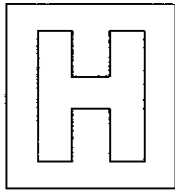


Candidate Name: _____

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millennia
institute

2021 Preliminary Exams
Pre-university 3

ECONOMICS

9757/01

Paper 1

14 September 2021
2 hours 15 minutes

Additional Materials: Answer Booklet

READ THESE INSTRUCTIONS FIRST

Write your name and class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, highlighters, glue or correction fluid.

Answer **all** questions.

You are reminded of the need for clear presentation in your answers.

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional paper, ask the invigilator for a continuation booklet.

The number of marks is given in brackets [] at the end of each question or part question.

Answer all questions.

This question paper consists of **7** printed pages and **1** blank page.

[Turn over

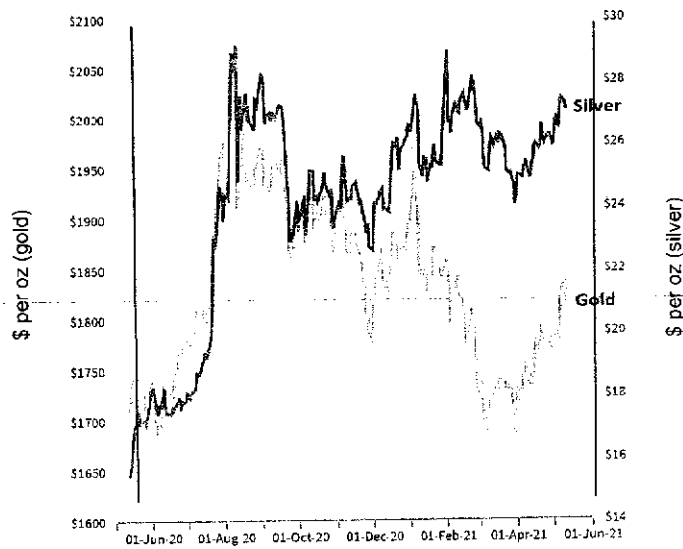
Question 1: The Growth of E-Waste

Extract 1: Price of silver is up over 70% in a year

It is often overlooked in favour of its lustrous cousin gold, but the price of silver has jumped over 70% in the last year. Demand for the precious metal has shot up in the past 12 months. From electronics to photography, jewelry and coins, silver is integral to numerous everyday products. Its high electrical conductivity and durability gives it industrial and technological applications, with almost every computer, mobile phone, automobile and appliance containing silver.

About 50% of the demand for silver is industrial and the rest comes from investors. Still, its uses in industry is one of the main reasons driving its recent rise in value. The recent shift towards green technologies have spurred a rise in demand for industrial metals such as silver which are used in solar panel production.

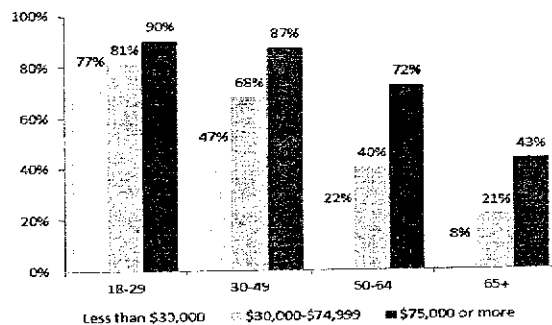
Figure 1: Silver and gold prices Jun 2020 – May 2021
Silver and gold daily closing price (\$ per ounce)



Source: CNBC, 13 May 2021

Figure 2: Smartphone ownership by income & age group in the United States in 2013

Smartphone ownership by income/age grouping
% within each age/income grouping who own a smartphone (example: 77% of 18-29 year olds with an annual household income of less than \$30,000 are smartphone owners)



Source: Pew Research Center

Extract 2: The global growth of e-waste is not letting up

Each year, the total amount of electric and electronic equipment the world uses grows by 2.5 million tonnes. Phones, radios, toys, laptops – if it has a power or battery supply, it is likely to join a growing mountain of “e-waste” after use.

People are buying electronic products with shorter life cycles and fewer options for repair. This “planned obsolescence”, where manufacturers design new tech products with limited useful lifespans leads to products becoming obsolete — either unfashionable or no longer functional — after a certain period of time. Consumers are compelled to fork out more money on even newer products. The current stream of e-waste could turn into a flood, as people are expected to start dumping smartphones, modems and other gadgets incompatible with 5G networks, once these go live.

All e-waste contains small amounts of hazardous materials, ranging from heavy metals such as lead found in TVs and mercury in batteries, to ozone-depleting chlorofluorocarbons and hydrochlorofluorocarbons found in refrigerators. Many people simply throw these items down the chute, or leave them at rubbish bins and bin centres. Such items often end up in the hands of scrap traders and rag-and-bone men, who lack the skills to recycle them safely and may unknowingly discharge the chemical compounds which are harmful to both their health and the environment.

Aside from toxins, e-waste also contains precious metals and useful raw materials, such as gold, silver, copper and platinum. The total value of all this discarded as e-waste in 2019 has been conservatively valued at US\$57 billion – a sum greater than the GDP of most countries.

