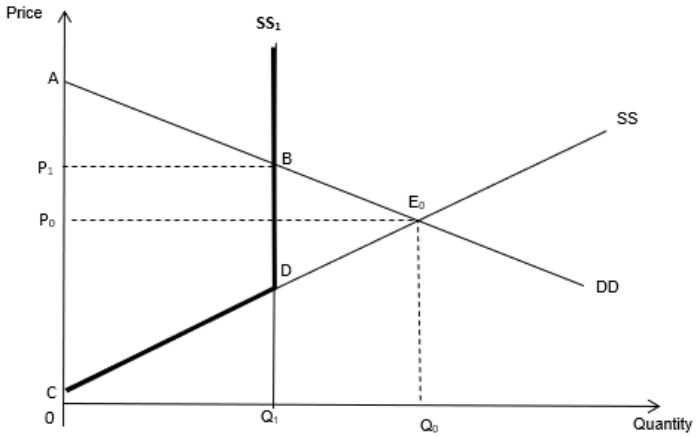
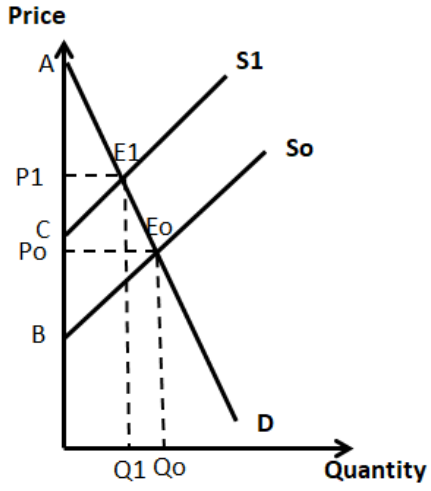
2020 A Levels H2 CSQ1 SAMS: Anti-competitive behaviour in Singapore

(a)		Explain **one** measure used by economists to assess the level of competition in an industry.	[2]
		One measure economists can use to assess the level of competition in an industry is the market concentration ratio. The market concentration ratio is the ratio of the combined market shares of a given number of firms (usually the 4 or 5 largest firms) to the whole market size. [1] When the market concentration ratio is high, a few firms account for most of total market share. This means they are more able to control prices and erect barriers to entry, leading to lower competition. [1]	
(b)		Using Table 1, explain **two** possible changes in the market for pork that could account for the difference in consumption of pork in 2018 compared to 2007.	[4]
		As seen from Table 1, there is an increase in consumption (qty) of pork between 2007 and 2018. This could be due to either an increase demand or supply for pork. **Demand factor [2]:** The rise in income of Singaporeans will lead to a rise in demand for pork. With higher purchasing power, consumers are more willing and able to purchase normal goods such as pork. The rise in demand for pork would cause a rightwards shift of the demand curve causing a rise in equilibrium quantity, which indicates a rise in consumption of pork. **Supply factor [2]:** The advancement of technology could also result in a rise in supply for pork. New technology might lead to a lower cost of rearing pigs. The fall in production cost will lead to a rise in supply as producers are incentivised to increase production. This rise in supply of pork will lead to rightward shift in the supply curve causing a fall in equilibrium price and a rise in equilibrium quantity as consumers increase their consumption of pork.	
(c)	**(i)**	What is meant by 'producer surplus' and 'consumer surplus'?	[2]
		Producer surplus is the difference between the amount that a producer of a good actually receives and the minimum amount that the producer is willing and able to sell the good. This is a measurement of producers' welfare. [1] **Consumer surplus** is the difference between the maximum amount that a consumer is willing and able to pay for a good and the amount that he actually paid for the good. This is a measurement of consumers' welfare. [1]	
	(ii)	Extract 2 states that 'collusion restricted supply in the market and contributed to price increases of certain fresh chicken products'. Using a diagram, explain how this collusion is likely to have affected the producer surplus and the consumer surplus in the market for these chicken products.	[4]

		The restricting of supply to Q_1 will result in a new market supply curve SS_1, as seen in the diagram below. Equilibrium price increases (P_0 to P_1) and quantity falls (Q_0 to Q_1). [1]  Consumer surplus falls from area AE_0P_0 to area ABP_1. [1] Producer surplus rises from area P_0E_0C to area P_1BDC. [1] <u>Alternative approach</u> The restricting of supply by firms will lead to a fall in market supply causing a leftwards shift of the supply curve from So to S1. Price increases (Po to P1) and quantity falls (Qo to Q1). [1] Consumer surplus falls from area AEoPo to area AE1P1. [1] Producer surplus falls from area PoEoB to area P1E1C. [1]  Diagram [1]	
(d)		Using Extracts 3 and 4, discuss which market structure best describes the characteristics of the ride-hailing market in Singapore.	[8]
		<u>Introduction</u>	

The ride-hailing market consists of firms such as Grab and Uber. The type of market structure in which these firms are operating in can be determined by examining the features of the industry such as the presence of long-term profits, the ability to set prices, the market share of firms and the existence of barriers to entry.

<u>To determine which market structure it is, let's examine each characteristic of the market:</u>

1. <u>Market share</u>

With the merger of Grab and Uber, the combined firm now holds a **large market share** of around 80% in Singapore (Ext 4). This makes it a **single dominant firm** and therefore a monopoly. The significant market share could enable the single dominant firm to enjoy a high degree of market power with price setting ability, as seen in Extract 4, where the firm is able to **set prices** when it increased its effective fares 10% to 15% after the merger.

2. <u>Level of barriers to entry</u>

This is because such high degree of market power could be due to the **existence of high barriers to entry** into the industry. Drivers of private hire vehicles have exclusivity arrangements (Ext 3) with the combined firm, making it difficult for new entrants to enter and capture a significant amount of market share. In addition, the use of "modern technology to aid bookings" (Ext 3) could pose as a form of barrier to entry. There is a huge amount of start-up infrastructure and R&D costs incurred before production can happen. This makes it more likely for a single producer to supply the entire market and hence enjoy a lower average total cost of production due to the opportunity to reap substantial internal EOS. Due to the huge capital outlay involved coupled with low average cost of production of the merged firm, this effectively bars potential entrants with insufficient capital funds. The incumbent firms then are able to protect their supernormal profits "$13 million fine was small compared with the value of the firm… is unlikely to have a large impact on their profits" (Ext 4).

3. <u>Nature of knowledge</u>

Both consumers and rival firms have imperfect knowledge on Grab and Uber's cost of production. This is especially so since much of the necessary infrastructure are technology-related. While the hardware costs can be estimated, the software and R&D costs are harder to ascertain. In addition, it is also difficult to determine the service quality standards such as the precision of location pins, as well as information on the pricing algorithm (and how peak pricing is calculated) for consumers to determine if the pricing is *fair*. The high degree of imperfect knowledge makes this the market to likely be either a monopoly or oligopoly.

<u>Evaluation</u>

[Stand] While high BTEs and high degree of imperfect knowledge are associated with monopoly and oligopoly, the market share is the deciding characteristic that establishes it as a monopoly.

[Qn assumption ie long run outcome] Whether the ride-hailing industry in Singapore will turn into oligopoly in the long run would depend on the likelihood of the new entrants being able to capture a significant amount of market share.

[Arrive at the likely long run outcome with justification] The chances of it turning into an oligopoly is high due to the close monitoring and likely intervention by the CCCS which aims to increase competition in the industry. Furthermore, firms like Go-Jek which has got operations in Indonesia should be able to overcome the barriers to entry due to the similarity in the type of technology used.

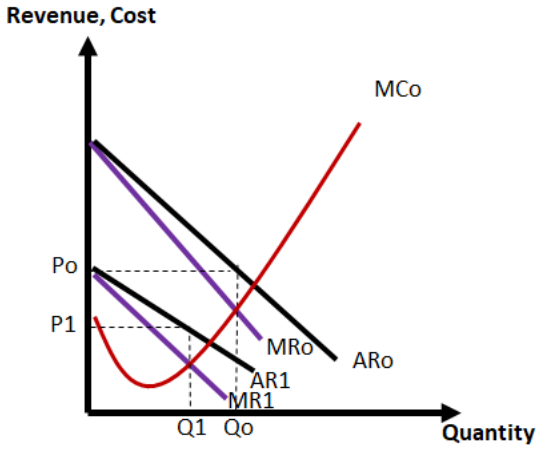
Alternatively,
[Qn assumption with justification] Whether the market structure is considered to be a monopoly or not also depends very much on the definition of the market. In Extract 4, Uber asserts that this monopoly definition was based on a very narrow definition. If one extends the definition to also include other forms of land transport such as taxis and buses, then it would not be as dominant as assessed by CCCS (much less than 80% market share).

Level	Descriptor	Marks
L2	For an answer that rigorously compares characteristics of different markets compared to monopoly and applied to the market, based on case evidence	4 – 6
L1	Identify a limited number of characteristics that affect degree of competition; limited application For an answer that has a smattering of points, with inability to examine the information from the extracts to link to the relevant characteristics.	1 – 3
E2	For a reasoned judgement that a monopoly best describes	2
E1	For an evaluation / judgment that is unsubstantiated	1

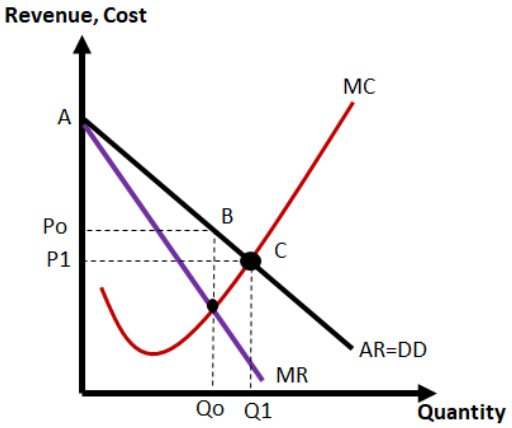
(e) Discuss whether the fines imposed by the CCCS are the best way to improve the outcomes for consumers in both the chicken product market and the ride-hailing market. [10]

<u>Introduction</u>
The CCCS is concerned with the merger of Grab and Uber as well as the collusion between the 13 fresh chicken distributors. The merger between Grab and Uber will give the combined firm monopoly power whereas the collusion between the fresh chicken distributors will allow them to behave like a multi-firm monopoly. This will result in greater market dominance which prompted the CCCS to intervene with fines so as to improve the outcome for consumers i.e. increase consumer welfare by reducing price and increasing consumer surplus, improving quality as well as increasing product variety.

<u>Thesis: How a fine imposed can improve the outcomes for consumers</u>
By imposing a fine, the combined firm of Grab and Uber will be discouraged from driving up prices as seen in extract 4.

		To curb anti-competitive practice, the CCS can make price fixing for chicken product market or **exclusivity arrangements between Grab and Uber** in ride-hailing market **illegal** by levying financial penalty such as **fines**.
		With market dominance in both the chicken product market and the ride-hailing market, the respective incumbents face a more price inelastic demand curve and have the ability to restrict output (at Q0) and set a price (at P0). When faced with a fine, the firms will have no choice but to decouple from each other. As such the market share of each incumbent will fall. This will cause the demand for the good of the dominant firm in the ride-hailing industry as well as the cartel formed by the 13 fresh chicken distributors to be more price elastic as the number of substitutes in the market increases, and hence reducing its market power to abuse its market dominance by raising price and restricting output. Demand also falls causing a leftward shift of the AR and MR curve (ARo and MRo to AR1 and MR1). **Price will fall** from Po to P1 which will improve the outcome for consumers in terms of higher consumer surplus. 
		In addition, the increased competition will force the incumbent to be more productive efficient in order to maximise profits. The fall in costs may further **reduce price**. Moreover, the increased competition will incentivise firms to innovate and achieve dynamic efficiency resulting in an **improvement in quality** of goods and services for consumers. Consumers will now also have **a larger variety** of goods and services to choose from. <u>Anti-thesis 1: Limitations of a Fine</u> - The fine might not cause the firms to alter their behaviour as the profits gained from the price hike and collusion may outweigh the costs of the fine. - Furthermore, the CCCS will also need to incur enforcement and monitoring costs so as to ensure that any form of collusion by the fresh chicken distributors do not go undetected. <u>Anti-thesis 2: Other policies such as Marginal Costs pricing is a better approach</u>

Under MC pricing, the price is set equal to the marginal cost of producing the last unit of the output (i.e. P = MC). This is at the intersection point between the DD (AR curve) and MC curves, point C on the graph below. The regulated firm now has no choice but to charge the price of P1 for each unit produced. In so doing, allocative efficiency is attained since the correct amount of resources are used to produce the correct amount of goods.



This will result in a **fall in prices** from Po to P1. **Consumer surplus** will increase from area ABPo to area ACP1. With a fall in price and a rise in consumer surplus, the fine will lead to an improvement in consumer outcomes.

<u>Evaluation</u>

Whether the fine is the best way to improve the outcomes for consumers depends on various factors.

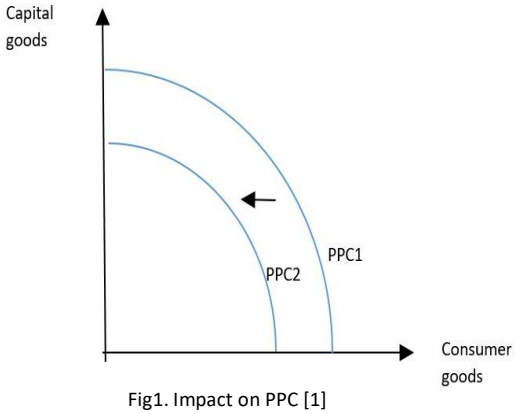
In the case for the ride-hailing industry, a fine is the best policy. Although the fine may constitute only a small percentage of the total profits earned by the combined firm (Ext 4), the government can always adjust the fine accordingly. The fine will also prevent the firm from enacting barriers that limits the entry of new firms such as Ryde and Go-jek. Due to the importance of the ride-hailing industry in a country where time and efficiency is highly regarded, the entrance of new firms will bring about better service quality which the MC pricing may not achieve.

On the other hand, MC pricing is likely to be the best way to address the collusion of the 13 fresh chicken distributors. Due to the fact that chicken products are essential goods that are 'widely consumed' (Extract 2) in the country, there is a need to ensure that the right amount is being produced at socially optimum level. MC pricing is the only way to achieve that.

Level	Descriptor	Marks
L2	For an answer that provides rigorous, coherent and in-depth assessment of the respective policies in achieving positive outcomes to consumers. Analysis has to be relevant and well supported by case study evidence.	5 – 7

			L1	For an answer that has a smattering of points and merely states a few points on the policy – with little economic rigour or many conceptual errors. For an underdeveloped answer that provides a superficial analysis or one lacking in scope For a one-sided analysis of how the fine may/may not help the CCCS achieve positive outcomes to consumers.	1 – 4	
			E2	For an evaluation that justifies if the fine is the best way to achieve positive outcomes to consumers.	2 – 3	
			E1	For an evaluation / judgment that is unsubstantiated	1	

Suggested Answers for H2 N2020 CSQ2: The dangers of a trade war

(a)	**With reference to Table 4, state the two components of a Singapore's current account, other than the goods and services balance.**	**[2]**
	The two components of Singapore's current account are investment incomes [1] and net transfers [1].	
(b)	**Using a production possibility curve diagram(s), explain the likely impact of the change in labour force described in Extract 6 upon China's economic growth.**	**[2]**
	 Fig1. Impact on PPC [1] An ageing and shrinking labour force (Extract 6) means that there are less people who are willing and able to work in the Chinese economy. Hence, the PPC curve will shift inwards from PPC1 to PPC2 as the economy's productive capacity falls. Negative potential growth occurs in China. [1]	
(c)	**With reference to Extract 7, explain why it might be claimed that a floating exchange rate means that the Chinese economy 'was well placed to withstand external shocks'.**	**[4]**
	A floating exchange rate is determined by market forces through supply and demand [1]. Chinese economy 'was well placed to withstand external shocks' as a floating exchange rate meant an external shock would not affect its macroeconomic aims (balance of trade, economic growth, employment and price stability) severely. In the event of an external shock such as the US-China trade war, the decrease in the demand for China's exports will cause the demand for its currency (Chinese yuan) to fall as well. This would lead to a depreciation of Chinese yuan [1] which would increase the quantity demanded for China's exports due to the increase in China's export competitiveness. Hence, the extent of negative impact of the US-China trade war on China's net exports (X-M) would not be significant as the fall in export revenue (X) would be accompanied by a rise in X from other countries [1] assuming that the demand for Chinese exports	

is price elastic. Consequently, the adverse impact on AD, economic growth and unemployment would be less severe [1].

