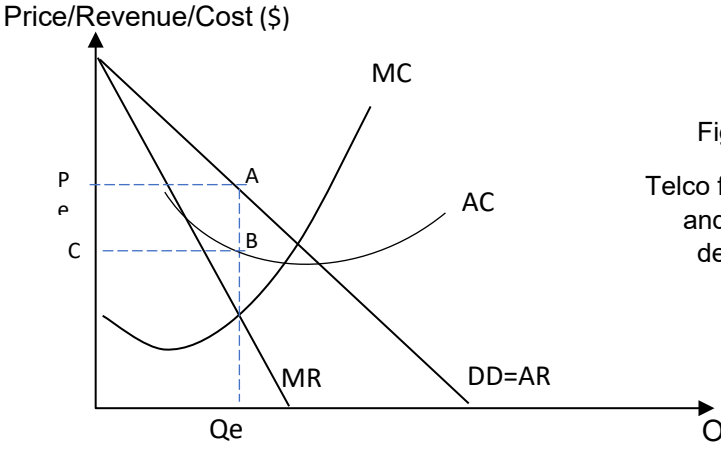


Figure 1

Telco firm's price and output decision

- **Economic theory → profit-maximising firms will set price (Pe) and output (Qe) where MC=MR.**
  - If MR>MC, firms will increase output to earn higher profits since additional revenue is greater than additional cost with an extra unit of good produced. This will continue until MC=MR where firms' profits are maximized.
  - Firm earns supernormal profits Area CPeAB at Pe, Qe, where MC=MR.

- **Price rigidity → price and output remain unchanged at MC=MR.**
  - Should an oligopolistic firm such as SingTel increase the price of its products above Pe → quantity demanded of its goods will fall → SingTel is likely to lose its market share to other telco firms as consumers switch to buy similar products (i.e,. substitutes) from other telco firms → no incentive for SingTel is to increase the price of its products.
  - Should SingTel reduce the price of its products below Pe → quantity demanded of its goods will rise → other telco firms such as Starhub, M1, MyRepublic are likely to lower the prices of their products as well to retain their market share → SingTel is unlikely to experience a significant rise in quantity demanded of its products → overall, all firms are likely to earn lower profits → no incentive for SingTel to reduce the price of its products.

Note: Instead of price rigidity, students can also explain how oligopolistic firms make price and output decisions based on limit or predatory pricing.

Conclusion
SG's telco market can be determined to be an oligopoly via examining its key characteristics. Oligopolistic firms will set price and output where MC=MR to maximise profits, which are likely to remain rigid due to mutual interdependence among such firms.
Mark Scheme:

Level	Descriptor	Marks
L3	Well-developed explanation on why SG's telco market can be considered an oligopoly and how this market structure can affect the price and output decisions of profit-maximising firms.	8-10
L2	Under-developed explanation on why SG's telco market can be considered an oligopoly and how this market structure can affect the price and output decisions of profit-maximising firms.	5-7
L1	Mere listing of the characteristics of an oligopoly, with no or little elaboration on how this market structure can affect the price and output decisions of profit-maximising firms in SG's telco market.	1-4

Suggested answer for part (b)

Question Analysis

Approach	**Command Word**	Discuss → Balanced answer + Evaluate
	Question Type	Government Policies
	Start Point	Policy [i.e. Price controls (e.g. MC pricing), Remove BTEs]
	End Point	The requirement is to evaluate the extent to which government intervention is successful at protecting consumers in SG's telco market.
Content and Context	**Content**	Impact on consumer welfare – consumer surplus, choice and variety Policies – HAL framework
	Context	Telco market in Singapore

Introduction

- Economic problem: A few dominant oligopolistic firms in SG's telco market → high price and low quantity of telco goods, and a lack of choice/variety of products → Consumer welfare may be adversely affected.
- Protect consumers: Improve consumers welfare (i.e. via changes in P, Q, consumer surplus, choices/ variety of products)
- Focus of essay: Explain how SG government may intervene via imposing MC pricing as a form of price control or removing regulatory barriers to entry by increasing no of licenses to protect consumers (i.e. enhance consumers' welfare). Assess the extent to which these policies are successful (i.e. effective) in protecting consumers' welfare in SG's telco market.

Development

Policy 1: Price Control (MC pricing) – How the policy works

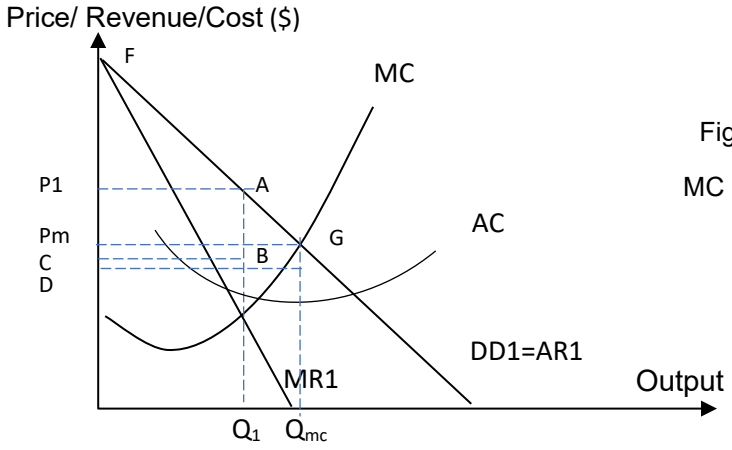


Figure 2

MC Pricing

Assume that a telco firm such as SingTel initially maximises profit at P1 & Q1 where it earns supernormal profits (area CP1AB).

Government imposes MC pricing on telco products

- ➔ Government sets P=Pmc where MC=AR, Qm is produced
- ➔ **Hence, government intervention in SG's telco market protects consumers via:**
  (1) Fall in P → Rise in affordability of telco products
  (2) Increase in the number of telco products
    - Rise in consumer surplus (i.e. the difference between what consumers are willing to pay and what they actually pay) from area P1FA to Area PmFG

<u>Advantage of policy</u>

By imposing MC pricing to protect consumers, the government achieves allocative efficiency and ensures a more equitable distribution of resources in the telco market. The socially optimum level of output (Qmc) is achieved where P=MC such that society's welfare is maximized. In addition, inequity is reduced as consumers will find telco products, an essential good in current times and SG context, more affordable. The government is similarly able to reduce allocative inefficiency and inequity with the removal of barriers to entry in the telco market.