Source: Vanessa Forti, Channelnewsasia, 19 August 2020

Extract 3: E-waste offers an economic opportunity

The idea of “mining” e-waste has tantalized the recycling and electronics industries for decades. Until recently, most methods to extract value from e-waste have been costly, inefficient and hazardous. Over the last few years, however, innovators have devised safer techniques in the lab that would wrest value from e-waste. As the extraction of metals becomes more efficient and eco-friendly, tech manufacturers may feel compelled to get raw materials from their own end-of-life products rather than from the earth. Some of these metals and rare-earth elements are scarce, and some, like cobalt, are found mostly in conflict zones. By mining the ever-expanding mountains of e-waste, countries could steel themselves against the volatility in prices and supplies of the global market. In addition, consumerism seems to be making a critical shift from rapidly buying more new products to supporting eco-friendly products.

Source: The New York Times magazine, 5 July 2018 & Financial Times, 7 October 2019

Extract 4: Mandating recycling of e-waste in Singapore

In March, the Ministry of the Environment and Water Resources (MEWR) made it mandatory for manufacturers of large household appliances to collect at least 60 per cent (in weight) of the appliances they supply to the market each year for recycling. The collection target is 20 per cent for smaller consumer electronics such as lamps, portable batteries, and information-communication technology (ICT) equipment (printers, laptops, tablets, mobile phones and routers).

Some companies have formed partnerships with recycling facilities to make it easier for their consumers to recycle their old products, such as the one between telco M1 and recycling firm Virogreen to set up e-waste collection bins in malls. Some of the awareness-raising and corporate initiatives are bearing fruit.

Still, there are challenges in the way of a proper e-waste recycling infrastructure here. The informal sector of scrap traders and rag-and-bone men, for example, creates disorganisation in collecting e-waste, said Mr Sharul Annuar, Marketing Manager for Virogreen Singapore. Rag-and-bone men do not necessarily recycle the e-waste they receive, Mr Annuar noted. He added: "Singaporeans have this ingrained mindset that you can actually sell e-waste to the karung guni men, so it's a challenge for us to convince them that there is a fee to recycling and it's not free."

Singapore can develop its "local capacity" for repair, reusing and recycling by integrating the numerous, easily accessible and often inexpensive electronics repair and resale shops islandwide, said Ms Amita Baecker, a project manager and business development manager at GA Circular. Such a move would formalise the existing repair and reuse industry towards safer and more environmentally friendly practices, she noted. "If purely profit-driven, these businesses are not encouraged to handle the less valuable components found in e-waste, so larger volumes will bring economies of scale to them," she said. Regulation should not only push manufacturers to collect and recycle e-waste, but also nudge them to think about how to reuse or turn materials into new products, experts said.

There is profit to be made in the e-waste business. The potential value of e-waste in Singapore is an estimated S\$234 million. Developing cutting-edge competence in the field of e-waste recycling technologies will also allow local businesses to lead the Asian e-waste industry, which accounts for 40 per cent of global e-waste generation.

Source: Cynthia Choo, Todayonline, 3 September, 2019

Questions:

- (a) With reference to Figure 1 and Extract 1, explain one possible reason for the change in price of silver **relative** to the change in price of gold on 1 Jun 2020 with that on 1 May 2021. [3]
- (b) With reference to Figure 2, explain the likely values of income elasticity of demand for smartphones for the age groups of 18 – 29 and 65+ in the US. [3]
- (c) With the aid of a diagram, explain how the increase in demand for tech products due to "planned obsolescence" is likely to affect Singapore's social welfare. [4]
- (d) Explain how the recycling of e-waste could alleviate the problem of scarcity. [2]
- (e) Discuss the factors that a profit-maximising tech producer would consider in making a decision regarding the mining of e-waste to manufacture its new products. [8]
- (f) Assess the extent to which mandating the manufacturers of electronic goods to collect and recycle e-waste is effective in ensuring allocative efficiency. [10]

[Total: 30]

Question 2: India's Economic Woes

Extract 5: Modi's big tax cut unlikely to spur job bonanza in India

India cut tax on local businesses to one of the lowest rates in Asia, while providing a more than US\$20 billion boost to revive economic growth from a six-year low. Tax on domestic companies will be lowered to 22 per cent from a base rate of 30 per cent currently. The reduction in corporate tax rates follows a series of steps to boost demand and investments after growth slowed to 5 per cent in the quarter ended June.

Economists and finance ministry officials expect India's spending plans and tax cut to mean it will miss its fiscal deficit target of 3.3 per cent of gross domestic product this year and be pushed to borrow. That will pile stress on state finances and make any boost in infrastructure spending, which can be a source of quick employment for rural migrants, unlikely. Although broadly welcomed by businesses, electronics manufacturers are so far among the few to indicate the tax cuts would be enough to trigger investment as they look for alternative destinations to sidestep supply chain disruptions from the US-China trade war.

With an estimated 1.2 million youth entering India's labour market each month, Prime Minister Narendra Modi has made job creation a priority in his 'Make in India' plan, but manufacturing has been sluggish. India's auto sector has laid off about 350,000 workers this year, while Parle Products, a major Indian biscuit maker, recently warned it may shed some 10,000 workers. "Further structural reforms to the labour market, land acquisition and regulatory environment," would help generate sustainable growth, said Arnab Das, global market strategist at Invesco in London.

Economists and business leaders who see low wages and depressed crop prices as playing big parts in India's economic slowdown would have preferred measures to stimulate consumption. The tax cut "is a welcome move by the government," said Mayank Shah, category head at biscuit maker Parle, but he added that a goods and services tax (GST) cut to reduce prices for consumers would have had a more significant impact.