Therefore, it is claimed that a floating exchange rate means that the Chinese economy 'was well placed to withstand external shocks'. As even with external shocks, China's floating exchange rate mitigates its negative impact and its accompanying impact on China's macroeconomic aims.

(d) **Explain two factors that will determine the impact upon the US balance of trade if China raises tariffs on imports from the US.** **[4]**

1. Depends on US PEDx value. If China imposes tariffs on US exports, the price of US exports will rise. This will lead to a fall in quantity demanded for exports. Assuming US import expenditure remains constant, the impact on US BOT depends on PEDx. If PEDx > 1 (US exports have many close substitutes), quantity demanded for exports will fall more than proportionately, leading to a fall in export revenue and hence worsening US BOT position, possibly going into a deficit.

2. In addition, it also depends on the significance of China is to US as an export destination. If China takes up a significant percentage of US export market, US will be impacted more severely, with higher likelihood of its BOT going into a deficit.

(e) **Explain how supply-side policies aimed at Singapore's labour market could 'make the economy more resilient' and consider how likely they are to be successful.** **[8]**

Approach	**Command Word**	Explain
	Start point	SS side policies
	End Point	'make the economy more resilient'
Content and Context	**Content**	AD-AS analysis Macro goals BUGP
	Context	Singapore labour market

Introduction

Briefly explain 'make the economy more resilient'.

Prolonged trade war between US and China → potential cyclical economic downturn & sharp fall in global state of confidence (Extract 8) → SG economy is faced with the challenges of negative growth and declining balance of trade surplus → 'Making the economy more resilient' refers to the government's attempts to ensure that the SG economy achieves macroeconomic aims such as sustained growth, low employment rate and healthy trade balance in spite of external shocks to the economy.

Development

(1) How supply-side policies work to 'make the economy more resilient'

Supply-side policies aimed at SG's labour market refer to policies to improve quantity, quality and mobility of labour, such as policies to retrain workers in SG (Extract 8).

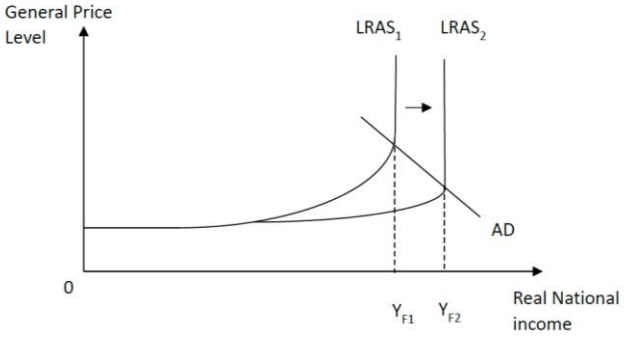


Fig 2. Supply-side policies

- SG government subsidises skills retraining and upgrading courses for workers in less productive sectors (eg. SkillsFuture)→ rise in labour productivity → increase in productive capacity of SG economy → rise in LRAS from LRAS1 to LRAS2
  → potential growth occurs as real national income at full employment increases from Y_{F1} to Y_{F2}, in Fig.2
- Better trained workers may further engage in product innovation which enhances the non-price competitiveness of exports → rise in DD for SG exports → increase in SG export revenue (X) → actual growth. Overall, sustained growth is achieved. Furthermore, SG's trade surplus is likely to rise, assuming ceteris paribus
- Improving the skills set of workers in less productive sectors → increase in the demand for these workers in more productive sectors → lowers structural unemployment in SG as skills mismatch is reduced, targeting at managing 'longer-term structural shifts' (Extract 8) → growth may become more inclusive as the wage inequality between workers in less and more productive sectors is reduced

(2) Limitation of supply-side policies

- Supply-side policies targeted at SG's labour market is likely to be effective mainly in the long run, as retraining and upgrading skills of the workforce requires time to be acquired and put into practice for mastery.

Evaluative Conclusion

[Stand] The SG government's efforts on promoting skills retraining and upgrading are likely to be successful at making the economy resilient.

[Justification] The success of the above supply-side policies is supported by the Sg government's strong budget surplus position to finance the supply-side policies and a highly receptive and hardworking workforce.

[Insight] However, the SG government should consider other policy options such as attracting skilled foreign workers to boost the SG economy's growth and trade prospects in midst of US-China tensions.

Levels	Descriptors	Marks
L2	For a balanced answer that considers both how supply-side policies aimed at SG's labour market could make the economy more resilient and at least one limitation of the supply-side policies, supported by relevant case evidence.	4-6
L1	For a one-sided answer that only considers how supply-side policies aimed at SG's labour market could make the economy more resilient. Limited case evidence.	1-3
Evaluation		
E2	A reasoned judgment on the likely success of supply-side policies aimed at SG's labour market.	2
E1	An unsupported judgment	1

(f)	**Discuss whether an open economy such as that of Singapore would gain or lose from an ongoing US-China trade war.**	**[10]**

Approach	**Command Word**	Discuss
	Start point	US-China trade war
	End Point	Impact on Sg BUGP
Content and Context	**Content**	AD-AS analysis
	Context	Singapore

As a small and open economy, exports amount to 173% of Singapore's GDP. Singapore also is heavily reliant on imports for its capital goods (factors of production) and consumer goods.

The impact on Singapore BUGP is affected by the different relationships with US and China.

1. Singapore relies on China and US for factors of production

Global supply chain disruptions lead to higher COP for Sg (eg higher transport costs, additional costs incurred to source for alternative sources of FOP that are likely to be more expensive)

➔ SRAS falls for Sg

➔ Translates to higher final price of goods and services ie higher GPL

➔ Reduces price competitiveness of its exports which is especially detrimental for a small and open economy [Loss]

2. China and US as export destinations for Singapore – fall in RNY leads to fall in Sg X

With each country imposing tariffs on each other's exports, their export revenue will worsen. As explained in part d, if China imposes tariffs on US, US BOT will worsen (eg smaller surplus or go into a deficit). This will cause US AD to fall by a multiplied amount since one man's spending is another's income and that there will be subsequent rounds of cutback on spending and hence laying off of US workers. RNY will then fall by a multiplied extent, leading to recession.

With a fall in US income, Sg will experience a fall in export revenue (assuming Sg exports are normal goods ie YED > 0). Sg will also likewise experience the reverse multiplier effect, leading to recession. [Loss]

3. Singapore exports as substitutes for China exports

As a result of more expensive Chinese imports to US, US could buy more exports from Sg (assuming Sg export is a substitute for China export). Assuming XED value between Sg and China goods is more than 1, when the price of Chinese X rise, the demand for Sg X rises by more than proportionate extent, leading to rise in Sg X revenue.

➔ Sg (X-M) rise ➔ AD rise ➔ RNY rises by multiplied amount ➔ benefit Sg [Gain]

Evaluation

[Question assumption to ascertain the likelihood of prior analysis and hence weigh the relative importance of impact on Sg]

Referring to point 2, US RNY may not fall as much as initially predicted as US consumers could also switch to buying local goods due to more expensive Chinese imports. Thus, the rise in C could mitigate the fall in X, leading to a small fall in US AD or even a rise in AD. This will subsequently impact Sg differently who could even experience a rise in AD and hence RNY.

Referring to point 3, the extent of Sg X revenue rising may not be as much since the intent of the US policy is to encourage consumers to buy local goods, increasing C instead of importing Sg goods. Hence, Sg may not gain as much.

[Stand]

Hence, scenario 1 would likely be more dominant than scenario 2 and 3, leading to Sg experiencing fall in price competitiveness of exports and hence a net loss from the ongoing US-China trade war.

[Recommendation to Sg govt]

To strategically build up domestic capacity to produce factors of production and to diversify sources of FOP eg ASEAN instead of China in anticipation of future worsening supply chain disruptions.

Levels	**Descriptors**	**Marks**
L2	For a balanced answer that considers both the ongoing trade war impacts Sg positively and negatively, anchored on suitable AD-AS analysis	5-7
L1	For a one-sided answer With limited use and exemplification of case evidence	1-4
Evaluation		
E2	A reasoned judgment on the likely impact on Singapore	2-3
E1	An unsupported judgment	1

1) Discarded plastic and carbon emissions are among the biggest causes of pollution. The environmental damage to air and water runs into billions of dollars. This affects not only our health but also our food supply.

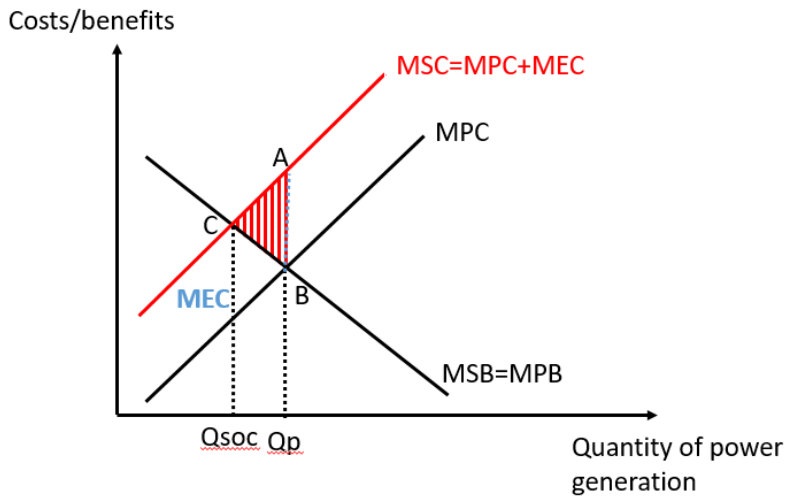
a) Explain how pollution leads to market failure. [10]
b) Discuss the extent to which government policy measures are likely to address this market failure. [15]

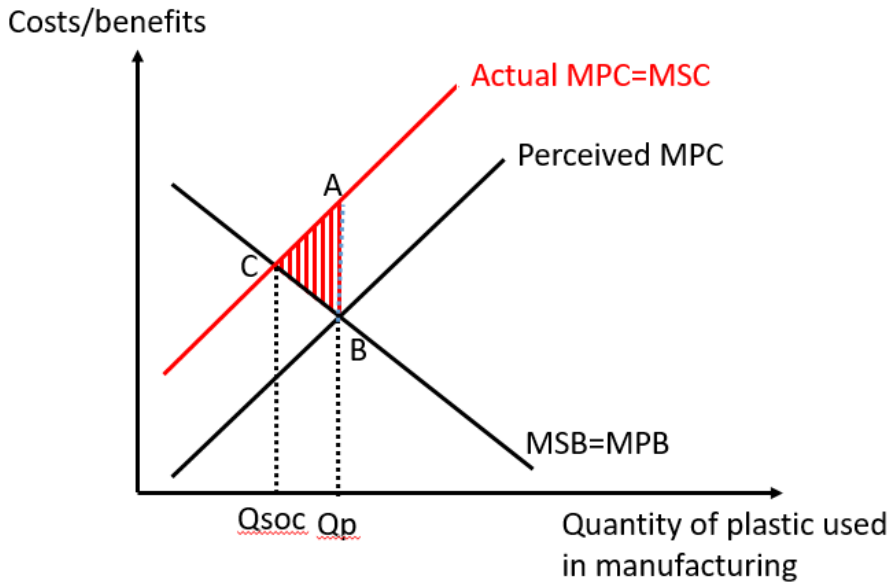
a) Question analysis

Approach	**Command Word [*Explain*]**	Provide economy reasons and explanations using diagrams
	Start point [pollution]	• Discarded plastic and carbon emissions contribute to pollution • Explain how these contribute to negative externality and food inequity.
	End Point [Singapore economy in future]	Outcomes on allocative efficiency and inequity
Content and Context	**Content**	Market failure
	Context	Plastic and carbon emissions, food inequity.

Body

P1	**<u>Point: Negative externality in production</u>** Carbon emissions from power generation, transportation and manufacturing has long caused negative externality in production. [define negative externality] **Explain and Elaborate: Private costs and benefits, external costs to third party** Identify the private costs and benefits considered by producers Costs → costs of production eg: rental of premises/factories, acquisition of machinery and labour wages Benefits → revenue generated from sales of goods/services Explain the external costs generated and identify the third party not involved nor compensated External costs of carbon emissions - Global warming → disrupts weather patterns which affects farmers who are not consuming the goods provided. - Acid rain → damages water supply, buildings which affects agriculture/water supply of individuals in other countries and not consuming the goods and services **Explain with diagram**

	Since producers disregard the external costs generated, a divergence of MSC from MPC takes place as shown below.  Producers will be producing up to Qp having considered the private costs and benefits, where MPC=MPB. Social optimal level of output will be at Qsoc, where MSC=MSB. Since **Qsoc<Qp, there is a situation of over-production and hence over-allocation of resources** towards generation of power, manufacturing industries. **Between Qsoc and Qp, MSC>MSB, total social costs generated is shown by QsocCAQp, which exceeded the total social benefits generated, which is shown by QsocCBQp.** Thus, the over-production led to the development of **welfare loss to society** which is represented by **area ABC.** **Link:** This leads to inefficiency in allocation of resources and hence market failure. [Alternatively, negative externality in consumption of plastic bags leading to plastic waste is acceptable. In consideration for scope of response, only 1 source of externality will be accepted.]
P2	**Point: Imperfect information** Producers of power, manufacturing may not be fully aware of the costs incurred by their activities and underestimates the costs they incurred. [Define imperfect information] **Explain/Elaborate** Producers, especially manufacturers, rely heavily on plastic materials for packaging of their goods for transportation and sales. Often these single use materials cannot be reuse or recycle. The disposal of these plastics can be costly if carried out in the proper manner. Lapses in operational processes and lack of information regarding proper disposal of these materials have led to rampant and random disposal of these plastic materials. Plastic dumping, especially micro plastics, have poisoned water supply. This affects the workers involved in the production of these industries. Drinking water polluted with micro plastics may be toxic to these workers if consumed. Furthermore, micro plastics may be found in marine life affected by these pollution. If consumed by workers, it further compromised their digestive systems, and they may

	have to seek medical attention. These medical costs will be placed on the firms, since more producers of power, manufacturing do extend health insurances for their workers. Even in the event that they do not extend insurance coverage, a labourforce that is affected by food and water safety cannot work efficiently and will reduce productivity of the firms and generate less output and hence increases unit costs of production. **Explain with diagram** The imperfect information causes perceived MPC to be lower than actual MPC. Assuming no externality, MPB=MSB and actual MPC=MSC. The producers will produced up to perceived MPC=MPB, at Qp, while social optimal level of output is set at Qsoc, where MSC=MSB, as shown below.  Since Qp>Qsoc, there is over-production in the market, which leads to over-allocation of resources towards these industries. Between Qp and Qsoc, MSC>MSB, **total social costs generated is shown by QsocCAQp, which exceeded the total social benefits generated, which is shown by QsocCBQp.** Thus, the over-production led to the development of **welfare loss to society** which is represented by **area ABC.** <u>Link</u> Hence, this leads to inefficiency in resource allocation and market fails.