<u>Limitation of policy</u>

However, it is difficult for the government to determine how to set P=MC since marginal costs vary across SingTel, Starhub and MyRepublic, of which the government may not be able to obtain accurate information on. If the government sets price higher at an overestimated marginal cost, then protection to consumers may be limited.

Policy 2: Remove barriers to entry – How the policy works

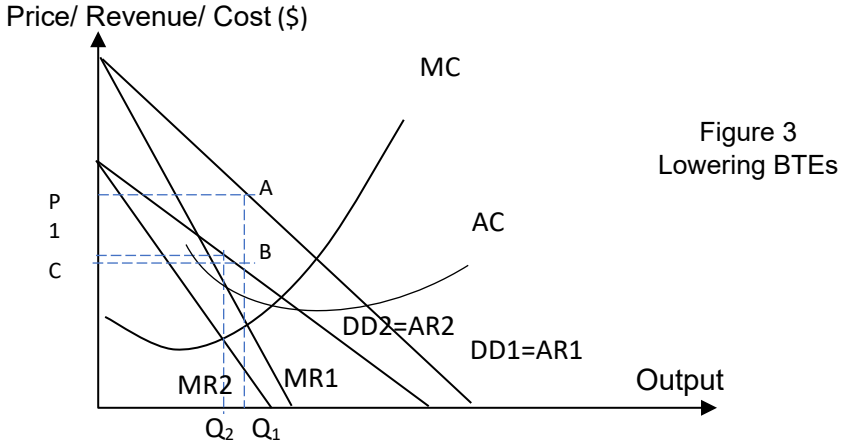


Figure 3
Lowering BTEs

Assume that a telco firm such as SingTel initially maximises profit at P1 & Q1 where it earns supernormal profits (area CP1AB).

Government lowers regulatory barriers to entry by increasing number of licenses

- ➔ New firms enter the telco market
- ➔ Rise in level of competition in the telco market
- ➔ Fall in the market share of existing telco firms
- ➔ Fall in DD1 to DD2 (i.e AR1 falls to AR2) & DD2 becomes more price elastic due to a greater availability of substitutes, MR1 falls to MR2
- ➔ Existing firm earns normal profits at P2, Q2 where profits are maximized where MR2=MC.
- ➔ **Hence, government intervention in SG's telco market protects consumers via:**

(1) Fall in P → Rise in affordability of Telco products
(2) Rise in number of firms → Increase in choices/variety of telco products

Limitation of policy
However, government intervention in SG's telco market via lowering barriers to entry may not fully benefit consumers as existing firms' profits are reduced due to the entry of new firms. Telco firms may thus possess lower ability to engage in research and development (i.e. both product and process innovation) with less available funds.

Summative Conclusion
[Stand with criterion] The extent to which government intervention in SG's telco market could protect consumers will be successful may depend on the **time period**.

[Justification] In the short run, MC pricing would be a more successful policy to protect consumers in the telco market, since the price of telco goods is immediately lowered to marginal cost once imposed by the government. Removing barriers to entry to the telco market is likely to take some time to be effective at lowering prices in the telco market as new entrants attempt to capture market share by competing with existing firms. In the long run, MC pricing may not be sustainable as the government may incur high opportunity cost to ensure adequate enforcement of MC pricing as well as information on firms' marginal costs remains accurate and updated. On the other hand, increasing the number of licenses will incentivize firms to engage in research and development (R & D) due to greater competition, to earn at least normal profits in the long run, especially with government support in the form of various incentives for R & D.

Mark Scheme

Level	Descriptor	Marks
L3	A well-developed answer which clearly explains how 2 government policies could protect consumers in Singapore's telco market, supported by clearly labelled diagrams.	8 – 10
L2	An under-developed answer on how government policies could protect consumers in Singapore's telco market.	5 – 7
L1	An answer which merely lists and describes how government policies could protect consumers in Singapore's telco market. Conceptual errors are present. Answer does not address the question requirement.	1 – 4
Evaluation		
E3	For an answer that arrives at an analytically well-reasoned judgement on the extent to which government intervention in SG's telco market to protect consumers will be successful.	5
E2	For an answer that makes some attempt at evaluation, but does not explain adequately their judgement, on the extent to which government intervention in SG's telco market to protect consumers will be successful.	4 – 3

E1	For an answer that gives an unexplained, unsupported evaluative statement on the extent to which government intervention in SG's telco market to protect consumers will be successful.	1-2

4	**The rate of unemployment in more than 50 of the world's countries, including several European countries, exceeds 10%. Governments face a difficult decision about whether income tax rate cuts are most effective policy measure to reduce unemployment to more acceptable levels.**	
	(a)	**Explain how a reduction in the rate of income taxes paid by workers and firms might have consequences on an economy's aggregate demand and aggregate supply. [10]**

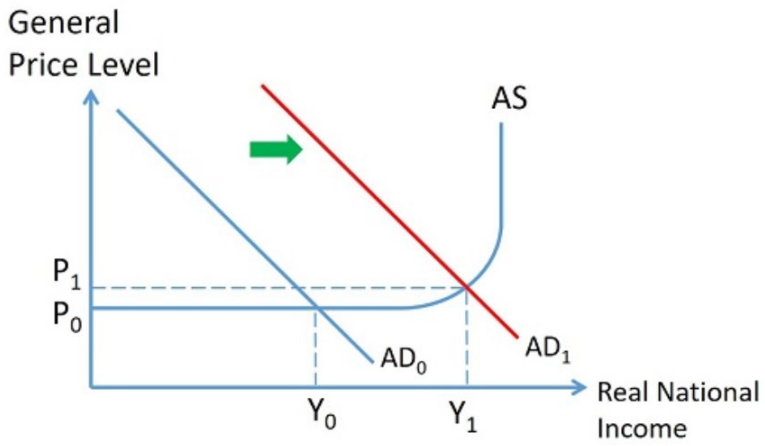
Question Analysis

Framework		
Approach	Command word	Explain how
	Question Type	Causes
	End point	AD and AS
Content and Context	Content (Scope of coverage)	Tools of fiscal policy Factors affecting AD and AS
	Context	An economy