Source: Bloomberg, 20 September 2019 & Reuters, 25 September 2019

Extract 6: In India, job creation the biggest issue on voters' minds

From the makeup of its population, India should be reaping demographic dividends, a condition where a country can catapult its economic growth by having more people in the working-age group than dependent population (children and senior citizens). By next year, India is expected to overtake China as the world's most populous country. In the span of three decades, India is estimated to have added 400 million extra people to its population, taking it to 1.73 billion by 2050. Most of these people will be of working age (15 to 59). If these people can find productive employment, with decent incomes, this can propel India's economic development. But OECD data indicate that more than 30 per cent of India's 15 to 29-year-olds are neither in schools nor in jobs. India is thus facing an employment crisis, the magnitude and complexity of which has never been witnessed.

India has many structural problems to solve before good-paying and long-lasting jobs can be created. There is a mismatch of jobs available and the skills of job-seekers. The formal sector does not contribute much to employment opportunities. The sectors which are growing are modern services - telecom, education, health, banking. This requires a much higher level of education than what is available to youth today. Instead, 90 per cent of India's labour demand comes from informal sectors like day labouring for agriculture, construction, tourism and other low-paid services and trades. Almost half the workforce toils in agriculture, and although

workers are moving to manufacturing and services as the economy modernises, the rate is slower than elsewhere in Asia.

India's 789 universities and 37,204 colleges churn out mostly unemployable graduates. Many of them do not have the skills required by employers. Even after graduation, they lack basic work and communication skills. Furthermore, 38 per cent of students in India do not even complete their primary education. Meanwhile, many entry-level jobs are being automated with robots and artificial intelligence. This is also the case for repetitive manufacturing jobs. Such trends are likely to accelerate in the future, reducing the country's capacity to generate employment.

Another factor is a sharp fall in private investment, resulting in "very little" job creation in the private sector, said Professor Santosh Mehrotra of Jawaharlal Nehru University. This lack of investment is caused in part by the "huge crisis" of bad debts at India's state-owned banks, making them reluctant to lend, Prof Mehrotra told AFP. Red tape and corruption also make buying land for factories difficult, and infrastructure is often poor.

To solve the unemployment problem, India must increase effective investment in education, improve capacity building at all levels and sectors. The country must also improve health and public services. The government should enhance connectivity across the country by investing in infrastructure. It is a rather tall order for the country to fulfil over the medium term. But, unless all these enabling conditions are met, jobs creation is likely to remain anaemic.

Source: Asit K Biswas, Channelnewsasia, 13 April 2019

Extract 7: India passes 'historic' minimum wage law amid activist worries

India's parliament on Friday passed a "historic" law to guarantee a minimum wage to hundreds of millions of workers, but labour activists said it did not go far enough to protect those in the informal sector. Labour minister Santosh Gangwar said the "historic" bill would for the first time ensure about 500 million Indian workers received minimum pay.

This law mandates a minimum payment of 176 Indian rupees (about S\$3) for an eight-hour work day, but local authorities can set their own lower rate and at least six states do so. There is some excitement and lots of disappointment all around. For one, the wage prescribed is less than half the 375 Indian rupees a day recommended by a high-powered labour ministry panel. It is also miles away from the 700 Indian rupees fair wage that the 7th Central Pay Commission (set up by the Government of India to review and make recommendations on the work and pay structure of all civil and military divisions of the Government of India).

Labour activists said many workers would remain vulnerable to exploitation, particularly those hired through contractors, which is often the case for brick kilns and tea plantations. Opposition politicians criticised a provision allowing employers to make deductions for staff benefits such as housing, food and travel payments, a practice that has for decades driven workers into debt bondage. "India is legitimising modern-day slavery. The struggle for bonded labour just got more difficult," said Chandan Kumar, coordinator of labour rights organisation Working People's Charter.

Source: Roli Srivastava, Reuters, 6 August 2019

Table 1: Selected Economic Indicators of India, 2015-2019

	2015	2016	2017	2018	2019
GDP Growth Rate (%)	8.0	8.3	6.8	6.5	4.0
Unemployment Rate (%)	5.6	5.5	5.4	5.3	5.4
Fiscal Balance (% of GDP)	-4.1	-3.9	-3.5	-3.5	-3.4
Inflation Rate (CPI) (%)	5.0	4.9	3.3	3.9	3.7

*Source: Various***Questions**

- (a) With reference to Table 1, state what happened to consumer prices between 2015 and 2019. [2]
- (b) Explain whether a GST cut (Extract 5) will lead to an increase in consumer expenditure on different types of goods. [4]
- (c) Explain how "depressed crop prices" (Extract 5) might play a big role in India's economic slowdown. [4]
- (d) With reference to Extract 6, identify two causes of youth unemployment in India. [2]
- (e) Using the case material and your own knowledge, assess whether a minimum wage law will improve living standards in India. [8]
- (f) In light of the unemployment problem in India, discuss whether a cut in corporate taxes or increase in government spending is a better approach for India to achieve sustained and inclusive growth. [10]