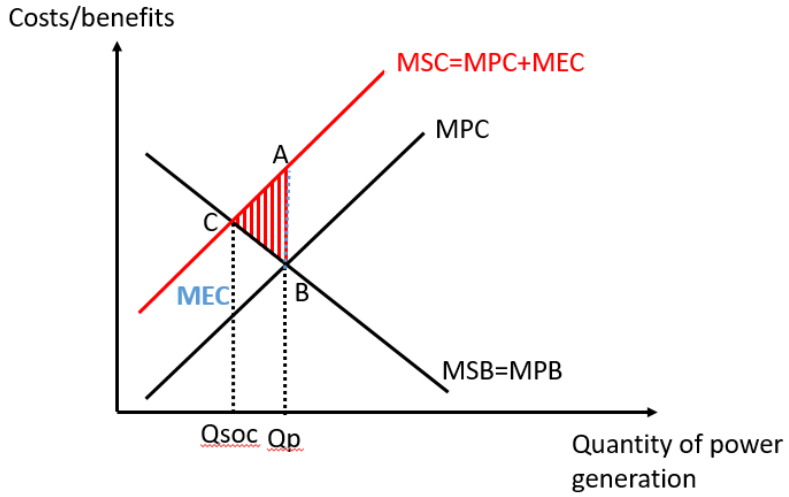
Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Displays full slew of skills across AO1, AO2 and AO3: - Well-elaborated explanation with appropriate diagrams as an analytic tool to explain how welfare losses are generated. - Good of range of different sources of market failures	8-10
L2	Displays AO1 and AO2 skills:	5-7

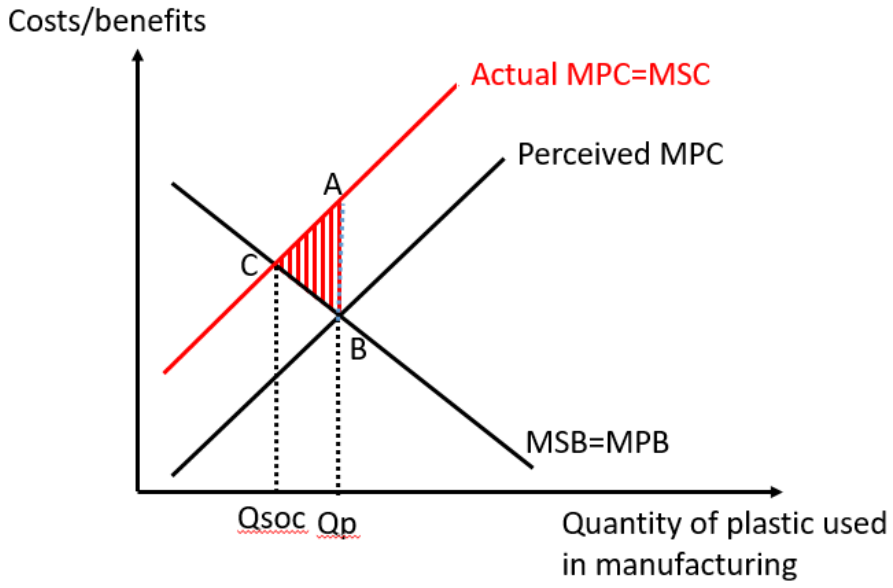
	- Underdeveloped explanation and/or unclear diagrams to explain market failures.	
L1	Uneven display of AO1 and AO2 skills: - Smattering of points – Lack of clarity, accuracy, and relevance. - Stating of market failure without any explanation/justification. - Brief description of how inefficient allocation of resources	1-4

b) Discuss the extent to which government policy measures are likely to address this market failure. [15]

Approach	**Command Word [*discuss the extent*]**	Balanced + EV
	Start point [govt policy]	• Policies to address each source of MF • taxes for neg ext, public education for imperfect info
	End Point [address market failure]	Outcomes on allocative efficiency and inequity
Content and Context	**Content**	Policies for market failure
	Context	Policies to addess plastic and carbon emissions, food inequity.

Body

P1	**Point: Taxes to internalise negative externality** Government can impose a tax to address the negative externality brought about by pollution. **How the policy works:** **Taxes imposed should reflect MEC at Qsoc** (refer to diagram in a) → which internalise external costs for producers in their decision making processes. This increases in the costs for producers and MPC will shift to MSC. As such, the producers will lower their production from Qp to Qsoc.  **Advantage**

	Taxes allow govt to collect tax revenue which can be utilised to clean up existing pollution or to compensate affected parties. **Limitations** -difficulty in assessing the monetary value of pollution/MEC → imperfect information will hinder its assessment resulting in over/under-correction → may result in further welfare losses → govt failure -demand for oil/energy/transportation may be price inelastic due to a lack of suitable substitutes → may require a large amount of tax to effect desired outcomes in the market → industries with market power may pass on the increase in costs to consumers → may causes inflationary effect in the society
P2	**<u>Point: Public education to address imperfect information</u>** Public education to improve awareness of the detriments of plastic usage → reduces demand for plastic → derived dd for plastic in manufacturing process will fall **<u>How the policy works</u>** Public education especially those that share information about the true costs of plastic pollution, how it affects ecosystems, poisoning of water supply. With more information, perceived MPC will shift towards actual MPC. Assuming rationality, producers will reduce output from Qp to Qsoc. This will eliminate welfare loss and market failure.  Advantage Public education address the root cause of the market failure. Limitations -Public education does not guarantee outcomes in the market → outcomes are dependent on receptivity of producers/consumers → may take a long time to effect desired outcomes -high costs of organising and disseminating information to the public → drains govt revenue → incurs opp costs

	Conclusion Stand: Government policies are likely to be effective in addressing the market failure brought about by pollution from plastic disposals and carbon emissions. Justify: The respective policies are effective in targeting the various sources of market failure. Time period: Although, the time period it takes to effect the desired outcomes may varies. Given that pollution inflicts costs to society immediately, a delay in the achieving the desired outcomes in the markets mean that more parties will be made worse off over time. Hence to effectively address the costs incurred, there should be efforts to mitigate the costs in the short run. Alternative policy: Govt may consider legislation to better effect desired outcomes in the markets. An example will be the ban in using plastic bags in grocery stores. Consumers can be encouraged to use their own reusable bags or trolleys during their visits to grocery and effectively cut plastic usage and waste. Further insights: Pollution tends to be borderless → non-excludable and non-rivalrous in nature → once generated pollution affects everyone regardless of borders → requires a concerted effort across industries and governments to effectively address the problem.

Level	**Knowledge, Understanding, Application, Analysis**	**Marks**
L3	Displays full slew of skills across AO1, AO2 and AO3: • A balanced and well-developed answer with different policies for different sources of market failure. • Correct application of policies to establish Qsoc and elimination of welfare losses • Use good examples to support analysis	8-10
L2	Displays AO1 and AO2 skills: • An under-developed answer • Some application of price/non-price/cost reducing strategies but limited in its explanation to address the question.	5-7
L1	Uneven display of AO1 and AO2 skills: • Smattering of points – Lack of clarity, accuracy, and relevance. • Many conceptual errors • No economic framework in analysis • Question requirement is not addressed	1-4
Evaluation		**Marks**

L3	Well-reasoned judgement • A well-reasoned judgement about the effectiveness of policies to address pollution • Question any unstated assumptions to arrive at this well-reasoned judgement.	4-5
L2	Largely unexplained judgement • Some attempt to explain judgement	2-3
L1	An unsupported judgement • Most evaluative statements or judgements that are neither supported nor relevant to the specific context of the question	1

Essay 2

Concerns about future shortages of water resulted in Singapore's national water agency, PUB, increasing the price of water by 30% from 2017. By 2060, Singapore's total water demand could almost double.

(a) Explain why a shortage of water might still exist after the rise in the price of water. [10]

(b) Discuss whether the government policy of increasing the price of water is the only effective way to overcome future water shortages. [15]

Suggested Answer and Mark Scheme

(a) Explain why a shortage of water might still exist after the rise in the price of water.

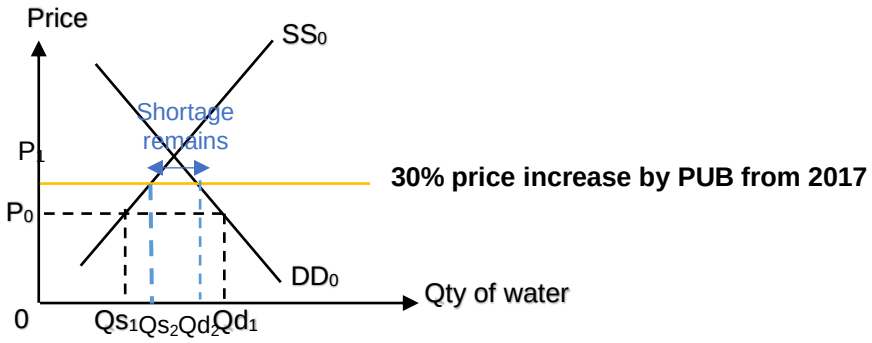
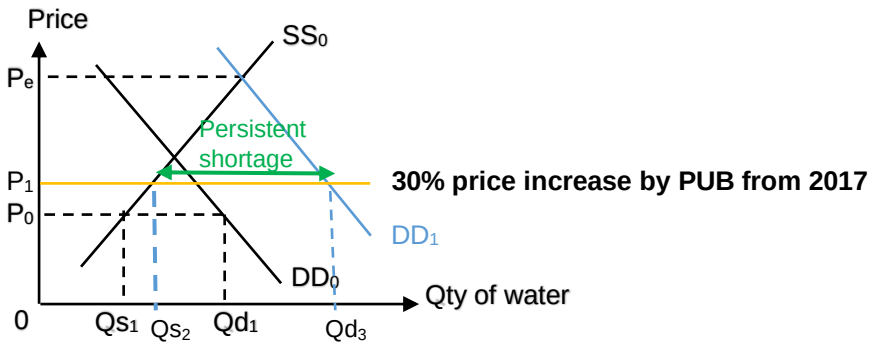
Question Analysis

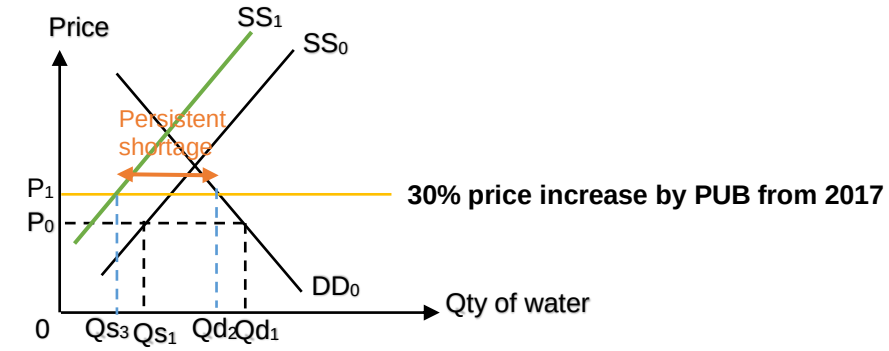
Approach	**Command Word**	Explain
	Question Type	Causes
	Start point	Shortage of water exists before PUB increased price of water by 30%
	End Point	Shortage of water exists after PUB increased price of water by 30%
Content and Context	**Content**	Factors affecting Demand and Supply, PAP
	Context	Market for water in Singapore Rise in price of water by 30% imposed

(a) Introduction

Focus of question → provide reasons for water shortage even after PUB increases price by 30%

Highlight role of government/ PUB → PUB sets the water prices in Singapore to manage water shortage.

P1	Point The 30% increase in price of water is not sufficient to eliminate the existing shortage of water. Explain/Elaborate  *Fig 1. Market for water in Singapore* At the initial price of water at Po, water shortage can be observed as the quantity demanded (Qd_1) exceeded the quantity supplied (Qs_1) of water. With a 30% rise in the price of water from Po to P_1 set by PUB, the upward pressure on price signals consumers to reduce quantity demanded to Qd_2 (e.g. households reducing water usage to save on utility bills), while incentivising profit-motivated producers to increase the quantity supplied Qs_2 (e.g. PUB produces more water to increase its earnings). While the shortage of water has been reduced to Qs_2Qd_2, the rise in price of water is not sufficient to eliminate the existing shortage of water.
P2	Point Increase in DD of water worsens the shortage of water. Explain/Elaborate  *Fig 2. Market for water in Singapore* The water shortage is also expected to increase and persist into the future, as water demand is expected to double by 2060. This is likely to be driven by factors such as projected population growth and real income growth in Singapore. Notwithstanding low birth rates, Singapore's population is expected to be

	supported by an influx of new immigrants and foreigners working in Singapore to grow our economy. With a larger population, the demand for water is expected to increase as more water is likely to be consumed on a daily basis for purposes such as drinking, cleaning and cooking. In addition, the demand for normal goods will increase with real income growth as the income elasticity of demand for normal goods is positive and greater than zero (i.e YED>0). For instance, where water is a resource required to produce more normal goods such as restaurant meals, the derived demand for water will also increase as a rise in real incomes. Finally, as Singapore moves from manufacturing into higher value-added sectors and service sectors such as petrochemicals and tourism respectively, the demand for water for industrial and non- domestic uses will rise as well. As the demand for water rises from DD_0 to DD_1, a persistent shortage of water Qs_2Qd_3 is likely to prevail at P_1 as the quantity demanded of water at Qd_3 exceeds its quantity supplied at Qs_2.
P3	<u>Point</u> <u>Fall in SS of water worsens the shortage of water.</u> <u>Explain/Elaborate</u>  *Fig 3: Market for water in Singapore* The water shortage is also expected to increase and persist into the future, as water supply is likely to be unpredictable with climate change. Given Singapore is heavily dependent on rainfall due to the lack of natural water resources, prolonged dry spells as a result of climate change would likely result in a fall in water supply. As the supply for water falls from SS_0 to SS_1, a persistent shortage of water Qs_3Qd_2 is likely to prevail at P_1 as the quantity demanded of water at Qd_2 exceeds its quantity supplied at Qs_3. <u>Link</u> Hence, given an increase in demand and fall in supply of water, the shortage of water is likely to prevail even with PUB's increase in price of water by 30%.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	• Persistent shortage explained accurately by large demand rises • Accurate and conceptually sound explanations • Clear elaborations that focus on linking to shortage even with price increase • Exemplification of the water market in the Singapore context • Coherent flow and organisation	8-10
L2	• Attempted to account for water shortage • Used DDSS framework, but with some inadequacy and/or inaccuracy • Some attempt to elaborate on price rise and to link to shortage • Some exemplification of the water market in the Singapore context	5-7
L1	• Descriptive account on water shortage • No, or conceptually inaccurate, use of DDSS framework • Lack of clarity, coherent flow and organisation	1-4

(b) Discuss whether the government policy of increasing the price of water is the only effective way to overcome future water shortages.

Approach	**Command Word**	Discuss Balanced answers + evaluation
	Question Type	Policy assessment
	Start Point	Policy to increase price of water
	End Point	Overcome future water shortage
Content and Context	**Content**	Policy: Increasing price of water (HAL) Alternative policy: Increasing SS / Decreasing DD of water (HAL) *Note: If faced with time constraint, the 3rd policy can be briefly mentioned or included as further insights.*
	Context	Market for water in Singapore

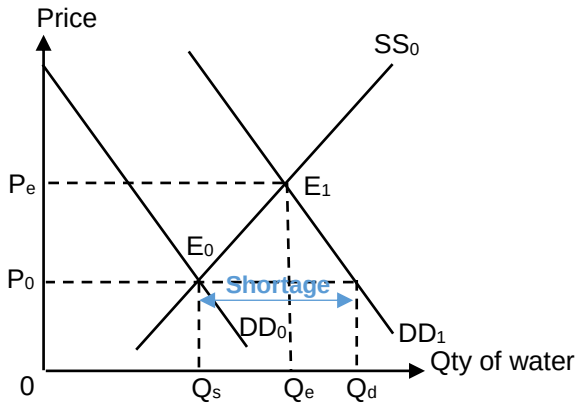
(b) **Introduction**

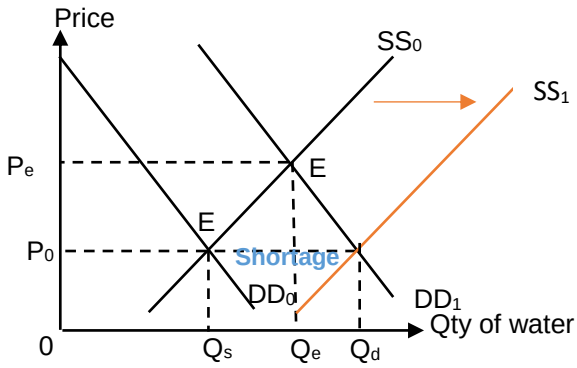
Aim of government → to overcome future water shortages i.e. eliminate water shortage

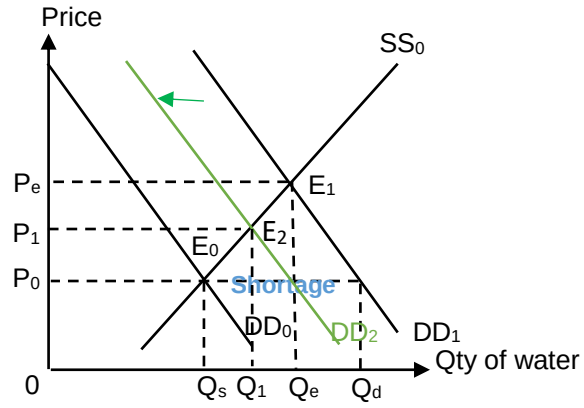
Focus of question → Examine how policies work to overcome water shortages and how well these policies work at achieving this aim. Provide a reasoned judgement on whether increasing price of water is the only effective in overcoming future water shortages in light of alternative policies.