Paragraph Writing

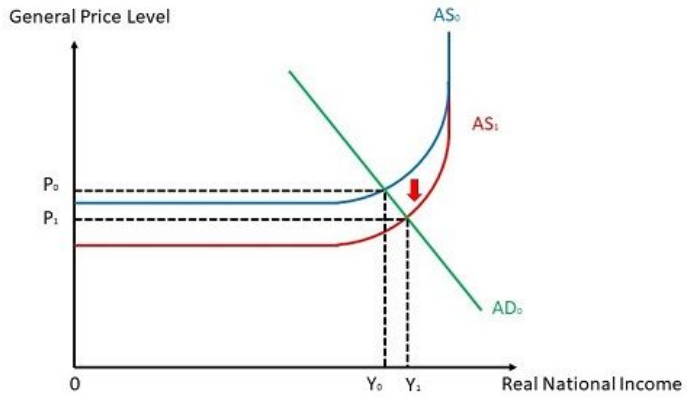
Introduction	An economy's aggregate demand (AD) refers to the total demand of or total planned spending on the economy's domestically produced final goods and services, at a given general price level (GPL) in a given time period. The equation for AD is AD = C + I + G + (X-M), so AD comprises of consumption (C) by households, investment (I) by firms, government spending (G) by government, and the value of net exports (X-M) by the foreigners. An economy's aggregate supply (AS) refers to the total value of goods and services that firms in an economy are willing and able to produce at a given general price level in a given time period. The short-run AS is affected by the unit costs of production of firms in the economy, while the long-run AS is affected by the quantity and quality of factors of production.
	When the personal income tax rate is reduced, workers and households have more disposable income and they are more willing and able to buy goods and services such as big-ticket items like housing and cars, so consumption (C) increases. When the corporate income tax is reduced, firms have more after-tax profits and they are more willing and able to use the excess funds to invest and increase their capital stock such as plants and equipments, so investment (I) increases. Since C and I are components of an economy's AD, it follows that the tax rate cuts would lead to an increase in AD. This is illustrated in Figure 1 by a rightward shift of the AD curve from AD0 to AD1.

Figure 1: An increase of an economy's AD.



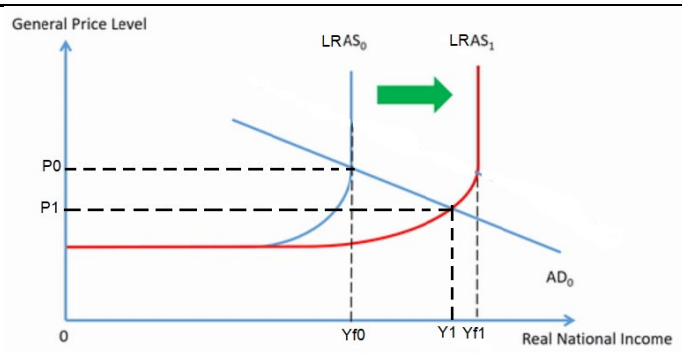
When the corporate income tax is reduced, firms have more after-tax profits and they are more willing and able to use the excess funds to train workers or to enhance the stock of capital, both of which will lead to a fall in the unit cost of production, increasing the economy's short-run aggregate supply (SRAS). This is illustrated by a downward shift of the SRAS curve from (SR)AS0 to (SR)AS1 in Figure 2.

Figure 2: An increase of an economy's SRAS.



Moreover, training of skills raises the quality and productivity of workers while enhancing capital stock can help firms automate their production processes and improve productivity at their workplaces. Hence, with the improvement of the quantity, quality and mobility of factors of productions such as labor and capital goods, there is an outward shift of the long-run aggregate supply (LRAS) curve from LRAS0 to LRAS1 in Figure 3 to illustrate an increase in the economy's productive capacity.

Figure 3: An increase of an economy's LRAS.

	
Conclusion	In conclusion, both an economy's AD, SRAS and LRAS are likely to increase with a reduction in the rate of income taxes paid by workers and firms.

Mark Scheme

Level	Knowledge, Application/Understanding and Analysis	Mark
L3	For an answer that provides a clear and thorough explanation of both aggregate demand and aggregate supply. Examples are used to support the explanation. A clear elaboration on the application or the justification of a reduction in the rate of income taxes paid by workers and firms	8 – 10
L2	For an answer that provides a good explanation of both aggregate demand and aggregate supply factors. Examples are used to support the explanation.	5 – 7
L1	For an answer that only regurgitates theoretical understanding without any application to context. Answer may have also demonstrated weak knowledge and applications, possibly with conceptual errors.	1 – 4

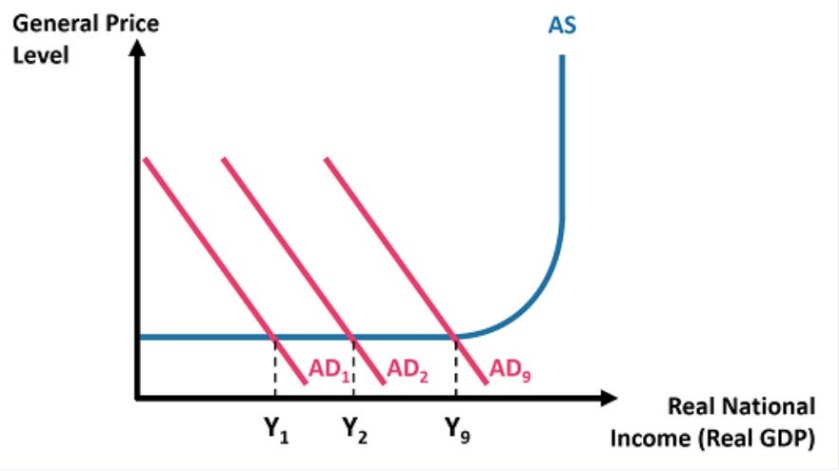
	b)	**Discuss whether a reduction in the rate of income taxes is likely to be the best policy measure to reduce high unemployment in a country. [15]**

Question Analysis

Framework		
Approach	Command word	Discuss whether = Bal view + EV
	Question Type	Policy assessment
	End point	Reduce **high** unemployment
Content and Context	Content (Scope of coverage)	Policies to reduce high unemployment
	Context	A country with high unemployment