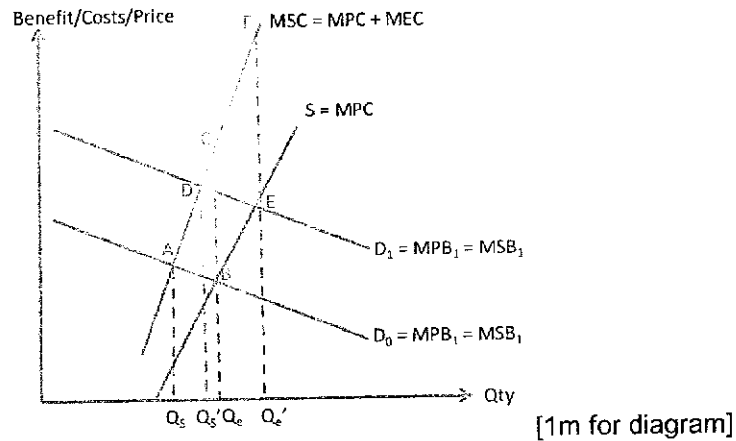
[Total: 30]

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Question 1: The Growth of E-Waste

(a)	With reference to Figure 1 and Extract 1, explain one possible reason for the change in price of silver relative to the change in price of gold on 1 Jun 2020 with that on 1 May 2021.	[3]
	<p>Price of silver increased at a faster rate than price of gold. [1] This could be due to the demand for silver rising faster than the demand for gold [1] as the derived demand for silver increases with the shift towards green technologies (more uses). [1]</p> <p><i>1m for identifying the relative change in the prices of silver and gold 1m for explanation in terms of different rates of increase in demand 1m for evidence</i></p>	
(b)	With reference to Figure 2, explain the likely values of income elasticity of demand for smartphones for the age groups of 18 – 29 and 65+ in the US.	[3]
	<p>Since the ownership of or demand for smartphones increases with income for both age groups, it shows that smartphones are normal goods with a positive YED for both groups. [1]</p> <p>However, the value of YED is different for the 2 groups. According to Fig. 2, the ownership of the smartphones increases less than proportionately (19%) as income level increases from less than \$30000 to \$75000 or more (about 150%) for the 18-29 year olds. Hence the YED for the younger group is likely to be more than zero but less than 1 and smartphones are necessities to them. [1]</p> <p>For the same change in income for the 65+, the ownership increases more than proportionately (more than 400%) implying that YED is likely to be more than one and smartphones are more of a luxury good to them. [1]</p> <p><i>1m for explaining the sign of YED 1m each for explaining the magnitude of YED for the 2 groups</i></p>	
(c)	With the aid of a diagram, explain how the increase in demand for tech products due to “planned obsolescence” is likely to affect Singapore’s social welfare.	[4]
	<p>The increase in demand for tech products leads an increase in e-waste which generates negative externalities as toxic chemicals may be unknowingly released, harming the environment and the people handling the e-waste. Due to the presence of such external costs, there is a divergence between marginal social cost (MSC) and marginal private cost (MPC) in the market for tech products. [1]</p> <p>Referring to the diagram below, market equilibrium is at Q_e where $MPC = MPB$ but the socially optimal level of output should be at Q_s where $MSC = MSB$. Since, Q_e exceeds Q_s, there is an overconsumption of tech products. [1] The deadweight loss in this case is the shaded area ABC.</p>	

An increase in demand for tech products shifts the demand curve from DD_0 to DD_1 as stated in the diagram below. This increases the market equilibrium from Q_e to Q_e' while the social optimum would only increase from Q_s to Q_s' , causing a further overconsumption. As such, the deadweight loss would increase from ABC to DEF , further reducing social welfare. [1]



1m for use of evidence to identify the negative externalities from e-waste of tech products
1m for explanation of the overconsumption of tech products
1m for explanation of how the increase in demand for tech products would worsen the overconsumption and reduces social welfare (increases the DWL)
1m for the diagram with references to the diagram

Note: Also accept diagram that shows further overconsumption by increasing market equilibrium from Q_e to Q_e' while holding the social optimum at Q_s . (It's not as technically accurate but should be sufficient for the A levels)

(d) Explain how the recycling of e-waste could alleviate the problem of scarcity. [2]

Scarcity is the situation of limited resources and unlimited wants

Recycling of e-waste will increase the quantity of resources, which leads to an increase in a country's productive capacity.[1] More wants can then be satisfied,[1] alleviating scarcity.

1m for explaining how recycling of e-waste will lead to an increase in qty of resources / productive capacity
1m for explaining linking the increase in qty of resources / productive capacity to the ability to satisfy more wants

(e) Discuss the factors that a profit-maximising tech producer would consider in making a decision regarding the mining of e-waste to manufacture its new products. [8]

Question Analysis

Command word: "Discuss the factors" → explain factors and evaluate which is most significant

Content: "factors that a profit-maximising tech producer would consider in making a decision regarding the mining of e-waste to manufacture its new products"

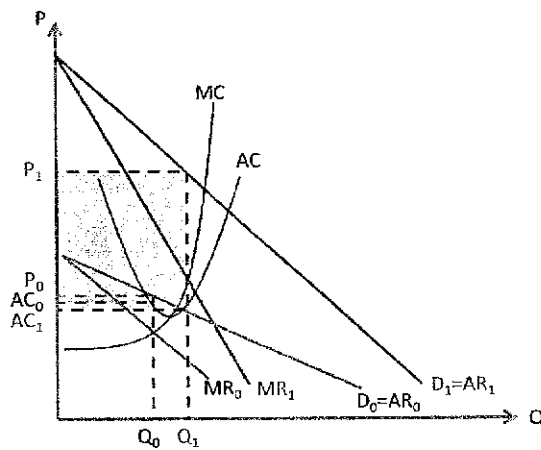
- Factors affecting decision making by producer: eg. constraints, benefits and costs

Context: e-waste mining in tech market

Requirement	Suggested Answer
Introduction: Definition and overview	A profit-maximising tech producer would seek to maximise total revenue and minimise total costs as profits = TR – TC. The producer would thus consider the benefits and costs of its decision regarding the mining of e-waste to manufacture its new products, as well as the constraints faced.