Body

P1a	<u>Policy #1 – Raising price (How it works)</u> The government may consider further increasing the price of water to equilibrium price (P_e) in order to eliminate the shortage completely. <u>Elaborate/ Explain</u> Increase price from P_1 to P_e → upward pressure on price signals consumers to reduce quantity demanded and incentivise producers to increase quantity supplied → Equilibrium is reached at P_e and Q_e where water shortage is eliminated (***Fig. 4).***

	 *Fig. 4: Market for water in Singapore* <u>Link</u> Increase in price has effectively resolved problem of water shortages by using market price signals to allocate water to those who are able and willing to pay.
P1b	<u>Policy #1 – Raising price (Limitations)</u> However, an inequitable outcome is likely to result. Increasing the price of water comes at the expense of the poor and lower income households who could now by priced out of the market. <u>Elaborate/ Explain</u> A sharp increase in the price of water to eliminate water shortage is expected to be sharp due to the price inelastic demand and supply curves of water. The demand for water is price inelastic as it is a necessity for daily living, and there are few substitutes of water available for cleaning and washing. This means that a rise in price of water will lead to a less than proportionate fall in its quantity demanded. On the other hand, the supply of water is price inelastic as it takes time for PUB to increase its water supply. Spare capacity is low, and lengthy and complex treatment process are required for new water sources, which makes it difficult for quantity of water supplied to respond quickly to price changes. This means that a rise in price of water will lead to a less than proportionate rise in its quantity supplied. Hence, a sharp rise in price of water is required to effect a large fall in its quantity demanded as well as a large rise in its quantity supplied so that the market can clear at Pe and Qe where the shortage of water is eliminated completely. This makes water highly unaffordable for the poor while richer families might not significantly reduce their quantity demanded of water as expenditure on water is likely to make up a relatively small portion of their income. <u>Link</u> Hence, while increasing the price of water may resolve the water shortage, it gives rise to the consequence of widening inequity. Hence, the government also has to consider policies in tandem to make water affordable to the poor to achieve its objective of ensuring equity.

P2a	<u>Strategy #2 – Increasing supply (How it works)</u> Alternatively, water supply can be increased by diversifying water sources and investing in relevant technologies to increase water supply.  *Fig. 5: Market for water in Singapore* <u>Elaborate/ Explain</u> Increase in supply from SS_0 to SS_1 → supply increases to meet excess demand at Q_d → No change in price and quantity, but equilibrium is reached at P_0 and Q_d (i.e. no more excess demand) ***(Fig. 5)*** In Singapore, the government has put in significant investments to boost its water supply, as there is a need to reliance our dependence on imported water to be more self-sufficient. In this regard, PUB has increased the water catchment area in Singapore, invested in NEWater technology to treat waste water into purified water suitable for drinking, and constructed more desalination plants. <u>Link</u> When supply is increased, the water shortage can be eliminated and price rises can be contained, ensuring water remains affordable for all.
P2b	<u>Strategy #2 – Increasing supply (Limitations)</u> However, production of NEWater and water desalination are highly capital intensive processes that require significant amount of government funding to set up and maintain. This may result in less spending on other key sectors which would also be beneficial to maximise society's welfare. <u>Elaborate/ Explain</u> High costs include monitoring and enforcement of water quality levels, training of skilled labour to have the technology know-how to operate the specific machineries, engaging in research and development work to ensure processes are continually improved to reap best economies of scale. These high costs on government budget represents an opportunity cost incurred as benefits from the next best alternative are forgone such as a faster rate of economic growth due to more productive human capital with greater spending on education and skills upgrading. In addition, such a policy is likely to be effective only in the long run, as it takes time for the supply of water to be increased to

	such a large extent to meet the doubling of water demand needs by the Singapore population by 2060. <u>Link</u> While the policy on increasing the supply of water may be effective at eliminating water shortage, it takes time to be effective and comes at high costs.
P3a	<u>Strategy #3 – Reducing demand (How it works)</u> The government can also invest in public education campaigns to increase awareness of water security issues faced by Singapore, encourage water conservation and reduce water demand.  *Fig.6: Market for water in Singapore* <u>Elaborate/ Explain</u> Reduction in water demand from DD_1 to DD_2 by changing the taste and preference of consumers towards water-saving habits and reducing water usage. Combined with the 30% increase in price by PUB, this effectively reduces water shortage and the equilibrium is reached at P_1 and Q (***Fig.6).*** The Singapore government has invested in campaigns to educate the public on Singapore's water issues and the need to conserve water. For instance, the 'Make Every Drop Count' campaign serves to educate the public on water scarcity and climate change which threatens our water security. The campaign further urges the public to pledge practical actions in reducing water consumption to help secure Singapore's water future. <u>Link</u> Policy is effective at targeting root cause of problem causing water shortage. By reducing demand, water shortage is less severe and the price increase need not need to rise to P_e and result in an unaffordable outcome for the poor.
P3b	<u>Strategy #3 – Reducing demand (Limitations)</u> However, there is a considerable time lag before effects can be seen.

	Elaborate/ Explain Consumer habits take time to change, and they might maximise short term benefits and not see the longer-term impact of their current water consumption. On the other hand, firms may be reluctant to spend money to engage in research and development work to develop water-saving technologies given other competing priorities, and the cost savings from lower usage of water might not justify the investment outlay. Link While moral suasion is necessary and if done rightly can effectively reduce water demand and hence water shortages, it is unlikely to be effective on its own without complementary price increases as it takes time for consumer and firms to change their habits and processes.

Evaluation

In conclusion, increasing the price of water is not the only way to overcome future water shortages.

Notwithstanding, increasing the price of water is likely to be the most effective policy in eliminating water shortages in the short term, as it takes time for the country to boost our water supply and change water consumption habits and processes by consumers and firms. To alleviate the equity concerns, the Singapore government has given out U-save rebates to lower income households to offset the rising cost of water, and ensure water remains accessible and affordable.

However in the longer term, effectively solving the water shortage issue in Singapore requires addressing the root cause of the problem caused by excessive water demand, and to generate additional sources of water supply as population in Singapore is projected to grow and water demand will increase accordingly. It is thus important to continue investing in public education campaigns to encourage water conservation whilst investing in water technologies to ensure our water supply is well diversified and reaping productive efficiencies.

To encourage lower utilisation of water of non-domestic purposes by firms, the Singapore government has also taken a right step in this direction by setting up a Water Efficiency Fund, which allows firms to seek funding support to adopt more efficient ways of managing their water demand. In 2019, a $26 million fund was also set aside to defray the cost of implementing water saving technologies for industries with high water usage, such as the petrochemicals and semiconductors industries. Taken together with continual public education campaigns, these steps will go a long way in overcoming Singapore's future water shortages.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	• Balanced discussion (HAL) on the effectiveness on raising prices and an alternative policy • Accurate and conceptually sound using DDSS framework with application of elasticity concepts • Clear elaborations that focused on linking to effectiveness of policy in overcoming water shortages • Good exemplification of the water market in Singapore context • Coherent flow and organisation	8-10
L2	• Balanced discussion (HAL) on the effectiveness on raising prices and an alternative policy. • Used DDSS framework, but with some inadequacy and/or inaccuracy • Limited exemplification of the water market in Singapore context	5-7
L1	• Descriptive attempt to elaborate and link how price increases can overcome future water shortages • No, or conceptually inaccurate, use of DDSS framework • Lack of clarity, coherent flow and organisation	1-4

Level	Evaluation	Marks
E3	Evaluative 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	For an answer that makes some attempt at evaluation or a conclusion that answers the question with underdeveloped analysis on the relative effectiveness of different policies to address future water shortages.	2-3
E1	For an answer that gives an unsupported evaluative statement(s)/judgement on the relative effectiveness of different policies to address future water shortages.	1

A Levels 2020 Question 3

Expectations of quick service restaurants (QSRs) or fast food chains are changing. Innovation is required to keep abreast of changing consumer taste and to maintain a competitive advantage in Singapore, a market known for its discernment of food.

(a) Explain how the market structure in which fast food chains operate is likely to influence how prices are determined. [10]

Question Analysis

Approach	Command Word	Explain
	Question Type	Explain that the characteristics (structure) of the market determines the strategies (behaviour/conduct) of the firms in the market.
	Start Point	Characteristics of Oligopoly
	End Point	How fast food chains set prices
Content and Context	Content	Oligopoly – BTE, Profit-Maximizing Output level, Price Rigidity
	Context	Fast food Chains in SG

Introduction – Oligopoly Characteristics

QSRs in Singapore operate in an oligopoly market structure. It is dominated by a few large firms who are mutually interdependent, specifically McDonald's, KFC and Burger King with a market concentration ratio of 60%. These QSRs would also face a high degree of barriers to entry (BTE), which prevents rival firms from easily entering the industry, enabling incumbent QSRs such as KFC to maintain their large market power. QSRs would tend to have strong brand loyalty which serves as artificial BTE, for example, McDonald's and their signature Big Mac and French Fries are very popular among consumers of fast food, which deters potential new entrants from breaking into the market as it would be an uphill task to compete against such a dominant and well-established brand. Hence with a large market power, these QSRs can retain supernormal profits in the long run.

P1: How QSR set prices to earn supernormal profits

Profit maximising QSRs have large market share due to the lack of competitors due to high BTEs. Hence the demand (AR) for fast food would be relatively price inelastic due to the lack of available substitutes. This would result in QSR firms having large and steep average revenue (AR) curves. QSRs would maximise profits by producing at the profit maximising output level, Q_M , where marginal revenue (MR) = marginal cost (MC), and charge prices P_M as seen in Figure 1 below:

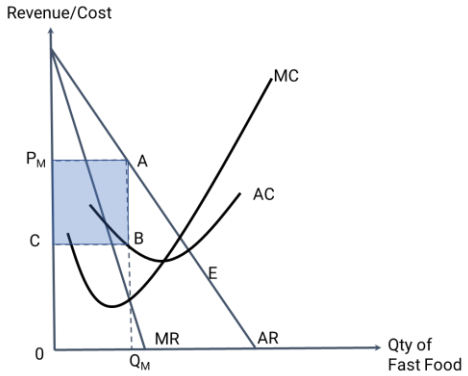


Figure 1: Price determination in an Oligopoly Firm

MR = MC is the profit maximising output level because at output less than Q_M, QSRs can increase profits by increasing production as MR > MC, indicating that the extra revenue from selling an additional unit of fast food is greater than the extra cost of producing that additional unit. Similarly, at an output more than Q_M, the MC > MR, indicating that the extra cost of producing an additional unit of fast food is greater than the extra revenue from selling the additional unit, hence the QSR can increase profits by reducing production. If the average cost (AC) is below the AR curve, at Pm, the total revenue is given by $0P_MAQ_M$ and the total cost is $0CBQ_M$, resulting in the supernormal profits given by the shaded area, CP_MAB.

P2: How QSR may face price rigidity

Oligopolistic QSRs are mutually interdependent and therefore will be subjected to price rigidity as rival firms will match each other's price reductions but not price increases. Firstly, for example KFC decides to lower its prices below existing market price, increasing their quantity demanded (sales volume). Burger King and McDonald's would both react and match KFC's price reduction to retain their market share. Therefore, it is unlikely that KFC can increase market share significantly as the rise in quantity demanded is unlikely to be large due to its rival's reactions. Likewise, if KFC decides to increase its price, the quantity demanded will decline. The rival firms would simply gain the sales lost by KFC and have no incentive to match the price increase.

Therefore, in an oligopolistic market structure, on top of setting prices at the profit maximising output level, QSRs will monitor rival pricing decisions and react accordingly due to mutual interdependence.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Displays full slew of skills across AO1, AO2 and AO3: - Well-elaborated explanation with appropriate diagrams as an analytic tool to explain how prices are determined. - Characteristics of either Oligopoly or Monopolistic Competitive market structure with reference to number of firms and barriers to entry	8-10

L2	Displays AO1 and AO2 skills: - Underdeveloped explanation and/or unclear diagrams to explain how prices are determined.	5-7
L1	Uneven display of AO1 and AO2 skills: - Smattering of points – Lack of clarity, accuracy, and relevance. - Stating of market structure without any explanation/justification. - Brief description of how prices are determined	1-4

(b) Discuss whether innovation is the best strategy for fast food chains seeking to increase their profits. [15]

Question Analysis

Approach	Command Word	Discuss - Two-sided answer with the need for evaluative statements and judgement
	Question Type	Strategies (behaviour/conduct) of firms which influences their own performance
	Start Point	Strategies: Innovation and others
	End Point	Increase in profits
Content and Context	Content	Strategies of MPC: Price Strategy Non-Price Strategy Cost Lowering
	Context	Fast food Chains

Introduction

As an oligopolistic firm, QSRs have numerous strategies at their disposal which seeks to increase revenue or decrease costs in order to increase their profit levels. For this essay, the strategies which will be discussed are innovation, price discrimination (pricing strategy) and advertisements (non-pricing strategy).

Thesis: Innovation is the best strategy

Firstly, QSRs can spend on research and development (R&D), to achieve process and product innovation. Process innovation seeks to reduce both the AC and MC by introducing cost reduction measures to the firm. For example, most QSRs can engage in automation for fast food orders. Waiters may take the wrong

order from customers which may result in the wrong food items being prepared and result in food wastage, resulting in higher AC for QSRs. By using automated food ordering terminals or mobile applications, it is less likely for wrong orders to occur as it reduces human error. This can reduce the AC and MC for QSRs, as shown by a downward shift of AC_1 and MC_1 to AC_2 and MC_2, as seen in Figure 2 below. The QSR will now produce at Q_2, charging a price P_2. This results in an increase in profits from P_1ABC to P_2DEF, ceteris paribus.

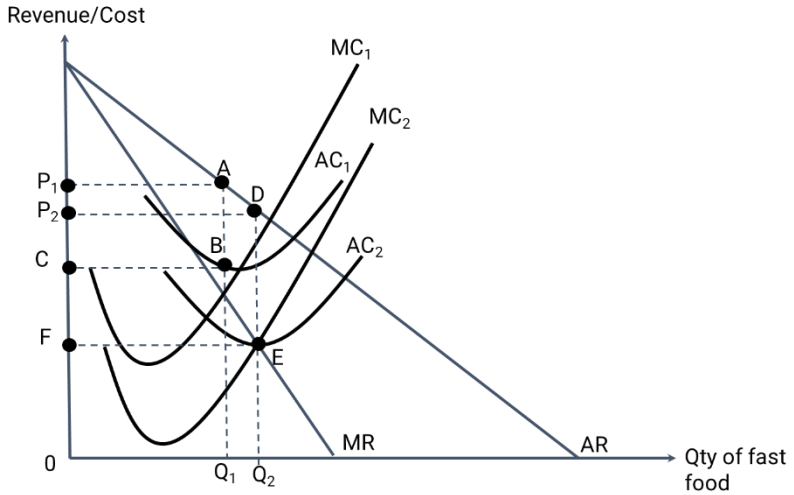


Fig 2: Process innovation amongst QSRs

Innovation can come in the form of product innovation as well, where QSRs innovate new menu items that appeal to the customers' tastebuds. QSRs can either improve on existing food items or to create new and tasty food items. For example, McDonald's innovated new food items such as the Samurai Burger which featured chicken patties dipped in teriyaki sauce as well as Seaweed Shaker Fries, where fries are sprinkled with seaweed seasoning. These are exotic new food items that are relatively novel compared to long time favourites such as the Big Mac. Hence, by appealing to the taste and preferences of the consumers, such innovation can increase the demand (AR) for the QSR, resulting in an increase in AR, as shown by a rightward shift of AR_1 and MR_1 to AR_2 and MR_2, as seen in Figure 3 below. The QSR will now produce at Q_2, charging a price P_2. This would likewise result in an increase in profits from to P_1ABC to P_2DEF, ceteris paribus.

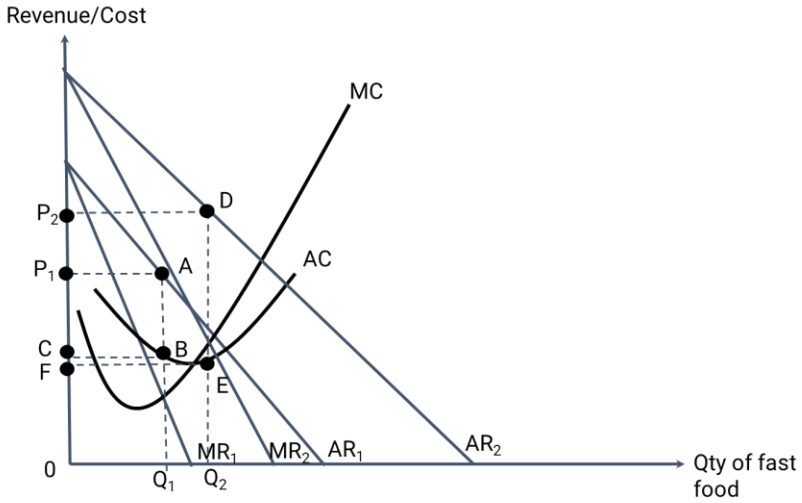


Fig 3: Product Innovation amongst QSRs

Anti-Thesis 1: Innovation may not be the best strategy (Limitations of Innovation)

However, the returns on R&D spending are not guaranteed. There could be product innovation that fail to appeal to the tastes of consumers, preventing an increase in demand (AR), for example McDonald's salted egg fries which received numerous poor reviews from customers. Such a failed innovation venture would fail to increase the profit of the QSRs, and may even result in lower profits due to the increased costs spent on innovation.