Paragraph Writing

Introduction	The unemployed are individuals in the labour force who are available for work and actively looking for jobs at current wage but unable to find any. The unemployment rate is an indicator of the level of unemployment in an economy. A country of high unemployment rate exceeding 10% means that more than 10% of its labor force is unemployed. It is calculated as the proportion of the labour force that is unemployed. A high unemployment means that many people in the labor force are not employed. There are two

	main causes of unemployment in an economy: demand-deficient unemployment arises from a lack of AD during an economic crisis wihle structural unemployment arises due to a mismatch between the skills of the unemployed and those required by producers seeking factors of production.
How a reduction in the rate of income taxes works to reduce high demand-deficient unemployment	A cut in income tax, as explained above in part (a) would increase the autonomous components of consumption (C) by households and investment (I) by firms, leading to an initial increase in AD from AD1 to AD2 and causes equilibrium real national income to increase from Y1 to Y2. This will trigger the multiplier effect which refers to an increase in the equilibrium national income that is greater than the initial increase in AD. This is because as first group of households receives the initial increase in NY, there is an increase in income-induced consumption which is passed on to the next group of households in the circular flow of income, boosting further rounds of increases in NY. Hence this results in multiple increases in AD until AD9, along the horizontal range of the LRAS, given that the economy with high demand-deficient unemployment is operating with lots of spare capacity. At the same time, there is an increase in withdrawals in the forms of savings, taxes and import expenditures. The multiplier process will stop when the increase in withdrawals matches the initial increase in autonomous expenditure. Hence, the final change in equilibrium real national income, represented by Y9 – Y1, is greater than the initial increase in AD, represented by Y2 – Y1. With the increase in real NY, firms in the experience an unplanned run-down of inventories and step up production of output. As firms produce more output, they increase their derived demand for labor (Optional to use the demand-supply analysis/diagram for labor market), leading to a fall in demand-deficient or cyclical unemployment. (Note: Students can also explain the impact of a rise in the derived demand for labor via a demand and supply of labour diagram.) 
A reduction in the rate of income taxes - Policy limitations	• The effectiveness of the policy hinges on the size of the multiplier effect. The formula for the multiplier is *k* = 1/(1-MPC) = 1/MPW = 1/(MPS + MPT + MPM). Hence, the size of the MPC (marginal propensity to consume) and MPW (marginal propensity to withdraw) matters.

	A country with a high MPC (for example Western culture of several European countries such as Spain have a stronger consumer spending culture and lower savings ratios) would benefit from a much larger multiplier effect than countries with a high MPS (marginal propensity to save) (Asian countries which have a stronger savings culture). On the contrary, a country with high MPT (marginal propensity to tax) (this is true for many European countries which have high tax rates) or a high MPM marginal propensity to import (countries that lack natural resources have a high import demand) would not benefit from a large multiplier effect. This is because any increase in the autonomous expenditure would have a very high degree of leakage from circular flow and so very little passed on in the circular flow to create increased income for others. Hence, the policy is effective to reduce high unemployment for countries with high MPC while it is less effective for countries with high MPW. • A reduction in the rate of income taxes would mean that these governments would collect lesser tax revenues from personal income taxes and corporate income taxes. <u>If the fall in tax revenues is not matched by a similar cut in government spending, the risk is that a fiscal or budget deficit will occur i.e. (T-G) <0</u> – a situation in which government expenditure is greater than tax revenues. This situation is precarious especially if the governments are unable to cut their government spending. Then, governments may borrow to fund their spending, increasing the interest rates. In such cases, crowding out may occur because it would become more expensive for private firms to borrow money from banks so crowding out private sector investment, offsetting the increase in AD from the reductions of income tax rates, rendering the policy less effective than intended. • Whether an increase in real NY/output leads to firms to increase their derived demand for labor depends on whether firms are using more labor or more capital and on firms' profits (= Total Revenue – Total Cost). For example, during an economic recession or more recently the Covid-19 pandemic recession, facing falling revenues & profits, firms might just want to cut costs by retrenching labor.
How alternative policy – Supply-side policies work to address high structural unemployment	High unemployment can also arise from a big rise in structural unemployment. Many developed countries including European countries undergo structural changes such as the shift from manufacturing to a knowledge-based economy. Workers in these developed countries endured competition from trade and relentless technological change (adoption of labor-saving automation and robots). These could cause a rise in structural unemployment as factory workers lose their previous jobs and need time to learn new skills. The sunrise high-tech industry experiences a shortage of high-skilled labour (where demand exceeds supply), while the sunset labour-intensive industry experiences a surplus of low-skilled labour (where supply exceeds demand). The retrenched low-skilled labor suffers from occupational immobility / mismatch of skills. Without relevant skills, low-skilled worker cannot find employment in the high-tech jobs. An alternative policy that is more effective in reducing structural unemployment is supply-side policies. Supply-side policies that encourages skills upgrading can help low-skilled workers become more employable and

	improve labour mobility, especially in the face of globalisation and technological advancement/disruptions at workplace (for example the rise of robots and artificial intelligence). With skills upgrading, these low-skilled workers will be equipped with relevant skills. This reduces the mismatch between jobs and skills in the economy and thus reduces structural unemployment.
Limitations of supply-side policies	• It takes time for supply-side policies to take effect. For example, it takes time for workers to retrain or upgrade their skills. The long time lag means supply-side policies have limited effectiveness in reducing structural unemployment in the short run. • The success of supply-side policies is not guaranteed as it depends on the receptiveness of households and firms. For example, firms may not want to spend to train their workers if firms are barely making normal profits and workers may not want to undergo retraining or skills upgrading despite the various grants and subsidies available. This is especially true about the workers for many European countries where generous unemployment benefits and minimum wage are given to support the unemployed but such welfare benefits create disincentives for the unemployed and the low-skilled workers to retrain and find work. • Finally, the feasibility of the policy will depend on the state of the government budget. For governments who are chalking up high budget deficits would not be able to implement supply-side policies because of the high expenditure involved in providing grants and subsidies for skills training.

Evaluation	<u>Make a stand</u> A reduction in the rate of income taxes is not the best policy measure to reduce high unemployment in a country because its effectiveness depends on the nature of the economy and cause of the high unemployment. <u>Justify with criteria / Question assumption</u> In the short run, it will be a more effective policy if the cause is high demand-deficient unemployment after a recession when the economy is operating below full employment. It is also more effective for an economy (such as the European countries) with a relatively larger multiplier effect and for the nature of the economy is such that it has a big domestic demand (C and I) to increase AD significantly. In the long run, such a high unemployment where unemployment rate is above 10% is likely to be structural unemployment as the root cause. A reduction in the rate of income taxes cannot reduce high unemployment if the root cause of unemployment is structural unemployment in the long run. <u>Insight / Recommendation</u> In this case, supply-side policies will be more effective in reducing the high unemployment. Unfortunately, many governments of the countries (both developed and developing countries) with high unemployment suffered from budget deficits which hinder sustainable spending on training and education adequately to reduce high structural unemployment. Furthermore, the governments in some European countries should consider lowering minimum

	wage and reducing unemployment benefits to create incentives for workers to retrain and upskill.