Factor 1: Benefits of mining e-waste

Possible revenue advantages
A shift in taste and preferences for eco-friendly products (Extract 3) may increase the demand for products that use recycled materials, allowing the tech producer to capture a larger market share. Demand for such tech products may also become more price inelastic as it helps differentiate the firm's products from its rivals and make them less substitutable. This will shift demand curve to the right from D_0 to D_1 as shown in the figure below. Also, as the demand is more price-inelastic, it will result in a steeper curve D_1 .

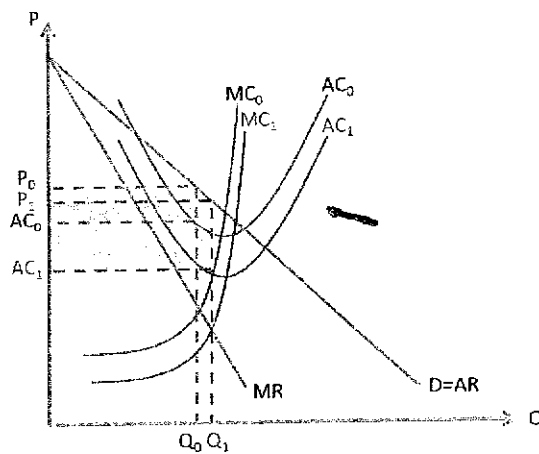


A profit-maximising tech producer would produce at an output where $MC = MR$. This is because if $MC > MR$, producing an additional unit adds more cost than revenue. Thus, the firm should not produce the additional unit. If $MC < MR$, producing an additional unit adds more revenue than cost. Thus, the firm should produce the additional unit. Hence, profit is maximised when $MC = MR$.

With reference to figure above, the original equilibrium was at output Q_0 and price P_0 . The supernormal profit was the small shaded area $((P_0 - AC_0) \times Q_0)$. With the higher and steeper D_1 , the profit maximisation output and price where $MC = MR_1$ then becomes Q_1 and P_1 respectively and the supernormal profit is now the larger shaded area $((P_1 - AC_1) \times Q_1)$. This increase in profit is mainly due to an increase in TR (from $P_0 \times Q_0$ to $P_1 \times Q_1$).

Possible cost advantages

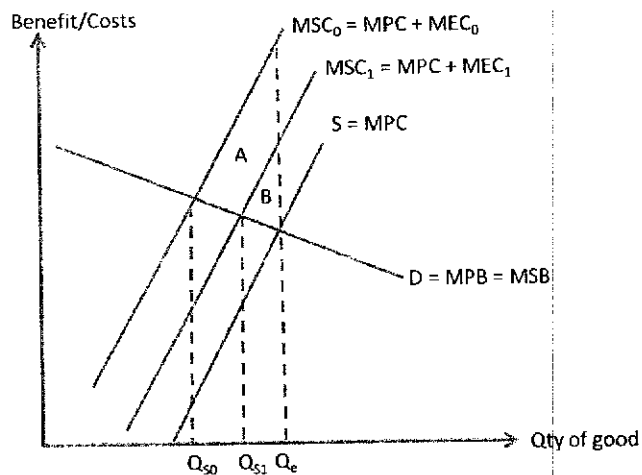
The possibility of using existing technological knowhow to mine e-waste efficiently (Extract 3) and the ability to reap internal economies of scale (EOS) (Extract 4) like technical EOS due to factor indivisibility will lead to lower average cost (AC) and marginal cost (MC) of production. Mining materials from e-waste will also allow the firm to avoid the volatile prices of materials mined from the ground. (Extract 3) This will again lower the average cost of production for the firm.



With reference to the above figure, the original equilibrium was at output Q_0 and price P_0 . The supernormal profit was the small shaded area $((P_0 - AC_0) \times Q_0)$. With the fall in AC and MC from MC_0 and AC_0 to MC_1 and AC_1 , the profit maximisation output is now at Q_1 and price at P_1 . The supernormal profit is now the larger shaded area $((P_1 - AC_1) \times Q_1)$.