Also, for the case of process innovation, if employees on the ground are not trained to work together with the automation processes, it may lead to more wastage and prevent a fall in AC and hence the rise in profits may be limited.

Anti-Thesis 2: Pricing Strategy may be a better strategy

Next, QSRs can engage in pricing strategy, such as predatory pricing to drive out competitors from the market to increase the demand for their own fast food. This is done by setting prices below the AC of the QSR, enduring short-term sub-normal profits to drive out smaller rivals. As seen in the figure below, instead of selling at price P_M, the QSR may now sell at the price P_P, below the AC, resulting in the short term subnormal profit of $CABP_P$. For example, QSRs could use numerous coupons and promotional discounts, offering their fast-food meals at half the price it would normally sell at. If successful, smaller rivals would be forced to leave the industry, resulting in a far more price inelastic demand for the surviving QSR. This would enable them to eventually raise prices once again and earn even larger profits in the long run. However, although this option is available it is unwise for QSRs to engage in such a strategy due to the existing mutual interdependence between them. The presence of rival consciousness would result in any attempt for pricing strategy to escalate quickly into a price war which is detrimental to all QSRs, as the fall in prices is unlikely to result in a substantial increase in market shares, but a likely fall in total revenue and hence total profits.

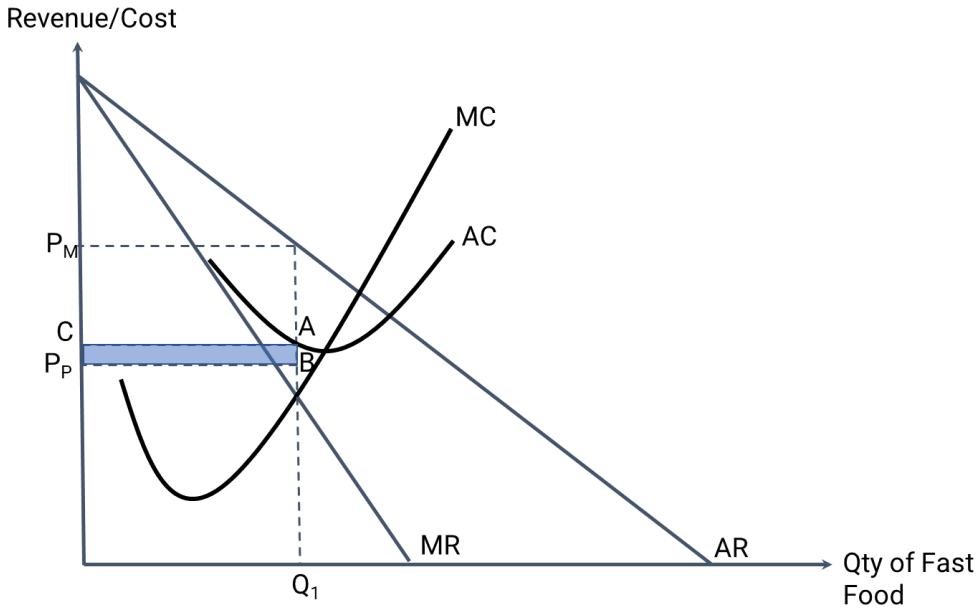


Fig 4: Predatory Pricing amongst QSRs

Anti-Thesis 3: Non price strategy – Advertisement may be a better strategy

Lastly, firms can also engage in advertisement to increase the demand (AR) and to reduce the PED value of their fast-food items. This is done by appealing to the consumer's perceived taste and preferences of the food item and also change their perception such that they view the brand to be different from others, reducing the availability of close substitutes. Advertisement can include endorsement by famous local influencer, such as JianHao Tan, to promote their brand to their large follower base. For example, KFC heavily engaged with local influencer to create content on YouTube and Instagram to brand their fried chicken as the most popular, leading to a rise in demand (AR) amongst consumers for it. KFC would now have larger market power, enabling it to set higher prices, which can lead to higher total revenue and therefore increasing the supernormal profits, ceteris paribus.

Evaluation

On balance, innovation is the best strategy for QSRs to increase their profits as it is the most sustainable way to increase average revenue and reduce average costs simultaneously. **Pricing strategy as discussed earlier** on is not sustainable in an oligopoly market structure due to the high degree of mutual interdependence, which creates more losers than winners in a price war, as both firms would face a fall in total revenue. **Meanwhile, advertisements** are also no longer considered a sustainable strategy because of how integrated people are on social media. Despite how convincing an advertisement or endorsement may seem; people cannot be easily swayed as consumers can post their pictures or thoughts

about the fast food items on social media to give honest reviews. For example, actual McDonald Hamburgers appear a lot smaller compared to advertisements, and social media does expose this to the consumers, therefore advertisements may not significantly increase the average revenue for the firm, preventing a significant rise in profits**. Innovation is the only sustainable way** to build brand loyalty by improving the quality of the fast food which can lead to higher demand (AR), at the same time continuously reducing average costs via automation. This is extremely important in times of recession, where there is falling demand (AR), and if average costs are not kept low, it could result in extensive subnormal profits which could cause the QSR to stop operations.

Note:

To provide a summative evaluation, I signposted and mention the previous strategies that were discussed, for e.g. "Pricing strategy as discussed earlier…" to properly weigh them. Also, to ensure relevancy in addressing the question, I explicitly highlight the most likely effects of the strategies in impacting costs and revenues and finally drawing the link back to profits.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Displays full slew of skills across AO1, AO2 and AO3: • A balanced and well-developed answer • Correct application of revenue and cost concepts (AR/MR/AC/MC) to assess effectiveness of strategy. • Use good examples to support analysis	8-10
L2	Displays AO1 and AO2 skills: • An under-developed but balanced answer (both thesis and anti-thesis) • Some application of price/non-price/cost reducing strategies but limited in its explanation to address the question.	5-7
L1	Uneven display of AO1 and AO2 skills: • An under-developed answer that is one-sided (either thesis or anti-thesis)	1-4

	• Many conceptual errors • No economic framework in analysis • Question requirement is not addressed	
Evaluation		**Marks**
L3	Well-reasoned judgement • A well-reasoned judgement about the impacts of different strategies on the profits of fast food chain • Question any unstated assumptions to arrive at this well-reasoned judgement. • Good explanation of the limitations of the analysis	4-5
L2	Largely unexplained judgement • Some attempt to explain judgement	2-3
L1	An unsupported judgement • Most evaluative statements or judgements that are neither supported nor relevant to the specific context of the question	1

4. Government expenditure on large-scale infrastructure projects such as airports and mass rapid transit (MRT) can contribute significantly to a country's economic growth.

(a) Explain how government expenditure on large-scale infrastructure can contribute to a country's economic growth. (10)

Question Analysis

Approach	**Command Word**	Explain
	Question Type	Cause and effect
	Start Point	Government expenditure on large-scale infrastructure
	End Point	Increase economic growth
Content & Context	**Content**	• Sustained growth- AD, AS • Multiplier effect
	Context	Transport/ Large-scale infrastructure

Suggested Answer

Introduction

An increase in government expenditure (G) on large-scale infrastructure such as airports, can result in a sustained economic growth in a country. Sustained growth is achieved when there is actual growth and potential growth.

Body

P1:

Actual growth is defined as the increase in an economy's level of output over time. It refers to the annual percentage increase in real national output actually produced. A rise in G on large-scale infrastructure will result in a rise in actual growth via the multiplier process assuming the economy is not operating at full employment.

Assuming that the government spends on large-scale infrastructure by $100m on the construction of a new airport. This will cause an initial increase in autonomous aggregate demand by $100m and shift the AD curve to the right (AD_1') by an initial $100m. This increase in autonomous spending will generate an increase in the income of $100 million for other parties such as the contractors of the construction firms within the economy. Real national income will in turn increase by the same value as the increase in autonomous AD ($100m) in this 1st round. In order to increase production, the construction firm will have to hire factors of production from households. These households will in return spend the factor incomes that they receive on buying domestically-produced goods and services. Assuming that the MPC on domestically-produced goods and services is 0.6 and the MPW is 0.4. When national income increases by $100m, induced consumption will increase by $60m which will cause the AD curve to shift further by $60m to AD_1'', while the rest of the initial increase in income is withdrawn in the form of savings, taxes and import spending.

This will result in an increase in real national income in the 2nd round by another $60m. Receiver of the $60m spending as factor income will further spend them on goods and services. This will further induce another round of spending and withdrawal. This process is repeated over many rounds as income flows back into the circular flow until the total amount withdrawn is equal to the original increase in G, where the multiplier process will stop.

Hence, an initial increase in aggregate demand will lead to many rounds of increase in induced consumption and multiple rightward shifts in AD curve from AD_1, AD_1', AD_1'' to AD_1''' as shown in figure 1. This series of shifts is captured by the overall shift of AD_1 to AD_2, and leads to a more than proportionate increase in the equilibrium level of real national income from Y_1 to Y_2.

Since K= 1/1-mpc, K = 2.5. Hence, when autonomous investment increases by $100m, real national income will increase more than proportionately by $250m and the extent of actual growth is $250m at Y_2.

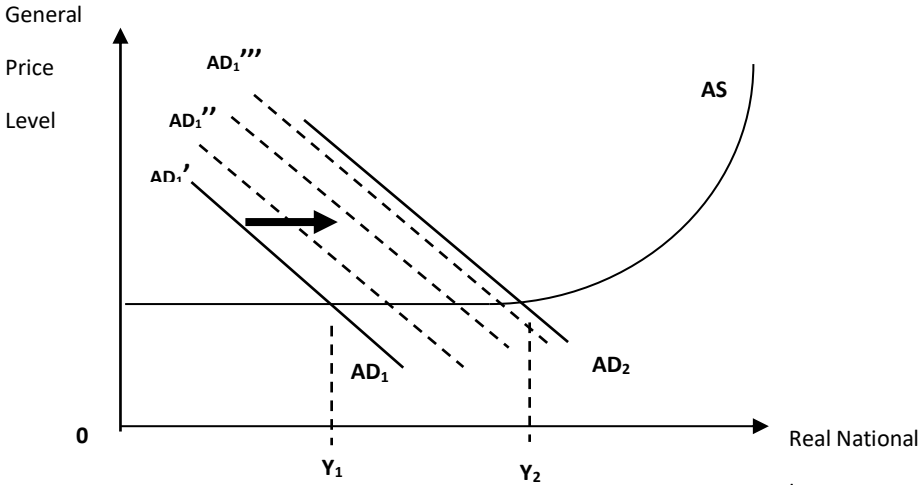


Figure 1: Multiplier Effect of rise in Government spending

P2:

A rise in G on large-scale infrastructure will also result in potential growth. Potential growth occurs when there is an increase in the productive capacity of the economy, which is also known as the maximum output the economy can produce given the available resources. This can be represented by a shift in Aggregate Supply (AS) which refers to the total number of goods and services which can be produced within the economy. With an increase government expenditure on large scale infrastructure, such as the construction of airport or the mass rapid transit (MRT), would mean a reduction of travelling time and thus more productive staff as they arrived at work more quickly and are less stressed. Building an additional airport and better transportation system will also allow easier trade and labour mobility which will increase the productivity and productive capacity of the economy. These effects would lead to an overall increase in productive capacity. AS will increase from $LRAS_1$ to $LRAS_2$, resulting in an increase in real GDP from Y_3 to Y_4, given AD remains unchanged. The increase in economy's production potential from Y_{FE1} to Y_{FE2} as illustrated in Figure 2 will allow it to meet the higher demand for goods and services without demand-pull inflation. Hence sustained growth is achieved.

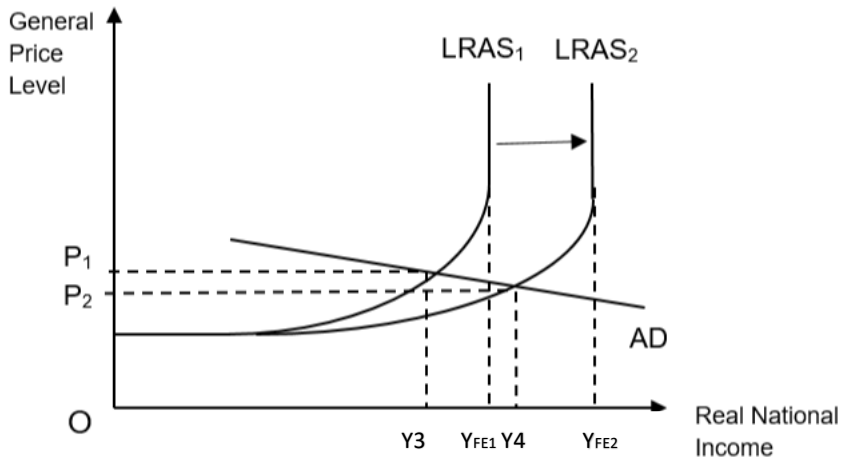


Figure 2: Potential growth resulting from a rise in Government spending

Conclusion

Overall, government expenditure on large-scale infrastructure can contribute to a country's sustained economic growth through actual and potential growth.

Mark Scheme

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Full display of AO1, AO2 and AO3 skills: • For an answer that shows a well-developed explanation of how increase in G brings about sustainable growth, using relevant economic analysis (e.g. AD/AS framework and multiplier effect) • Good use of examples	8-10
L2	Uneven display of AO1, AO2 and AO3 skills: • Answer lacks depth of analysis (e.g. limited effective use of relevant economic analysis-little to no application of the multiplier effect) • Or, answer lacks scope in explaining (e.g. only either actual or potential growth is explained) • Limited use of examples	5-7
L1	Limited display of AO1 and AO2 skills: Answer is descriptive or a mere listing of points, and/or contains major conceptual errors on sustainable growth from an increase in G.	1-4

(b) Discuss the extent to which such government expenditure on infrastructure projects will lead to a rise in the living standards of a country. (15)

Question Analysis

Approach	**Command Word**	Discuss the extent
	Question Type	Impacts
	Start Point	Government expenditure on infrastructure projects
	End Point	Standard of living
Content & Context	**Content**	• Sustained growth • Standard of living
	Context	Infrastructure projects-Eg. transport, airport

Suggested Answer

Introduction

Standard of living (SOL) comprises of two aspects, material standard of living and non-material standard of living. Material SOL refers to the quantity and quality of goods and services available for consumption by residents in a country, while non-material SOL refers to intangible aspects which enables residents in a country to have an enjoyable and fulfilling life. Government expenditure on infrastructure projects will result in sustained economic growth and lower unemployment rates which will improve SOL. In this essay, we will assess the impact of government expenditure on both material and non-material aspects of SOL.

Thesis-Increase in G will increase the SOL of the country

P1a:
As explained in part a, the increase in government expenditure will lead to an actual growth in the economy via the multiplier process. This is shown by an increase in real Gross Domestic Product (GDP). Real GDP is defined as the total market value of all final

goods and services newly-produced within the geographical boundaries of an economy in a given period of time (usually a year), measured in base year prices. With an increase in real GDP, assuming it also represents an increase in real GDP per capita, it indicates an improvement in the material SOL of residents living in that country as there will be higher real income and hence higher purchasing power. This allows for greater quantity of goods and services that can be consumed to satisfy more needs and wants. For example, residents may be able to buy more clothes, food, cars, etc. Furthermore, with higher real income, the quality of goods and services consumed also increases, as residents can afford better quality clothes, more nutritious food, a bigger car, etc. These increase in quantity of goods and services consumed reflects an increase in material SOL.

P1b:
With a rise in real GDP from actual growth, it indicates that the derived demand for labour will increase as well to increase production output in the economy. This lowers cyclical unemployment. The lower unemployment rate will result in lower crime rates and also greater stability as the population's basic needs can be satisfied through attaining income from employment. These improve the physical and mental well-being of the residents, increasing their non-material SOL. Above that, with a rise in real GDP per capita, the population will get to enjoy more leisure as they can now afford more leisure goods and services such as holiday trips etc. If the infrastructure spending is on education or health facilities, these will further result in greater non-material SOL in both current state and the long term. Higher non-material SOL in this case is achieved through better and more immediate provision of healthcare services.