Mark Scheme

Knowledge, Application, Understanding and Analysis		
L3	A balanced and well-developed answer on the policies used by the government to address high unemployment, with consistent use of examples related to different countries' context.	8 – 10
L2	An under-developed, balanced answer on polices deal with high unemployment, with inconsistent use of examples and gaps in analyses.	5 – 7
L1	May have many and/or serious conceptual errors. May have relevant points that were made incidentally.	1 – 4
Evaluation		
E3	For an answer that arrives at an analytically well-reasoned judgement about the policies to address high unemployment. Might also question any unstated assumptions to arrive at this well-reasoned judgement.	4 – 5
E2	For an answer that makes some attempt at evaluation, but does not explain adequately their judgement or base it in analysis, about their judgement on the policies to deal with high unemployment.	2 – 3
E1	For an answer that gives an unexplained, unsupported evaluative statement on the policies to deal with high unemployment.	1

2021 Essay Question 5

Singapore currently has a low rate of inflation and a persistent surplus on the current account of its balance of payments. However, unexpected external developments such as the outbreak of disease, natural disasters or increases in global raw material prices always represent potential risks to Singapore's economy.

(c) Explain how a modest and gradual appreciation in Singapore's exchange rate might affect Singapore's rate of inflation and its current account balance. [10]
(d) Discuss whether the modest and gradual appreciation in Singapore's exchange rate is likely to be the best policy to manage the effects of unexpected external developments. [15]

Part (a) (Question Analysis)

Approach	**Command Word**	Explain how → process/method
	Start Point	Appreciation of SGD will affect 1) inflation and 2) BOT
	End Point	
Content and Context	**Content**	Factors of inflation and BOT
	Context	Singapore

Suggested Answer and Mark Scheme

Introduction
● Singapore government's aim for inflation and BOT ● How appreciation helps to attain these aims
Body
<u>Point 1 Appreciation's impact through SRAS</u> - Modest and gradual appreciation will allow Singapore to better manage its inflation target. - Singapore has poor factor endowment and relies heavily on imports for raw materials and necessities like food, demand for imports will be price inelastic. - Appreciation will cause prices of imports to be cheaper in domestic currency, and with a price inelastic demand, quantity demanded increases to a less than proportionate extent, and import expenditure will fall. Assuming ceteris paribus, <u>balance of trade improves as import expenditure falls.</u> - This lowers of the costs of imported factors of production, lowering unit costs of production for producers, firms respond by partially raising output and lowering GPL. □ - SRAS will increase and shift downwards from SRAS1 to SRAS2, there will be leading to a fall in GPL from P1 to P2 curbing import price-push inflation.

Point 2 Appreciation on AD

- Appreciation will cause prices of exports to be more expensive in foreign currencies.
- Assuming demand for exports to be price elastic, since SG does not produce unique goods and services, an increase in prices of exports will lead to be more than proportionate fall in quantity demanded, leading to a fall in export revenue.
- Since PEDx>1, it fulfils the Marshal-Lerner Condition, where the sum elasticity of demand for exports and imports will be greater than 1, appreciation will lead to a worsening of balance of trade, assuming ceteris paribus.
- In addition, the fall in export revenue cause a fall in net export revenue and therefore a fall in AD.
- Since Singapore is a developed country, AD ought to be operating along the intermediate range of AS.
- A fall in AD, via the reverse multiplier process, demand for factors of production will ease off and prices for factors of production will decrease. This will allow firms to enjoy lower costs of production, and lower the prices for final goods and services. Thus, there will be fall in GPL from P1 to P2, curbing demand-pull inflation.

As such, modest and gradual appreciation will be able to address both demand-pull and import price-push inflation. Since appreciation is modest and gradual, the overall impact on balance of trade should be a surplus that may worsen slightly, since X is approximately 3 times of M in Singapore.

Alternative layout

1) Appreciation on BOT → Analyse appreciation's effect through the Marshal-Lerner condition on PEDx and PEDm and determine the effect on BOT
2) Appreciation on inflation → From the above, continue the analysis on (X-M) and therefore AD and demand-pull inflation, and SRAS through lower import expenditure and its effect on import price push inflation

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	● Analytical explanation of implication of appreciation through both AD and SRAS analysis on both GPL and BOT. ● Analysis ought to be supported with good use of diagrams	8-10
L2	● Cursory explanation of the implication of appreciation on GPL and/BOT ● Diagrams are used but not well referred to ● Contains some inaccuracy	5-7
L1	● Many conceptual errors ● Failed to use diagrams to illustrate ● Lack of clarity, coherent flow and organisation	1-4

Part (b) (Question Analysis)

Approach	**Command Word**	Discuss whether: T + AT+ EV
	Start Point	Negative impacts of external shocks
	End Point	Effectiveness of appreciation to address above shocks
Content and Context	**Content**	Impact of external shocks
	Context	outbreak of disease, natural disasters or increases in global raw material prices

Introduction

- Identify external shocks presented in preamble
- Examine the effectiveness of appreciation to address the above external shocks

Body

<u>Point 1: Appreciation would be effective in addressing external SS shocks → import price push inflation</u>

- External shocks such as increases in raw material prices, outbreak of diseases and natural disasters can bring about supply-side shocks
- Covid lockdowns impeded trade as labour across have to be quarantined to break the spread of diseases. The inability to work brought many sectors to a standstill including the transportation sector. This led to higher transportation costs and a decrease in SRAS and hence cost-push inflation.
- The lockdowns also led to higher global raw material prices since most countries will reduce the amount of goods and services available for export, this is the main of inflation that Singapore
- Natural disasters tend to disrupt supply chain, in particular crops. This will lead to higher prices of crops and hence higher costs to domestic producers, since Singapore relies heavily on imports for agricultural produce.
- As such, appreciation would be effective in mitigating cost-push inflation, since it directly targets the SRAS, causing it to increase.
- Furthermore, the main source of cost-push inflation has been import price-push inflation, hence, using the appreciation to target inflation will be effective.
- in addition, a stronger Sing dollar allows healthcare sector to better afford medical supplies required to combat the outbreak of diseases such as masks and vaccines, which are largely imported.

<u>Point 2: Appreciation would not be effective in addressing external DD shocks leading to growth issues</u>

- Outbreak of diseases can bring about demand shocks.
- The lockdown administered to contain the spread of diseases brought many economic activities to a stop.
- One of which is tourism, which is a key revenue area for Singapore.
- The immediate stop to traveling led to a severe fall in export revenue and a fall in net export revenue.