		x Q ₁ . This increase in profit is mainly due to a fall in TC (from AC ₀ x Q ₀ to AC ₁ x Q ₁).
	Factor 2: Cost of mining e-waste	Mining e-waste would incur huge costs as it may involve setting up a recycling plant and conducting R&D to find more efficient ways of mining and using e-waste and hiring more labour for the production. This would increase both the AC and MC, shifting the AC and MC curves upwards. Profits from using e-waste will be reduced if the increase in cost of production from setting up the mining facilities is more than the increase in profit.
	Factor 3: Constraints faced by the firm	<p>The firm also faces financial constraints when deciding whether to mine the e-waste. The limited amount of the firm's past profit savings would restrict its ability to mine e-waste. They are also constrained by the amount and quality of factors of production within the country when trying to hire more factors in order to produce more.</p> <p>Additionally, tech firms are likely to operate in an oligopolistic market structure with the market dominance of a few large firms. Such firms are mutually interdependent which results in price rigidity. If an oligopolist considers reducing his price, he knows that his rivals will also react by reducing their prices. Thus, his reduction in price will only lead to a less than proportionate increase in quantity demanded of his product as few customers would switch over from his rivals. This would cause his TR to decrease. Hence, he would not decide to decrease his price. If he considers increasing his price, he knows that his rivals will maintain their prices in response. Thus, his increase in price will lead to a more than proportionate decrease in quantity demanded of his product as many of his customers would switch over to his rivals. This would also cause his TR to decrease. Hence, he would also not decide to increase his price. Hence, a tech producer would face the constraint of not being able to use pricing strategies and therefore there is a need to employ non-price strategies.</p>
	Evaluative Conclusion: Which is the most significant factor?	In conclusion, there are many factors that a profit-maximising tech producer should consider when making a decision regarding mining and using e-waste. The benefits of e-mining will most likely outweigh the costs in the long run given the scarcity of the resources (Extract 3) and firms should undertake the decision. However, the constraints of the producer will determine whether e-mining is even plausible in the first place. In addition, the inability to compete using price strategies would also compel the oligopolist to adopt non-price strategies like mining e-waste to differentiate their products and cut costs in order to increase their profits. Hence, the most

	important consideration should be the constraints of the producer.													
	<table border="1"> <thead> <tr> <th>Level</th> <th>Description</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>L2</td> <td>Answer covers at least 2 groups of well-explained factors (e.g. benefits and costs) with thorough economic analysis and use of appropriate economic framework. Reference to case material were made in the answer. Max 4m – No reference to case material</td> <td>4-6</td> </tr> <tr> <td>L1</td> <td>Answer lacks balance or scope or reference to case material or details.</td> <td>1-3</td> </tr> <tr> <td>E</td> <td>Makes a substantiated judgement that answers the question.</td> <td>1-2</td> </tr> </tbody> </table>	Level	Description	Marks	L2	Answer covers at least 2 groups of well-explained factors (e.g. benefits and costs) with thorough economic analysis and use of appropriate economic framework. Reference to case material were made in the answer. Max 4m – No reference to case material	4-6	L1	Answer lacks balance or scope or reference to case material or details.	1-3	E	Makes a substantiated judgement that answers the question.	1-2	
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	<p>Question Analysis</p> <p>Command word: "Assess" → explain both sides and give an evaluative conclusion</p> <p>Content: "extent to which mandating the manufacturers of electronic goods to collect and recycle e-waste is effective in ensuring allocative efficiency"</p> <ul style="list-style-type: none"> • Thesis: Mandating manufacturers of electronic goods to collect and recycle e-waste is effective in ensuring allocative efficiency • Anti-thesis: Mandating manufacturers of electronic goods to collect and recycle e-waste is ineffective in ensuring allocative efficiency <p>Context: Electronic goods market</p> <table border="1"> <thead> <tr> <th>Requirement</th> <th>Suggested Answer</th> </tr> </thead> <tbody> <tr> <td>Introduction: Define allocative efficiency & give overview</td> <td>Allocative efficiency is defined as the state in which social welfare is maximised and every market in the economy produces at the optimal output level where $MSB=MSC$. As explained in part (c), there is an overconsumption of electronic goods due to the negative externalities generated from its e-waste.</td> </tr> <tr> <td>Thesis: Mandate to collect and recycle e-waste is effective in ensuring allocative efficiency</td> <td>Mandating the manufacturers of electronic goods to collect and recycle e-waste will reduce the likelihood of toxins from the e-waste being released into the environment (Extract 2). Hence, lesser toxins discharged will lead to lesser harm to the ecosystem. When this happens, the marginal external cost of consuming electronic goods is decreased. As such, there would be a smaller divergence between MSC and MPC (the MSC shifts towards the MPC). In such cases, the degree of market failure would also decrease. This is illustrated in the diagram below.</td> </tr> </tbody> </table>	Requirement	Suggested Answer	Introduction: Define allocative efficiency & give overview	Allocative efficiency is defined as the state in which social welfare is maximised and every market in the economy produces at the optimal output level where $MSB=MSC$. As explained in part (c), there is an overconsumption of electronic goods due to the negative externalities generated from its e-waste.	Thesis: Mandate to collect and recycle e-waste is effective in ensuring allocative efficiency	Mandating the manufacturers of electronic goods to collect and recycle e-waste will reduce the likelihood of toxins from the e-waste being released into the environment (Extract 2). Hence, lesser toxins discharged will lead to lesser harm to the ecosystem. When this happens, the marginal external cost of consuming electronic goods is decreased. As such, there would be a smaller divergence between MSC and MPC (the MSC shifts towards the MPC). In such cases, the degree of market failure would also decrease. This is illustrated in the diagram below.							
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Introduction: Define allocative efficiency & give overview	Allocative efficiency is defined as the state in which social welfare is maximised and every market in the economy produces at the optimal output level where $MSB=MSC$. As explained in part (c), there is an overconsumption of electronic goods due to the negative externalities generated from its e-waste.													
Thesis: Mandate to collect and recycle e-waste is effective in ensuring allocative efficiency	Mandating the manufacturers of electronic goods to collect and recycle e-waste will reduce the likelihood of toxins from the e-waste being released into the environment (Extract 2). Hence, lesser toxins discharged will lead to lesser harm to the ecosystem. When this happens, the marginal external cost of consuming electronic goods is decreased. As such, there would be a smaller divergence between MSC and MPC (the MSC shifts towards the MPC). In such cases, the degree of market failure would also decrease. This is illustrated in the diagram below.													