<u>Anti-Thesis- Increase in G will not increase the SOL of the country</u>

P2a:
However, dependent on the state of the economy, an increase in government expenditure on infrastructure projects may not result in a higher SOL for a country. If a rise in AD as a result of government expenditure increases when the economy is near or at full employment, demand-pull inflation may occur. As the economy reaches near full employment as shown in Figure 3, at AD_1, the rise in government expenditure will result in an increase in AD from AD_1 to AD_2, which results in a higher demand for scarce factors of production in the economy. This will result in a higher factor input prices such as wages, and thus a rise in GPL from P_1 to P_2. This is especially so for government expenditures on infrastructure projects which often demand large resource quantity to meet requirements. The projects are also often long term which further increases its demand for scarce resources. Producers may hence pass on the higher input prices via charging higher prices to consumers to maintain profitability. This results in higher GPL when AD increases at near full employment. In this case, **the higher inflation rate will increase the cost of living and worsen the affordability of necessities to low income households (necessities takes up a larger proportion of low income households' spending), lowering their material SOL.**

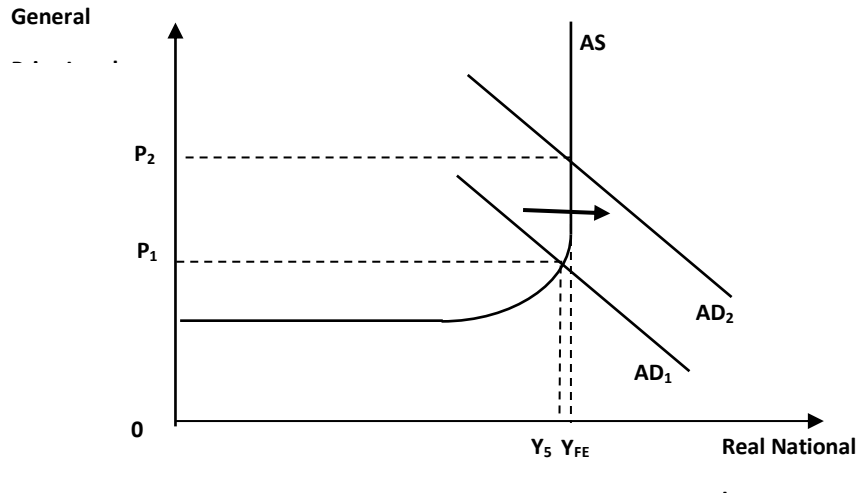


Figure 3: Impact of an Increase in AD on GPL at near full employment

P2b:

In addition, unlike Singapore, if a country were to finance its government expenditure through borrowing, crowding out effect may happen and this will push up borrowing costs with a higher interest rate. Households will find it harder and more expensive now to borrow to buy big ticket items such as cars. This further aggravates the fall in material SOL.

For some countries, such as Singapore, where the multiplier is small due to its higher marginal propensity to save and import, an increase in government spending may not necessarily generate a significant increase in real GDP within the economy as well. Furthermore, Singapore generally practices fiscal prudence. Its spending is one of the lowest in the world in proportion to its GDP. Hence, a rise in government expenditure alone and with its small multiplier size, it is unlikely to cause a significant rise in AD to improve the material SOL in the country significantly.

P2c:

However, there can be arguments that with government expenditure on infrastructure, there will be a growth in productive capacity brought about in the long term and hence potential growth can occur. When this happens, there will be a dampening effect on the demand-pull inflation, and material SOL will be increased. Though this is possible, there will be more resources dedicated to long term infrastructure projects in the short term. This will result in a trade-off between current and future SOL, since there will be fewer resources available for production of consumer goods in the short term. Hence, material SOL still falls in the short term.

P2d:

The increase in government expenditure on infrastructure projects can also negatively affect the non-material SOL of some residents in the country. Take for an example where

the government has increased the development of better transport network or infrastructure such as building more train tracks and train stations. Though it helps to cut down time on travelling and increases productivity in the long term, in the short term, it may result in noise pollution which lowers the non-material SOL of the residents instead. Residents living near the construction of transportation facilities or improvement developments may suffer from noise and air pollution due to the construction. These may have affected their quality of rest time and also health. Above that, they may also suffer from disruption in their lives with the many roads closed or diverted to assist in the construction. In the longer term, despite having a train station nearer to their home, they will also experience greater human congestion and congregation of amenities such as retail stores, which increases the noise pollution around them. These result in a lowering of their non-material SOL instead.

Evaluation

In the long term, the increase in government spending on infrastructure will most likely result in a higher material SOL due to the higher real GDP per capita and employment rate. Despite the possibility of demand-pull inflation, the increase in potential growth from infrastructure development is likely to dampen it and still result in increase in real GPP without inflationary pressures in the long term. However, whether non-material SOL will improve in the long term is dependent on the concurrent government's policies enacted. Take for example, whether the government intervenes in minimizing noise pollution from MRT trains through installing sound barriers and also good planning of roads and amenities in preparation of higher human traffic flow. If the government is able to minimize the unintended consequences from the construction of the infrastructure projects, the material and non-material SOL of the country will definitely improve in the long term.

That said, the extent of the increase in both material and non-material SOL is also highly dependent on the nature of the economy, and where the funding of the projects are attained. If the increase in government expenditure is financed through borrowed funds or the country has a small multiplier size, there will likely be a smaller increase in real GDP and a smaller increase in SOL in the short term.

Mark Scheme

Level	**Knowledge, Understanding, Application, Analysis**	**Marks**
L3	For an answer that shows well-developed explanation on how an increase in G impacts on SOL, including both positive and negative impacts, material and non-material SOL • Relevant, clear and accurate economic analysis, grounded by economic concepts, frameworks and principles • Supported by relevant diagrams, clear and accurate analysis • Supported by relevant examples, clear and accurate application	8-10

L2	For an answer that shows under-developed explanation on how an increase in G impacts on SOL, including both positive and negative impacts, material and non-material SOL • Relevant economic analysis, but lacking clarity and accuracy at times • Relevant diagrams, but lacking clarity and accuracy at times • Relevant examples and application, but lacking clarity and accuracy at times	5-7
L1	For an answer that shows limited knowledge on how an increase in G impacts on SOL, including both positive and negative impacts, material and non-material SOL • Mere listing of points, or unexplained statements • Basic or many conceptual errors • Fails to address question requirement	1-4

Level	Evaluation	Marks
E3	Insightful judgment substantiated with analyses, including but not limited to the following considerations: • underlying assumptions • nature of Singapore's economy • short vs long-term • state of Singapore's economy	4-5
E2	Judgment substantiated with analyses that were explained mostly in the body	2-3
E1	Unsubstantiated judgment	1

Essay 5

In Singapore in 2018, the resident population below the age of 20 fell by 1.5% while the resident population over 65 grew by 6.0%. If these population changes continue into the future, there are likely to be significant consequences for Singapore's economy.

Source: singstat.gov.sg, accessed 22 June 2019

(a) Explain the likely economic consequences of these population changes for Singapore economy in the future. [10]

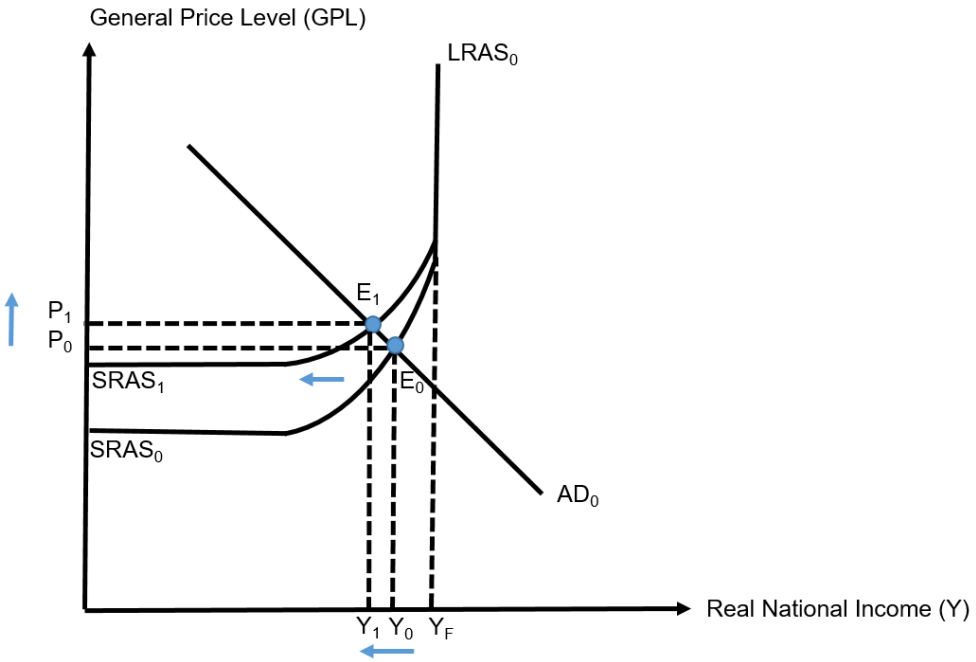
(b) Discuss the policy measures that Singapore's government should take to address the economic consequences of these population changes on its economy. [15]

Question Analysis (a)

Approach	**Command Word [*Explain*]**	Provide economy reasons and explanations using economic framework such as ADAS analysis
	Start point [population changes]	• Population below age of 20 falling + Population over age of 65 grew o These means a decrease in supply of working population, o Hence, **rise in equilibrium wage in labour market** o Changing composition of consumption and government spending ▪ **Increase spending in healthcare related goods and services and infrastructures**
	End Point [Singapore economy in future]	Outcomes on BUGP • Actual and potential growth • Demand-deficient unemployment • Cost-push and demand-pull inflation • BOT position
Content and Context	**Content**	Macroeconomic concepts/ADAD analysis
	Context	Singapore

Suggested Answer and Mark Scheme (a)

	Introduction	
	The decline in the resident population under the age of 20 can be linked to Singapore's **declining birth rates**, whilst the increase in the resident population over 65 shows Singapore's **population ageing**. The influence on Singapore's economy can be measured in terms of how it affects the country's internal goals of economic growth, price stability, and low unemployment, as well as its external goal of maintaining a healthy balance of trade (BOT).	
	Body	
	P1	Point In Singapore, lower birth rates combined with an aging population could contribute to **cost-push inflation** (sustained increase in general price level that is caused by a rise in unit cost of production which is independent of a rise in AD) and lead to **negative actual growth**.

		Explain/Elaborate This is because, as birth rates decline, the number of new workers entering the workforce may not be sufficient to replace those who are retiring. As a result, there would be a decrease in labour supply in the labour market, as well as increased competition among businesses looking to hire from a dwindling workforce. This would result in a rise in labour wages and a rise in the economy's overall cost of production. The economy is initially at equilibrium E_0 with general price level at P_0 and national income/output level at Y_0 as shown on Figure 1 below.  Figure 1: Cost-push inflation and negative actual growth in Singapore If there is an increase in the costs of production at all levels of output, the $SRAS_0$ curve shifts upwards (i.e. to the left) to $SRAS_1$, thereby resulting to inflationary pressure with a higher general price level, P_1. If the increase in price is sustained, **cost-push inflation might set in**. The fall in SRAS also leads to lower equilibrium national income/output at Y_1. If the fall in national output is persistent for two consecutive quarters, this will bring about **negative actual growth in the economy**. Link As a result, population changes may contribute to higher cost-push inflation and negative actual growth, as seen above.
	P2	Point Singapore's productive capacity is gradually being reduced due to a dwindling workforce and an aging population, making the economy increasingly exposed to **negative potential growth and inflationary pressure in the future**.

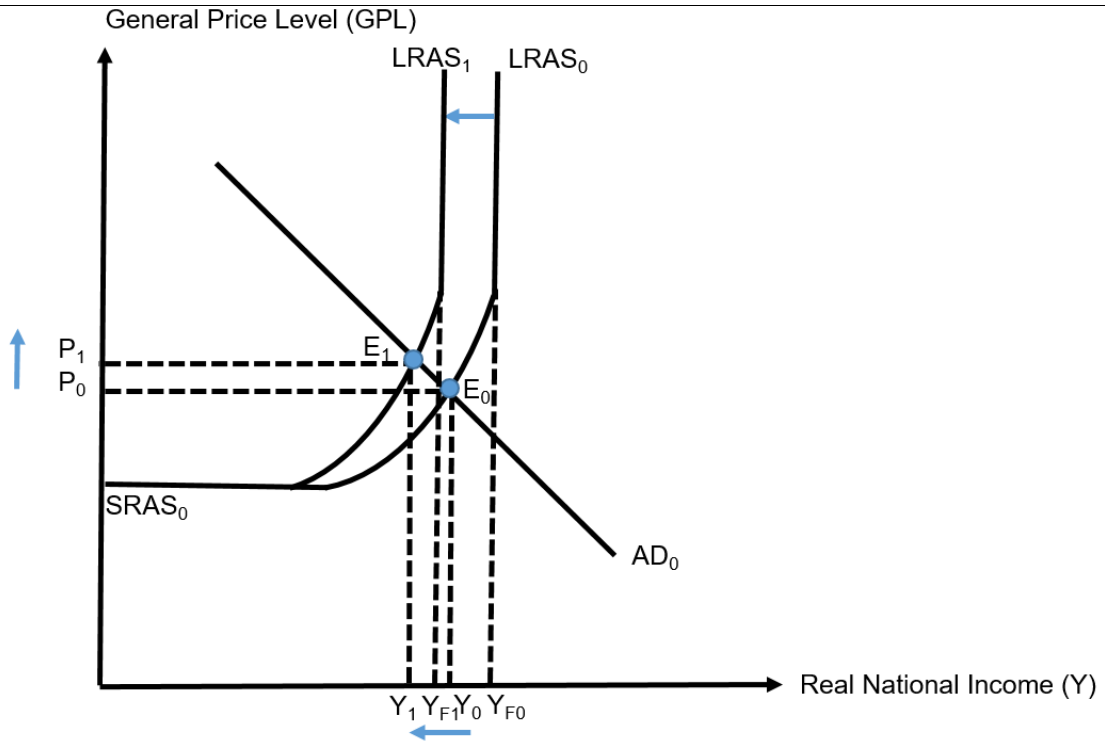


Figure 2: Inflationary pressure and negative potential growth in Singapore

Explain/Elaborate: Negative Potential Growth

When the workforce ages and shrinks, the quantity of labor resources is expected to decrease. With fewer factor inputs available, the productive capacity of the economy will decrease. This is shown by a decrease in LRAS from $LRAS_0$ to $LRAS_1$, resulting in an **inflationary pressure** from P_0 to P_1 and a likelihood of **negative potential growth** from Y_{F0} to Y_{F1} as shown on Figure 2.

Link

As a result, demographic changes may exacerbate inflationary pressures in the future and make the Singapore economy more vulnerable to negative potential growth.

Explain/Elaborate: Demand-pull Inflation

The composition of consumption and government expenditure in Singapore will alter as the population ages, with **increasing consumption of age-related items and services and a greater demand for government spending on health care**, care homes, and pensions. These factors may thus contribute to Singapore's **demand-pull inflation** (sustained increase in general price level arising from a continuous or a large increase in AD, without a corresponding increase in productive capacity of the economy). As shown on Figure 3 below, the Singapore economy's initial equilibrium E_0 is near to full employment (i.e. little spare capacity) as evident by Singapore's low unemployment rate of 3.9%. The lack in spare capacity will be worsened by the fall in LRAS explained in the previous point.