- The lockdown also caused a fall in consumption, as shopping malls and restaurants were ordered to close.
- This led to a fall in AD and through the multiplier, real NY fell to a larger extent.
- Appreciation eroded export price competitiveness, which caused a fall in net export revenue, which will contribute to the fall in AD.
- As such, AD falls further and with multiplier, RNY falls further, which may a recession in Singapore.

Point 3: Policy to address external DD shock

- Singapore government conducted expansionary fiscal policy to address the external demand shock.
- In a situation where majority of our trade partners are suffering from economic contractions due to the same external shocks, Singapore has to rely on domestic drivers for growth, which are consumption, investment and government expenditure.
- Yet, with the lockdown imposed to contain the spread of diseases, it is unlikely that policies to stimulate C and I will be effective
- Expansionary fiscal policy to increase government expenditure would be the most optimal choice for the government.
- The government increased spending in a few manners.
- Provision of masks, sanitizers and ART test kits during lockdowns
- Transfer payment eg: rediscovery vouchers, CDC vouchers to increase C
- These serve to compensate the fall in (X-M) from external shock and could cause AD and RNY to increase, or at the very least, cushion the fall in AD such that RNY falls to a smaller extent.

Evaluation

Stand
Modest and gradual appreciation, by itself, cannot address the various external shocks.

Justification
As analysed, appreciation is likely to be more effective in addressing external supply shocks, which is the reason why SG adopted exchange rate as its monetary tool instead of interest rate. Typically, SG's approach to external shocks has been to diversify trade relations, which unfortunately will not be effective in lieu of a global pandemic.

Further insights
Singapore has enjoyed fiscal surpluses and accrued a robust reserve which proved to be instrumental in allowing the government to deploy massive fiscal stimulus to combat the external shocks faced in 2020. Along with swift decisions made to utilise the national reserve, SG was able to avoid a severe recession. It is imperative that government minimise time and implementation lags so that policies can effect the maximum impact on the economy.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	● Analytical explanation of negative impacts of external shocks to SG economy ● Good use of diagrams ● Exemplification ● Coherent flow and organisation	8-10
L2	● A mix of analytical and cursory explanations of negative impacts of external shocks to SG. ● Diagrams are used but not well referred to ● Lacks Exemplification ● Contains some inaccuracy	5-7
L1	● Many conceptual errors ● Failed to use diagrams to illustrate ● Lack of clarity, coherent flow and organisation	1-4
Level	**Evaluation**	**Marks**
E3	Insightful judgment substantiated with analyses, including but not limited to the following considerations: ● long vs short term ● intended vs unintended consequences ● other factors ● different contexts ● underlying assumptions	4-5
E2	Judgment substantiated with analyses that were explained mostly in the body	2-3
E1	Judgment with poor substantiation	1

Question 6

The annual rate of real GDP growth in Singapore dropped from 4.6% at the start of 2018 to 1.2% at the start of 2019. However the Gini coefficient remained stable at around 0.46.

(a) Explain **one** potential demand-side cause and **one** potential supply-side cause of real GDP growth. [10]
(b) Discuss whether a reduction in the rate of real GDP growth makes it harder for Singapore to achieve both inclusive growth and sustainable growth. [15]

(a) Explain **one** potential demand-side cause and **one** potential supply-side cause of real GDP growth. [10]

Question Analysis

Command Word	Explain
Content/Concept(s)	Causes of real GDP growth
Start Point(s)	Change in AD & Change in AS
End Point(s)	Real GDP growth
Context	Generic / Singapore

Suggested Answer

Introduction

- **Real GDP growth is defined as** the annual percentage increase in real national output actually produced. Real national output is equivalent to real national income.
- **This essay aims to explain one demand-side cause and one potential supply-side cause of real GDP growth, using the ADAS analysis.**

Body Paragraph (1): Demand-side cause

- **An increase in Aggregate Demand (AD) could be due to an increase in C / I / G / (X-M).** AD refers to the total level of spending in an economy at each general price level. It shows the amount of **domestically-produced** goods and services which households, firms, government and foreigners are willing to buy at each general price level.
- *Explain how C / I / G / (X-M) increases: (An example)*
    - When Singapore's trading partners experience an increase in national income, they will increase their demand for Singapore's exports such as refined oil and pharmaceutical products, which are considered normal goods with income elasticity of demand value of more than zero (YED>0).
    - Hence, there will be an increase in Singapore's export revenue (X) which is price multiplied by quantity sold of exports.
- *Explain the ADAS analysis and diagram, including multiplier effect:*

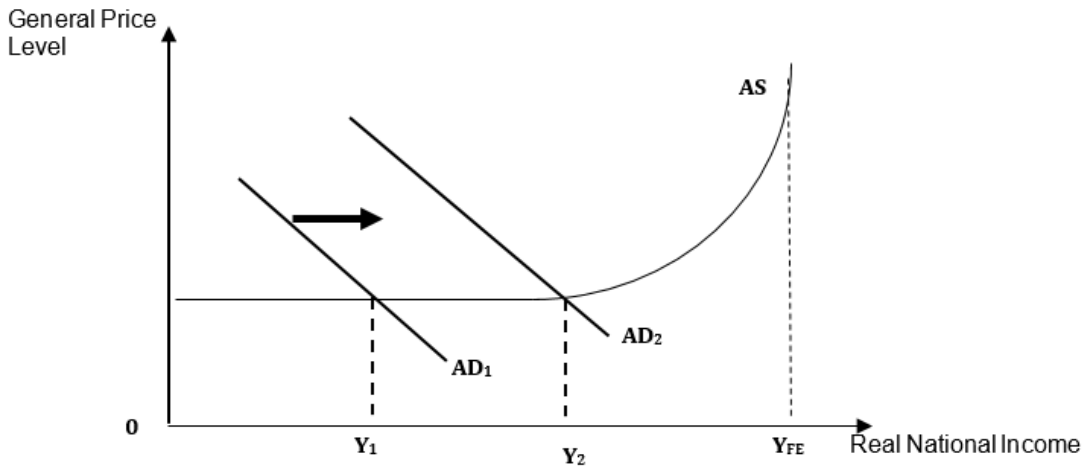


Figure 1: Multiplier effect of rise in AD

- **Due to this increase in X and hence rise in AD from AD_1 to AD_2,** the Singapore economy faces an unplanned running down of stocks/inventories. To maintain the level of stocks/inventories, firms will step up their production of capital goods by hiring more resources (i.e. purchasing more capital, using more land space and hiring more labour). This in turn leads to these factor owners (of the capital, land and labour), as well as the entrepreneurs running these firms to receive an extra income, raising the national income in the first round.
- As national income starts to rise, it will induce more consumption in the economy. **Since one person's spending becomes another person's income, the additional consumption by the first group of factor owners will now create additional income for another group of factor owners in the economy.** National income will now rise by another round, albeit by a smaller amount.
- This rise in income will once again generate another round of consumption in the economy. As consumption rises for another round, so too will production, output and income. This process will then continue, with each round of increase becoming smaller; until the rise in income is too small to generate any further consumption.
- **Overall, the increase in X leads to a multiplied increase of real national income (measured by GDP) from Y_1 to Y_2.**