Referring to the diagram above, the original market equilibrium is at Q_e where $MPB = MPC$. The original social optimum is at Q_{s0} where $MSB = MSC_0$. The original deadweight loss is area $A + B$. As the R&D reduces the external cost, the MSC will decrease from MSC_0 ($MPC + MEC_0$) to MSC_1 ($MPC + MEC_1$). This causes the social optimum to shift from Q_{s0} to Q_{s1} where $MSB = MSC_1$. The deadweight loss is thus decreased to the area B .

If the mandate can reduce external costs to zero, it would be the ideal solution as there would be no need to reduce production or consumption of electronic goods.

Anti-thesis:

Mandate to collect and recycle e-waste is ineffective in ensuring allocative efficiency - limitations (Explain any 2 limitations)

High Opportunity Cost

However, the mandate is limited in its effectiveness in ensuring allocative efficiency. While the mandate reduces the deadweight loss through targeting the root of the problem by removing the negative externality, it still involves high monitoring and enforcement costs. Hence, there is a huge opportunity cost incurred as the money could have been allocated to other critical national needs such as healthcare and education. Therefore, the mandate may not ensure allocative efficiency in the economy.

Negative externalities cannot be fully removed with the existence of the informal recycling sector

Additionally, unless the negative externality can be completely removed (i.e., MEC decreased to zero), there will still be some market failure. The mandate does not require the manufacturers to collect back all the electronic goods sold. The collection target for smaller consumer electronics like laptops and mobile phones is only 20% (Extract 4). Furthermore, consumers, being self-interested, would rather sell their unwanted electronics to rag-and-bone men, than deposit them into collection bins. (Extract 4). Most of the electronic wastes, not collected through the proper channels, however, are not properly handled and

		<p>recycled. Thus negative externality still exists and the mandate would not be effective in ensuring allocative efficiency.</p> <p><u>Increasing demand for electronic goods may worsen AE</u> According to Extract 2, there is 'planned obsolescence' in the design of electronic goods. For example, consumers are compelled to buy new smart phones ever so often as their old ones become obsolete or non-functional. This demand for new electronic goods is also set to rise with the 5G network kicking in. Hence, as explained in part (c), the allocative inefficiency may worsen instead of improve and the mandate would not be effective.</p>																
	<p>Evaluative Conclusion</p> <ul style="list-style-type: none"> - To what extent is the policy effective? Why? - Suggestions? 	<p>In conclusion, making it mandatory for manufacturers to collect and recycle e-waste may not be significantly effective in ensuring allocative efficiency, in both SR and LR. In the electronics industry where dynamic efficiency is valued, products become obsolete rapidly and the amount of e-waste generated will increase. The mandate, though limited in its effectiveness, forces firms to take steps to reduce wastage. On their own, firms, being profit maximisers, would not have engaged in mining e-waste as it is not profitable on a small scale (Extract 4). For the policy to be more effective, the government should complement it with the use of other policies as the problem involves many stakeholders and a circular economy can only be created with the cooperation of everyone. One measure which the government could undertake would be to change the mindsets of consumers through moral suasion or education. They need to convince consumers to deposit their unwanted electronic goods to the designated collection bins in the malls. With economies of scale, firms would then find recycling more profitable and a mandate may not be necessary at the time.</p>																
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Question 2: India's Economic Woes