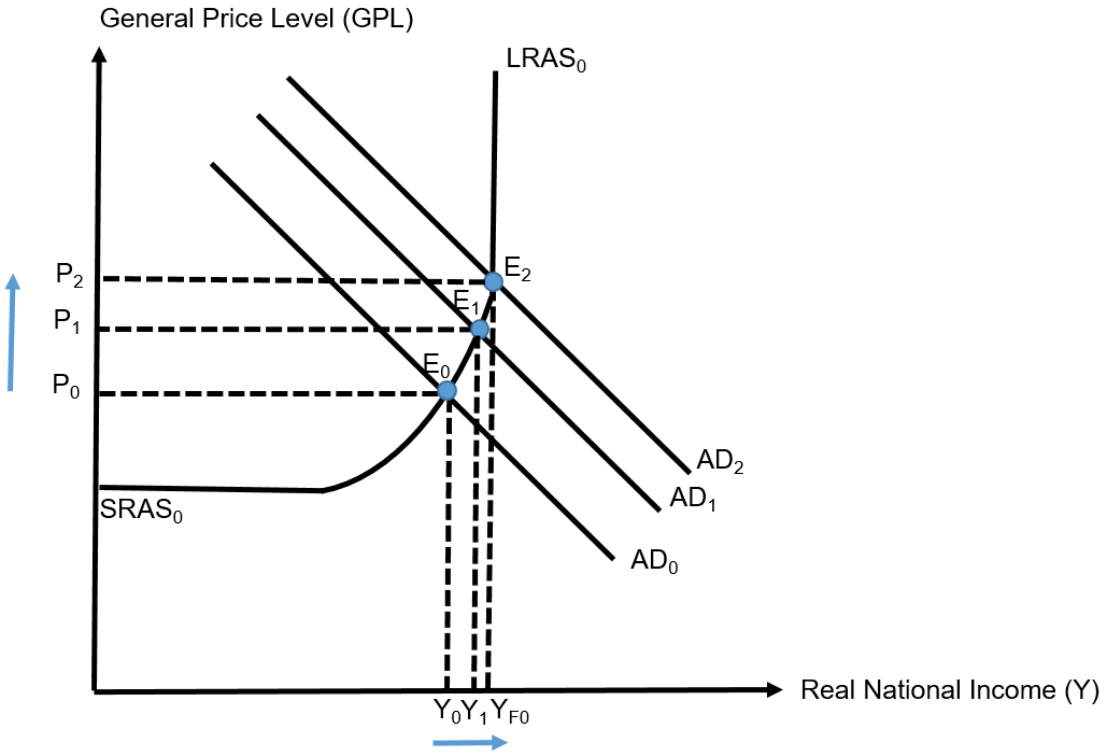


Figure 3: Demand-pull inflation in Singapore economy

AD_0 is close to the vertical section of AS, i.e. LRAS. When AD increases due to increase consumption and government expenditure on health care from AD0 to AD_1 to AD_2, firms face an unplanned decrease in stocks/inventories at the original general price level P_0. Firms will increase their production of health care related products to meet the rising demand, as long the prices of their goods are rising faster than the prices of inputs they use in production. In order to increase production, they will hire more resources (i.e. factors of production) thereby competing with other producers for the same resources. This leads to an increase in unit cost of production, which firms will pass on to consumers in the form of higher prices. This is represented by an upward movement along the upward-sloping section of the AS. Overall, general price level rises from P_0 to P_2. If the rise in general price level is sustained, demand-pull inflation is resulted.

Link
As a result, population changes may contribute to higher demand-pull inflation.

	P3	Point The population shifts that resulted to a combination of cost-push and demand-pull inflation, as shown above, will **erode Singapore's export price competitiveness and exacerbate our BOT situation**. Explain/Elaborate Given price elastic demand for Singapore's exports (due, for example, to competing countries exporting identical products like electronic microchips), the increase in the price of exports will lead to a more than proportionate fall in the quantity demanded for Singapore's exports, resulting in a drop in export revenue. Our **balance of trade position will deteriorate**, ceteris paribus.

	Conclusion Overall, the above population changes harbour negative repercussions for Singapore's small and open economy. Singapore must ensure that its workforce remains competitive in order to maintain sustained economic growth through healthy export growth and foreign investor appeal. As a result, policies are required to address the aforementioned issues, as we will discuss in part (b).	

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	• Accurate and conceptually sound explanations using ADAS framework • Clear elaborations that focus on negative consequences due to population changes • Coherent flow and organisation	8-10
L2	• Used ADAS framework, but with some inadequacy and/or inaccuracy • Some attempt to elaborate and to link to macroeconomic consequences • Some exemplification within Singapore context	5-7
L1	• No, or conceptually inaccurate, use of ADAS framework • Lack of clarity, coherent flow and organisation	1-4

Discuss the policy measures that Singapore's government should take to address the economic consequences of these population changes on its economy. [15]

Question Analysis (b)

Approach	**Command Word [Discuss]**	To provide **H**ow-it-works & **L**imitations (HL) discussions of policies with evaluation

	Start Point	Supply-side policies and demand-management policy
	End Point	To address the negative economic consequences due to populations shifts elaborated in (a)
Content and Context	**Content**	Macroeconomic concepts/ADAD analysis
	Context	Singapore economy

Suggested Answer and Mark Scheme (b)

Introduction

To address the negative consequences posed by population shifts in Singapore, a fundamental policy entails addressing both the quantity and quality of the workforce using supply-side policies. While this is the most effective way to solve Singapore's labour problems, it is not without flaws, necessitating the use of supplementary policies to address changes in consumption and government spending.

Body

P1a

Supply-side Policy#1 – Increasing Quantity of Labour (How it works)

Due to a shrinking workforce and a small labour base, Singapore must explore strategies to **expand its labour market**. To this aim, Singapore can consider bringing in foreign workers to contribute to various sectors in our economy.

Elaborate/ Explain

Having a **ready supply of competent foreign labour** in Singapore helps to guarantee that international investors continue to find Singapore appealing as a business hub. This would assist to assure a steady increase in investment spending in Singapore, which would help to boost both our AD and LRAS while **reducing the risk of negative actual and potential growth due to population changes**. In addition to assisting in the transmission of skills and technological knowledge to the local workforce, skilled foreign labour could help to **minimise the possibility of structural unemployment** induced by the aging population.

Furthermore, **lowering the cost of production in labour-intensive industries** like construction, where we rely heavily on foreign workers to keep housing costs from spiralling out of hand, is possible by **employing cheaper foreign labour**. This would help to lower cost of production in the economy and lead to a rise in SRAS from $SRAS_0$ to $SRAS_1$ as shown on Figure 4 below, therefore mitigating the likelihood of cost-push inflation from P_0 to P_1 and stimulating actual economic growth from Y_0 to Y_1.

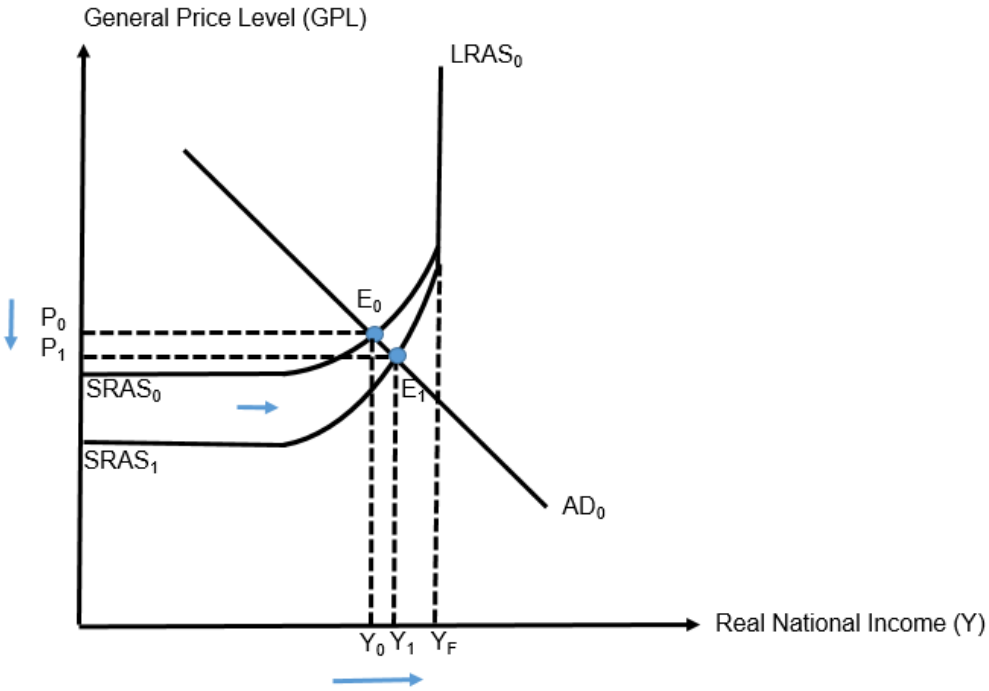


Figure 4: Cheaper foreign labours lowers COP and stimulate growth in Singapore

Link
As a result, hiring foreign workers helps Singapore avoid the negative effects of population changes such as slower growth, more unemployment, and higher inflation.

P1b

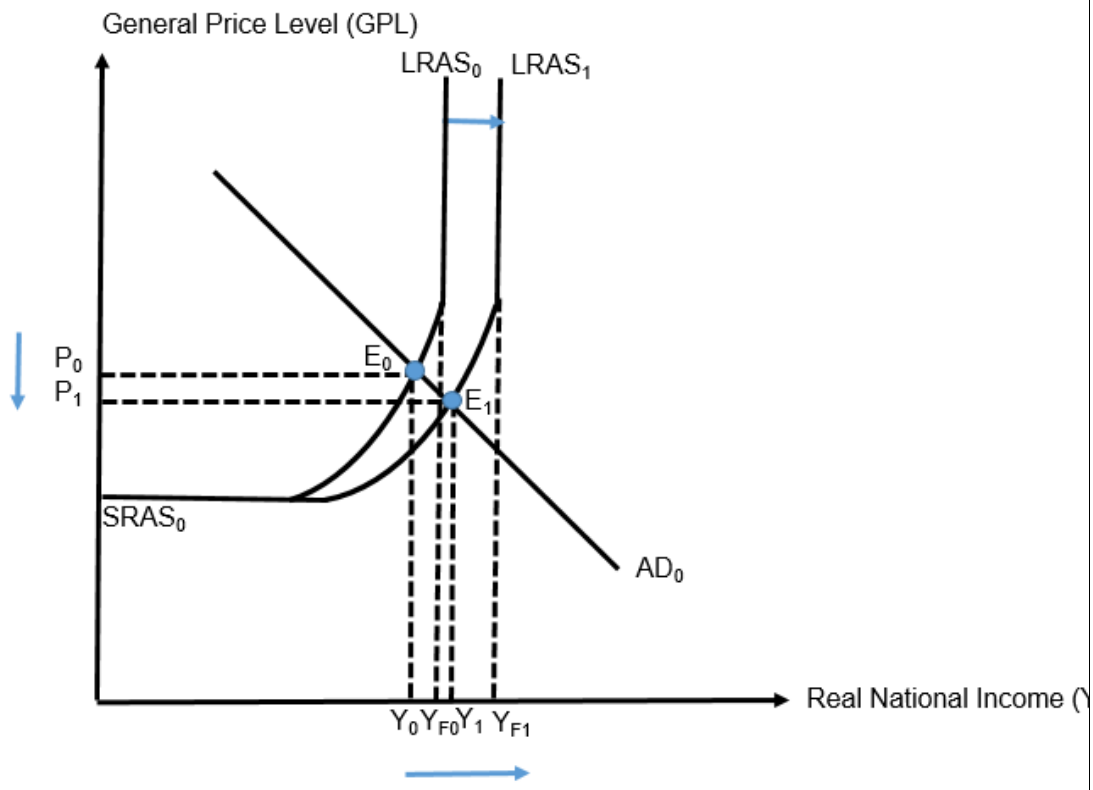
Supply-side Policy#1 – Raising Quantity of Labour (Limitations)
However, **over-reliance on foreign workers is unsustainable** for Singapore.

Elaborate/ Explain
Having access to a ready pool of foreign workers may discourage firms from hiring and training up local workers; and this may bring about **social tensions** given the stiff competition for jobs (especially severe during an economic downturn). **Foreign direct investors who are concerned with social tensions may lose confidence and withdraw their capital investments**. Given the rapid closure of businesses, this might result in **more structural unemployment** in Singapore, since retrenched workers may have difficulty learning new skills and finding jobs that fit their skill set in the short term.

The reliance on foreign labour may also **expose the sector's success to unanticipated events**. For instance, the COVID-19 pandemic has resulted in stricter border controls and a slowdown in our construction sector with delays in supplies of public housings due to Singapore's over-reliance on foreign labour. Border restrictions severely affect the flow of resources (both financial and human resources) into Singapore and may exacerbate the worsening of our productive capacity, leading to a decrease in the LRAS and a reduction in Singapore's potential growth.

Link

		As a result, longer-term measures, such as improving the quality of our workforce, are required.
	P2a	<u>Supply-side Policy#2 – Raising Quality of Labour (How it works)</u> To counteract the decline in productivity caused by dwindling and aging labour, Singapore can increase labour quality and productivity by **raising the skill level of the workforce** through a productivity campaign, **allowing the economy to grow without inflationary pressures**. <u>Elaborate/ Explain</u> Singapore started a SkillsFuture Council that leads a national effort to enhance labours' skills and provide an integrated learning system for all Singaporeans. Learning credits (subsidies) are available through the SkillsFuture Council for Singaporeans aged 25 and above to pay for skill-related courses in order to enhance their productivity. More productive workers will be able to create more output per man-hour, lowering the unit cost of manufacturing. The decrease in production costs will result in a rise in SRAS and a decrease in cost-push inflation from P_0 to P_1 as a result of the decrease in production costs. Higher labour productivity leads to more actual economic growth, as illustrated in Figure 4 above from Y_0 to Y_1. In the long run, a more skilful labour will boost the economy's productivity, and LRAS will rise from LRAS1 to LRAS2 to LRAS3, as illustrated in Figure 5. With each successive increase in LRAS, more spare capacity is produced resulting to increasing potential growth from YF_0 to YF_1 and a reduction in inflationary pressure from P_0 to P_1.

		 Figure 5: Skilful labour force will lead to greater potential growth without inflationary pressure Link Overall, a good productivity campaign to enhance labour quality can help Singapore improve its economic performance by increasing economic growth while preserving price stability. As a result, the numerous issues provided by Singapore's population shifts may be properly addressed.
	P2b	Supply-side Policy#2 – Raising Quality of Labour (Limitations) However, one of the most significant limitations of the productivity campaign is the **time** it takes for such efforts to bear fruit. Elaborate/ Explain It is difficult to persuade workers to participate in training since the effectiveness of such initiatives is mainly **dependent on the workers' competence and willingness to learn**. Obtaining company buy-in may be challenging as well, since some companies may be afraid that staff with better skills would depart for greener pastures. Link As a result, given the productivity campaign's incapacity to solve Singapore's issues in the short term, complementing measures might need to be considered.

	P3	<u>Policy#3 – Gradual Modest Appreciation (How it works)</u> Furthermore, Singapore's policy of maintaining a gradual and modest appreciation of its local currency contributes to the country's price stability. <u>Elaborate/ Explain</u> A **gradual and modest appreciation of the SGD** will make Singapore's imports relatively cheaper in domestic currency terms. Given Singapore's heavy reliance on imported raw materials and semi-finished products in its manufacturing, reduced import prices will cut the cost of production. This will cause the SRAS curve to move downwards, limiting overall cost-push inflation brought about by dwindling workforce. At the same time, the strengthening of the Singapore dollar boosts export prices in foreign currency terms. Assuming Marshall-Lerner's Condition holds true, the SGD's appreciation decreases Singapore's net exports, lowering AD, and preventing demand-pull inflation caused by expenditure on health care as a result of shifting demographics. <u>Policy#3 – Gradual Modest Appreciation (Limitations)</u> However, in order to appreciate S$, Singapore government needs to purchase the domestic currency in the foreign exchange market, so as to increase the demand for S$. This can only feasible if Singapore has **enough foreign exchange reserves available** to purchase our domestic currency. <u>Policy#4 – Prudent Fiscal Policy (How it works)</u> Moving forward, the government may need to be more **selective in their employment of demand-management measures to prevent overspending** in order to combat demand-pull inflation that may emerge as a result of rising consumption and government expenditure on health care due to an aging population. <u>Elaborate/ Explain</u> For example, Singapore must be **prudent** in allocating limited resources in order to ensure that assistance is better targeted to those in most need. **Building additional polyclinics** is one method to accomplish so, since it would assist to **guarantee that basic care is easily available** to the elderly, allowing patients to be treated for at the most appropriate facilities. Another alternative is to **better focus subsidies** so that the elderly with lesser incomes receive more, keeping healthcare affordable for everybody. <u>Link</u> By remaining cautious and careful in our expenditures, Singapore may avoid over-heating the economy with spending on health care and enable our health-care infrastructure to flourish, therefore improving our long-term productive capacity and reducing inflationary pressure in the economy. <u>Policy#4 – Prudent Fiscal Policy (Limitations)</u> Singapore, on the other hand, may have to dip into its limited fiscal reserves in order to increase government sending. Taking into account various economic scenarios, for example, if Singapore is dealing with a pandemic, budget may need to be put aside for vaccines and ventilators rather than infrastructure for the elderly.