Body Paragraph (2): Supply-side cause

- **An increase in Aggregate Supply (AS),** which refers to the total domestic output of goods and services that firms collectively are willing to produce at each general price level, **can result in real GDP growth.**

- *Note to students: Factors affecting SRAS and LRAS are both acceptable, as long as the end point for increase in LRAS is the rise in real national income (real GDP).*

  Option A: Explain how a rise in Short-run Aggregate Supply (SRAS) results in real GDP growth

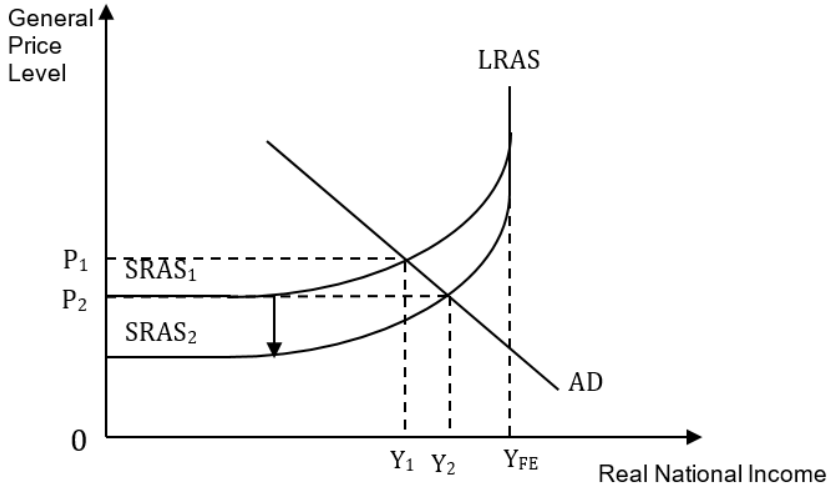


Figure 2: Rise in SRAS

  - *Explain how a rise in SRAS is due to fall in cost of production (COP): (An example)*
    - Factor inputs refer to land, labour, capital and entrepreneurship which are required to produce goods and services.
    - **When prices of key factor inputs such as rent falls, the cost of production at every output level falls.**
  - *Explain how a rise in SRAS results in real GDP growth, using diagram:*
    - Hence, SRAS rises and shifts downwards from $SRAS_1$ to $SRAS_2$. This in turn causes a downward pressure on the general price level from P_1 to P_2. As the general price level falls, spending on goods and services increases due to the wealth, interest rate and international trade substitution effects, and this is represented by a movement down along the AD curve.
    - General price level continues to fall until the disequilibrium is eliminated at P_2 and equilibrium **real national income (measured by GDP) increases from Y_1 to Y_2.**

Option B: Explain how a rise in Long-run Aggregate Supply (LRAS) results in real GDP growth

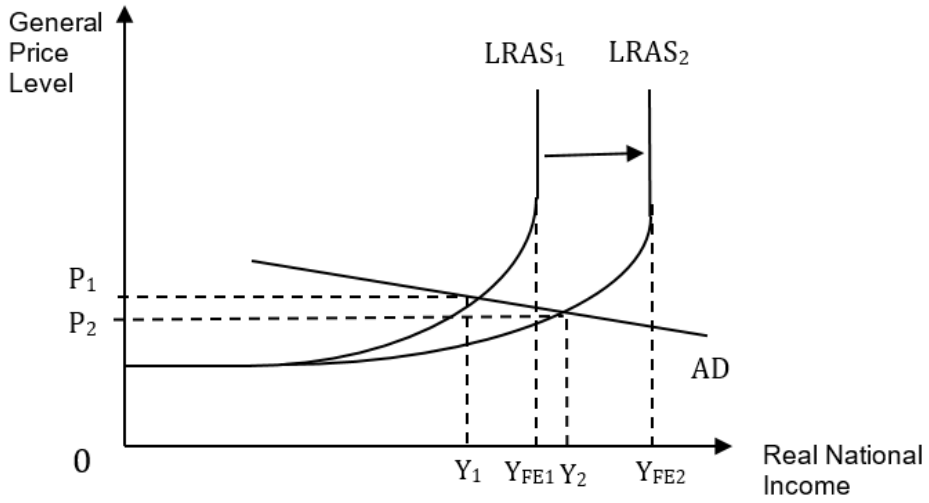


Figure 3: Rise in LRAS

- *Explain how a rise in LRAS is due to rise in quantity and/or quality of factors of production and/or improvement in technology (QQT): (An example)*
  - Research and development can bring about solutions that streamline and revolutionalise production processes, such that **productivity of existing resources increases.** For example, use of self-ordering kiosks in the Food & Beverages sector has reduced waiting time to increase the number of customers served per hour. This means **an increase in output produced per unit of resource in the same period of time. As such, productive capacity of the economy increases.**
- *Explain how a rise in LRAS results in real GDP growth, using diagram:*
  - Hence, LRAS rises from $LRAS_1$ to $LRAS_2$.The general price level will fall from P_1 to P_2 and **equilibrium real national income (measured by GDP) increases from Y_1 to Y_2.**

Conclusion:

- In conclusion, real GDP growth results from either a rise in AD or a rise in AS.

Mark Scheme

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Analytical explanation of both demand-side and supply-side causes, with good use of diagrams and exemplification/contextualisation.	8-10
L2	Answer includes both demand-side and supply-side causes but lacks depth of analysis, for example: ● Diagrams are used but not well referred to ● Lacks exemplification/contextualisation ● Contains some inaccuracy OR, Answer is lopsided (either demand-side or supply-side cause only)	5-7
L1	Many conceptual errors and smattering of valid points only.	1-4

The annual rate of real GDP growth in Singapore dropped from 4.6% at the start of 2018 to 1.2% at the start of 2019. However the Gini coefficient remained stable at around 0.46.