	Evaluation
	Stand: Among the measures suggested, **increasing the productivity of the local labour is the most effective and long-term option**, as it allows Singapore to transit to higher-value-added products production that typically requires less labour. Comparison (economic priority): Given that the **aging population outnumbers the falling population**, the first priority should be to guarantee that health-care infrastructure is in place to meet the aging population's increased demands. Contextualisation (is the above stated limitations going to be very severe in SG context?): The **likelihood of societal tensions** as a result of the increased flow of foreign labour into Singapore **is low**. Because Singapore is a law-abiding country with stringent law and order in place to maintain national security, hence, it is unlikely that societal tensions will develop, dampening FDI confidence in Singapore. As a result, supply-side policies of employing foreign workers remain a feasible alternative for dealing with the issues caused by Singapore's shifting demographics.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	• At least 2 policies • 2-sided discussion (HAL) • Accurate and conceptually sound using ADAS framework • Coherent flow and organisation	8-10
L2	• 2-sided discussion (HAL) • Used ADAS framework, but with some inadequacy and/or inaccuracy	5-7
L1	• No, or conceptually inaccurate, use of ADAS framework • 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 policies • different contexts • underlying assumptions	4-5
E2	Judgment substantiated with analyses that were explained mostly in the body	2-3
E1	Unsubstantiated judgment	1

A Levels 2020 Question 6

Singapore experienced a price deflation with the general price level falling from 2014 to 2016. In Japan, the general price level fell in 11 of the 14 years from 1998 to 2012.

Source: OECD data, accessed 21 June 2019

(a) Explain one possible demand-side cause and one possible supply-side cause of price deflation for an economy such as that of Singapore or Japan. [10]

Question Analysis

Approach	Command Word	Explain
	Question Type	Causes
	Start Point	Possible demand-side cause, supply-side cause
	End Point	Price deflation
Content and Context	Content	AD-AS analysis
	Context	Singapore / Japan

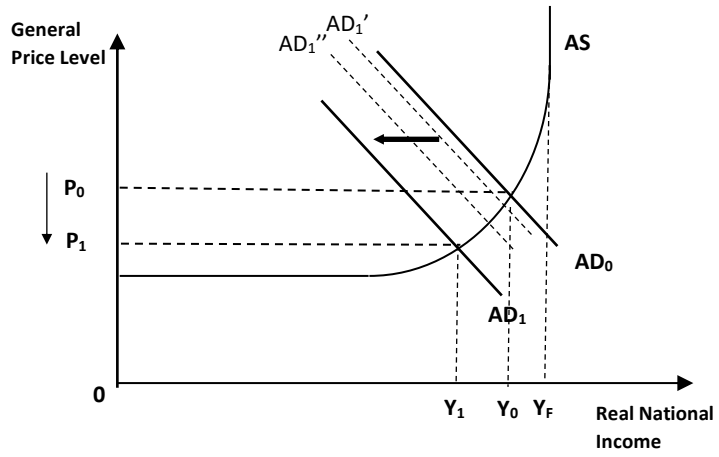
Introduction: Define deflation

Deflation refers to a sustained fall in the general price level in an economy. It can be caused by a fall in aggregate demand (AD) or an increase in the short run aggregate supply (SRAS).

Explain one possible demand-side cause

In the case of Singapore, a fall in AD is likely to be caused by a fall in its net exports (X-M) due to worldwide recession. When major trading partners such as Malaysia and the Eurozone are also faced a recession, Singapore will experience a decrease in export revenue (assuming Singapore exports are normal goods to these TP), net exports decrease and so does AD. With trading partners' consumers facing a fall in NY, they will be less willing to purchase more goods and services, which includes goods and services produced in Singapore causing a fall in demand for Singapore's exports. This causes Singapore's export revenue to decrease and net exports to decrease, hence AD decreases, ceteris paribus, as represented by a leftward shift of AD in Figure 1. further reducing the willingness of consumers to spend.

Figure 1



This fall in net exports will cause multiple leftward shifts of the AD via the reverse multiplier effect, which will in turn lead to a multiplied fall in real national income assuming that the economy is not operating at full employment level. The fall in net exports which leads to a fall in AD, will result in households directly employed by the firms, to face a fall in income as firms will employ less factor inputs to decrease production and hence will pay households less factor income. When households' income falls, they will decrease consumption expenditure. This leads to a fall in induced consumption expenditure and hence further fall in AD as seen in Figure 1. Firms will employ even less factor inputs from households to further decrease production and hence will pay households even less factor income. This process of fall in income and induced consumption is repeated over many rounds, leading to more than proportionate fall in RNY at Y2. This will lead to an unplanned accumulation of inventories and firms will start to hire fewer factors of production (FOP). Demand for FOP will fall, leading to a downward pressure on factor prices. Firms will then pass on the cost savings to consumers, leading to a fall in GPL from P_0 to P_1. This leads to deflation in Singapore.

(Other possible common reasons could be a fall in consumption or investment expenditure due to a fall in confidence.)

Explain one possible supply-side cause

Another reason for deflation could be due to a fall in the factor costs such as declining prices of major imported factors of production, such as oil and natural gas. Natural gas is a key factor used to generate electricity in the country and thus, a fall in the price natural gas will lead to a fall in costs of production for industries in Singapore. Producers will increase production due to increased profits, leading to an increase in the SRAS from $SRAS_0$ to $SRAS_2$ and pass on some of cost savings to consumers in terms of lower prices, resulting in a fall in general price levels from P_0 to P_2, leading to deflation.

(Other supply-side causes are a rise in productivity, driven by skill enhancement or innovation to a fall in the aggregate supply and hence GPL.)

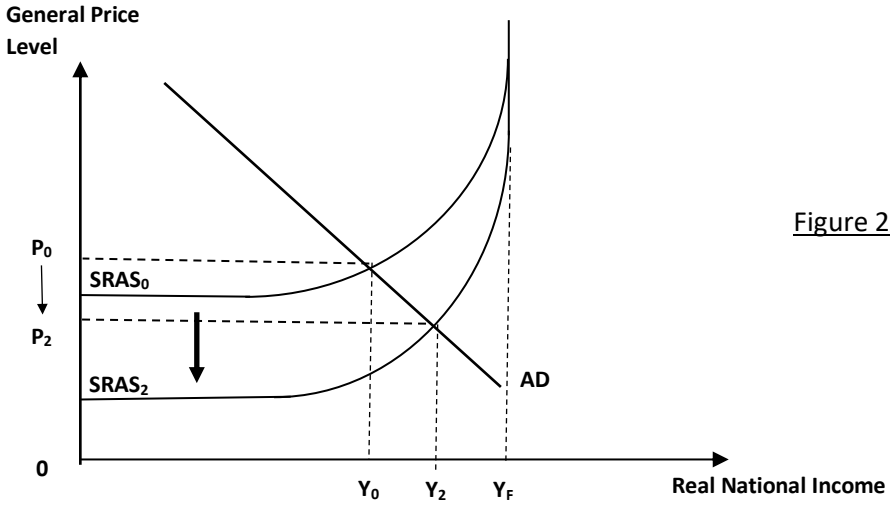


Figure 2

In conclusion, a combination of reasons affecting both AD and SRAS has resulted in deflation in Singapore.

Level	Out of 10 marks	Knowledge, Understanding, Application and Analysis
L3	8 - 10	**Relevance** • At least one demand-side cause and one possible supply-side cause applied to a context. **Content/Analysis** • For a good and thorough analytical explanation of factors causing both demand pull and cost push inflation and illustrated with AD/AS diagrams **Application** Good application to the context in terms of deflation.
L2	5 - 7	**Relevance** • At least one demand-side cause and/or one possible supply-side cause applied to a context. **Content/Analysis** An under-developed explanation of the causes causing deflation • Inaccurate/imprecise concepts • Inaccurate/missing ADAS diagram
L1	1 - 4	For an answer which shows some knowledge causes of deflation, but largely unexplained, OR an answer that is mostly irrelevant and contains a few valid points made incidentally. **Relevance** Meaning of the question not properly grasped **Content/Analysis** Fails to use ADAS analysis Shows some knowledge but there are basic errors of theory or inadequate development of analysis

(b) Discuss whether deflation or inflation is more damaging for an economy. [15]

Question Analysis

Approach	Command Word	Discuss
	Question Type	Consequences
	Start Point	Deflation, inflation
	End Point	Negative consequences for an economy (BUG)
Content and Context	Content	AD-AS analysis
	Context	An economy, can use Singapore

Introduction

Inflation is defined as a sustained increase in the general price level in an economy. On the other hand, deflation is defined as a sustained decrease in the general price level in an economy. The damaging effect to the economy refers to the negative consequences in terms of the other macroeconomic objectives.

Inflation is damaging for an economy in terms of the macroeconomic goals

- Inflation creates uncertainty → Firms uncertain about costs of I and returns to I. For Singapore which is a small domestic economy, foreign direct investment (FDI) inflows are important for long-term growth

  So fall in I and FDIs → Fall in AD and fall in LRAS (due to fall in quantity of capital FOPs) → actual and potential growth falls + rise in cyclical unemployment→ fall in sustained growth in Figure 4.

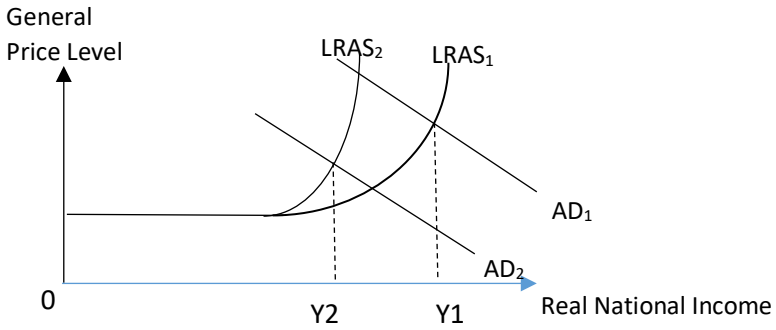


Figure 4: Fall in sustained growth

- Inflation erodes real incomes and hence real purchasing power → Households and fixed-income earners uncertain and lose confidence about their real purchasing power of money income → affect planning of consumption → fall in C → fall in actual growth and rise in cyclical unemployment.

- If inflation rate > trading partners' → fall in exports competitiveness as costs of production increases → rise in price of exports → assume demand for exports is price elastic → more than proportionate fall in the quantity demanded for exports → fall in exports revenue (X) → fall in net exports, worsens BOT position (fall in BOT surplus or increase in BOT deficit) → fall

in AD significantly since Singapore is heavily dependent on exports for growth → significant fall in real NY via multiplier effect → actual growth falls significantly.

[EV] Therefore, inflation is damaging to the Singapore economy because the nature of Singapore economy is such that it is small and open and hence relies on FDI and exports for growth both in the short run and in the long run.

Deflation is damaging for an economy in terms of negative consequences

- In a deflationary situation, AD may fall further if consumers expect prices to decrease even more and so withhold consumption. This will in turn aggravate the fall in national income. When prices are falling because consumers are saving more today (↑savings) and postponing spending (↓C) decisions in anticipation of getting a better deal tomorrow → ↓AD → ↓↓real NY by a multiplied amount and ↑cyclical unemployment. As real wages shrink and people become even more averse to spending, further ↓C.

- The low demand causes fall in business confidence → firms to invest less → ↓AD and ↓AS → ↓actual growth and ↓potential growth → ↓sustained growth. This would lead to a vicious cycle of falling demand, firms employing fewer people and paying less. E.g. Japan's deflation has been measured in terms of lost decades.

- Deflation rewards savers and punishes borrowers → Borrowers tend to be firms who would borrow for investment but now focus on paying down debts and deal with falling prices (so falling revenues), rather than try to expand their businesses → firms to invest less → ↓sustained growth.

  Some governments are also borrowers who now facing a rising government budget deficit → government forced to cut back on public spending in order to service their huge debt overhang → contractionary fiscal policy has contractionary effects on the economy or the inability to use expansionary fiscal policy during a recession would be damaging to the economy.

Evaluation

- **Whether inflation is damaging for an economy depends on the causes**
  - When there is an excessive increase in the components of aggregate demand (i.e., consumption, investment, government expenditure and net exports) in an economy, aggregate demand to increase from AD0 to AD1. This in turn causes GPL to increase from P0 to P1, resulting in demand-pull inflation in Figure 3. [EV] Some demand-pull inflation is not damaging because it reflects a healthy economic growth in the economy.

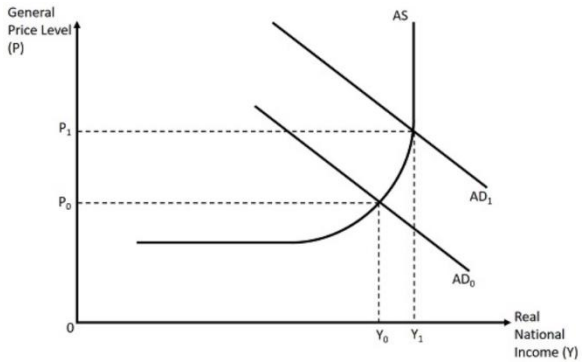


Figure 3: Demand-pull inflation

- A persistent increase in the costs of production in an economy causes aggregate supply to decrease from SRAS2 to SRAS0 in Figure 2. This in turn causes GPL to increase from P2 to P0, resulting in cost-push inflation. [EV] Cost-push inflation is damaging because it reflects a rise in factor costs of production, a fall in productivity, driven by skill erosion or lack of innovation, suggesting structural problems in the economy and lack of potential growth.

- **Whether deflation is damaging for an economy depends on the causes**
  - As explained in part (a), the supply-side cause of deflation is less damaging because it reflects an increase in the productive capacity of an economy. Deflation could be a good sign if it means that prices are falling because firms are using better technology to cut their production costs, or that healthy competition is driving down prices of some of goods and services in the CPI basket. The rise in productive capacity would enable the accommodation of further increases in AD. The economy would enjoy sustained growth without inflationary pressures. The increase in productive capacity allows consumers to enjoy increase in real incomes and hence more goods and services, and at lower prices (e.g. falling housing prices and rents, lower energy prices and cheaper transportation).

  - However, if deflation is caused by a fall in aggregate demand below the full employment level of national output, as explained in part (a), the demand-side cause of deflation is damaging because it reflects a sluggish which leads real NY to fall and negative actual growth and a rise in cyclical unemployment

- **To conclude, whether deflation or inflation is more damaging to the economy** depends on the cause of the deflation or inflation. Price deflation and price inflation might be a signal of a well-performing economy. The supply-side reason for deflation (a fall in input costs or rise in productivity) is considered to reflect an improving economy, while mild demand-pull inflation might be seen as a signal that there was strong growth in an economy and is thus positive.

Level	Out of 10 marks	Knowledge, Understanding, Application and Analysis
L3	8 – 10	**Relevance** Thorough knowledge of the facts and theory of the question. Essay focuses on the causes and/ negative consequences of inflation and deflation on the macroeconomy (BUGP). **Content/Analysis** Analysis is well-developed (for example, with the use of ADAS diagrams) **Application** Illustrations and examples are appropriate to the Singapore/Japan context.
L2	5 – 7	**Relevance** Good knowledge of the facts and theory of the question. Essay focuses on the causes and/ negative consequences of inflation and/or deflation on the macroeconomy (BUGP). **Content/Analysis** Incomplete analysis or analytical gaps of the negative effects of inflation and deflation. **Application** Lacks/No application to context of inflation or deflation or to an economy.

L1	1 - 4	**<u>Relevance</u>** Meaning of the question not properly grasped. For example, answers did not focus on the causes <u>and/or</u> negative consequences of inflation and deflation. Impact on macroeconomy is not established. **<u>Content/Analysis</u>** Analysis is largely undeveloped and contains inaccuracies in content, or is one-sided without scope.

Evaluation		
E3	4-5	For an answer that (so far as required by the question) builds on appropriate analysis to evaluate critically alternative theoretical explanations, contemporary issues, perspectives and policy choices, that recognises unstated assumption and evaluates their relevance, and that **synthesises *prior* economic arguments** to arrive at well-reasoned judgements and decisions.
E2	2-3	For an answer that makes some attempt at evaluation or a conclusion on whether inflation or deflation is more damaging to an economy
E1	1	For an answer that gives an unsupported evaluative statement(s).