(b) Discuss whether a reduction in the rate of real GDP growth makes it harder for Singapore to achieve both inclusive growth and sustainable growth. [15]

Question Analysis

Command Word	Discuss whether • Thesis + Anti-thesis + Evaluation
Content/Concept(s)	Causes of inclusive growth and sustainable growth (or lack thereof); and/or How to achieve inclusive growth and sustainable growth (i.e. policies)
Start Point(s)	Reduction in real GDP growth rate (i.e. slower increase in real GDP)
End Point(s)	Inclusive growth and sustainable growth
Context	Singapore

Suggested Answer

Introduction

- **Inclusive growth refers to** a rate of growth that is not only sustained over a period of time, but is also broad-based across economic sectors, and creates productive employment opportunities for the majority of the country's population.
- **Sustainable growth refers to** the rate of economic growth that can be maintained without creating other significant economic problems such as depleted resources and environmental problems for future generations.
- **Both inclusive growth and inclusive growth require sustained growth** (when both actual growth and potential growth are achieved) **as a basis.**
- **This essay aims to discuss whether slowing real GDP growth rate makes it harder for Singapore to achieve inclusive growth and sustainable growth.**

Note to students: Choose 3 out of 4 relevant arguments below.

Thesis (1): Slowing real GDP growth makes it harder to achieve inclusive growth

- Slowing real GDP growth means that real GDP is increasing at a reduced rate – from 4.6% at the start of 2018 to 1.2% at the start of 2019.
- As such, **income tax revenue collected by the government would increase slower**, since income tax is payable based on percentages of one's income. Moreover, under the progressive income tax system, people will be pushed into the higher income tax brackets at a slower rate.
- These result in **reduced ability of the Singapore government to tap on income tax revenue to subsidise lower-income groups, as compared to before**. **Hence, redistribution of income would be slower than before, thereby impeding the achievement of inclusive growth.**

Thesis (2): Slowing real GDP growth makes it harder to achieve sustainable growth

- *[Note to students: if you had not written about Thesis (1), please include bullet points 1-2 from Thesis (1) above to substantiate Thesis (2).]* Additionally, if the **amount of income tax revenue collected by the government increases slower, there is reduced ability**

of the Singapore government to tap on the tax revenue to subsidise the use of and/or research into clean and renewable technologies.

- Both research and development on, as well as actual adoption of clean and renewable technologies such as solar energy, require millions of dollars at one go.
- Hence, income tax revenue foregone from a slower increase in real GDP will compromise Singapore's ability to adopt clean and renewable technologies which can otherwise preserve resources like oil for future generations. **As such, the achievement of sustainable growth is compromised.**

Anti-thesis (1): Slowing real GDP growth **does not** makes it harder to achieve inclusive growth

- However, **the slower increase in real GDP could be due to a slower increase in productive capacity** which impedes the extent to which real GDP can increase since real GDP cannot increase beyond the full employment level of national income.
- **The slower increase in productive capacity could in turn be due to slower productivity growth in Singapore.** Firms were over reliant on cheap foreign labour and hence slow at investing in technology to improve productivity.
- **With slower adoption of technological improvement, higher-skilled jobs are created at a slower rate and lower-skilled jobs are replaced at a slower rate. This means that the rate at which structural unemployment,** where lower-skilled workers are replaced by technology but unable to transit to higher-skilled jobs due to mismatch of skills, **occurs slower.**
- Typically, income inequality rises when structural unemployment rises because the retrenched and unemployed earn zero income while the higher-skilled workers are paid higher wages due to rising labour demand in the high-skilled sectors.
- **Hence, a slower rise in structural unemployment would mean a slower rate of increase in income inequality.** In fact, Gini coefficient remained relatively stable at 0.46 despite the slowing real GDP growth from 2018 to 2019. Thus, it is not harder to achieve inclusive growth.

Anti-thesis (2): Slowing real GDP growth **does not** makes it harder to achieve sustainable growth

- **However, the achievement of sustainable growth could be through other means/policies which do not require government spending.** An example would be **carbon tax** which is tax levied on the amount of carbon dioxide emitted by producers.
- In the oil refinery industry for example, government can impose a per-unit tax equivalent to the Marginal External Cost (MEC) at the socially optimal quantity (Qs) of manufactured goods. This forces producers to internalise the MEC – healthcare costs associated with air pollution on third parties like residents near Jurong Island, such that they will produce at the new Qp' where MPB = MPC + tax, which coincides with Qs.
- With Qs level of refined oil produced, overproduction and the deadweight loss associated with the over-allocation of resources to the oil refinery industry are both eliminated. **This ensures that resources are not depleted so quickly, and that there are some left for future generations. Additionally, with the reduction of air pollution, the environment is also protected for use by the future generations of Singapore. Hence, sustainable growth is achieved, and not compromised by the slowing real GDP growth.**

Evaluative Conclusion *(An example)*

- *Make a stand:* In evaluation, while sustained growth is a basis for inclusive growth and sustainable growth, **a slowing actual growth does not necessarily make it harder for Singapore to achieve them**.
- *Justify stand:* This is because there are **various policy options available** to ensure environmental protection (e.g. carbon tax as explained), as well as equitable distribution of income and employment opportunities. If need be, the Singapore government could adjust downwards the income brackets for the progressive income tax system, to maintain the amount of income tax revenue collectable despite the slowing real GDP growth rate.
- *Additional insights:* Even if it might be harder for Singapore to achieve inclusive growth and sustainable growth in the context of slowing real GDP growth, **it may not be detrimental in the long run since the slowing real GDP growth could be temporary**. **It is important to adopt a long run perspective when pursuing inclusive growth** – in terms of socioeconomic mobility across generations, **and sustainable growth** – in terms of future generations, and not be overly hung up on temporary glitches/setbacks.

Mark Scheme

Level	**Knowledge, Understanding, Application, Analysis**	**Marks**
L3	Analytical explanation of both thesis and anti-thesis and both inclusive growth and sustainable growth, with good use of economic concepts and exemplification/contextualisation.	8-10
L2	Answer includes thesis and anti-thesis and covers inclusive growth and sustainable growth, but lacks depth of analysis, for example: ● Lacks economic concepts (like redistribution of income, Gini coefficient, externalities, government policies) ● Lacks exemplification/contextualisation ● Contains some inaccuracy OR, Answer is lopsided (either inclusive growth or sustainable growth only, or only one perspective on the issue)	5-7
L1	Many conceptual errors and smattering of valid points only.	1-4
Level	**Evaluation**	**Marks**
E3	Well-justified stand with clear criteria	4-5
E2	Some justification of stand but lacking coherence	2-3
E1	Unjustified stand	1