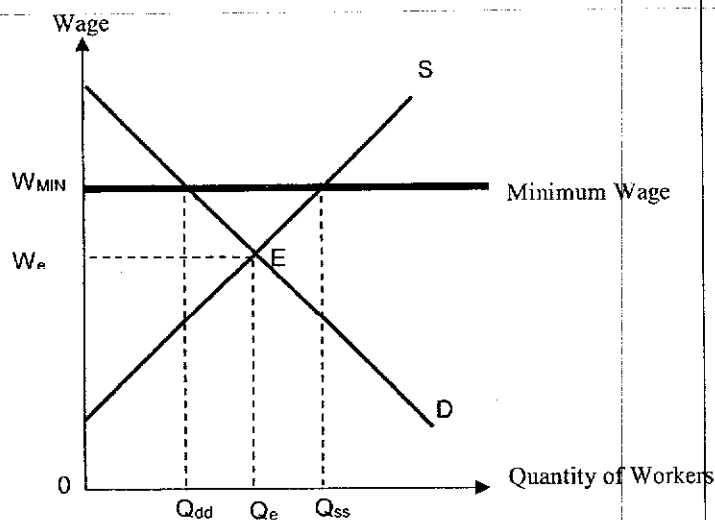
(a)	With reference to Table 1, state what happened to consumer prices between 2015 and 2019.	[2]
	Consumer prices increased at a decreasing rate between 2015 and 2019.	
(b)	Explain whether a GST cut (Extract 5) will lead to an increase in consumer expenditure on different types of goods.	[4]
	<p>A GST cut reduces the cost of production, leading to a rise in the supply of a good. [1] A surplus results at the original price and puts a downward pressure on the price. [1]</p> <p>Consumer expenditure, which is price multiplied by quantity, on a good will increase if the demand for the good is price elastic as quantity demanded rises more than proportionately to fall in price. [1]</p> <p>However, if demand for the good is price inelastic, quantity demanded will rise less than proportionately to the fall in price, resulting in a fall in the consumer expenditure. [1]</p> <p><i>1m for linking GST cut to a rise in SS</i> <i>1m for explaining impact of a rise in SS on the price of a good</i> <i>1m for explaining how CE would rise if IPEDI > 1</i> <i>1m for explaining how CE would fall in IPEDI < 1</i></p>	
(c)	Explain how "depressed crop prices" (Extract 5) might play a big role in India's economic slowdown.	[4]
	<p>'Depressed crop prices' refers to a sustained period of falling agricultural prices. As profit margins fall, agricultural producers lose confidence in the economy and hence investment spending (I) falls. [1]</p> <p>In addition, farm workers, in anticipation of lower wages and the higher prospect of losing their jobs, reduce consumption expenditure (C). [1]</p> <p>The fall in I and C leads to a fall in AD and hence a fall in national income via the multiplier effect. [1]</p> <p>Since half of India's population works in the agricultural sector (Extract 6), the fall in C would be significantly large and hence play a big role in dragging down the growth rate leading to India's economic slowdown. [1]</p> <p>OR</p> <p>Size of multiplier ($1 / MPW$) is likely to be large since the majority of Indians are poor and has low marginal propensity to withdraw as they spend most of their additional incomes on locally produced necessities. Hence NY falls to a large extent with the depressed crop prices, leading to an economic slowdown. [1]</p> <p><i>1m for explaining impact on I</i></p>	

	<p>1m for explaining impact on C</p> <p>1m for explaining how the fall in I & C leads to a fall in NY</p> <p>1m for explaining 'big role' of depressed crop prices</p>							
(d)	With reference to Extract 6, identify two causes of youth unemployment in India.	[2]						
	<p>Extract 6 mentions a 'mismatch of jobs available and the skills of job-seekers' indicating structural unemployment [1] while 'a sharp fall in private investment' leads to a demand-deficient / cyclical unemployment. [1]</p> <p>1m for evidence and identification of each type of unemployment</p>							
(e)	Using the case material and your own knowledge, assess whether a minimum wage law will improve living standards in India.	[8]						
<div style="border: 1px solid black; padding: 10px;"> <p>Question Analysis</p> <p>Command word: "Assess" → explain both sides and give an evaluative conclusion</p> <p>Content: "whether a minimum wage law will improve living standards"</p> <ul style="list-style-type: none"> • Thesis: A minimum wage law will improve living standards • Anti-thesis: A minimum wage law will not improve living standards <p>Context: India</p> </div>								
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Additionally, with higher incomes, households could improve their own non-material SOL by consuming goods and services that do that. For example, with higher purchasing power, they could have consumed food of better quality, which contributes to better health and hence, longer life expectancies. The increase in purchasing power could also increase the ability of Indian families to send their children to school, causing an increase in school enrolment rates. Since health and education are both aspects of non-material SOL, minimum wage also helps to improve non-material SOL.

Anti-thesis:
Minimum wage may not improve SOL

However, not all workers benefit from the minimum wage and SOL may not improve for these workers. As seen from the diagram below, the equilibrium wage is at W_e , where the demand for and supply of labour intersects. Minimum wage is set above the equilibrium wage at W_{min} . A minimum wage would decrease the quantity demanded of labour from Q_e to Q_{dd} (as firms want to hire fewer workers when the wage rate is higher) and increase the quantity supplied of labour from Q_e to Q_{ss} (as people are more willing to work when the wage rate is higher). The resultant surplus of labour ($Q_{ss}Q_{dd}$) represents unemployed labour. Those who are unemployed as a result of the minimum wage may see their earnings drop to zero and their living standards worsen.



Even for those who are able to retain their jobs, SOL may not improve. Their higher incomes may not translate into higher real purchasing power as the cost of living might be increasing faster. This can be inferred from the much lower minimum wage of 176 Indian rupees compared to the recommended rate of 375 Indian rupees which would

	<p>likely have taken into consideration the cost of living in India. (Extract 7) In addition, a minimum wage would increase the cost of production of producers who may then pass on this higher cost to the consumers in terms of higher prices of goods and services. Hence, the minimum wage may not lead to an improvement in SOL.</p> <p>Furthermore, workers who earn a wage above the minimum wage may also be adversely affected. There would be a lack of incentive for firms to pay a wage that is higher than the minimum wage as firms seek to minimise costs. This could mean that workers who are previously earning a wage higher than the minimum wage could see a drop in their earnings and a worsening of their SOL.</p>													
<p>Conclusion - Take a stand on whether minimum wage will improve living standards in India</p>	<p>In conclusion, a minimum wage law may bring about improvement in the living standards of some workers in India in the short run. However, over time, as producers adjust to the higher cost of living and if the minimum wage is not adjusted accordingly, real incomes will fall and Indian households will be worse off. Also, as mentioned in Extract 7, a minimum wage law may not offer protection to those employed in the informal sector. If the government does not monitor the labour markets and prevent exploitation of the workers, the living standard in India is unlikely to improve with the minimum wage law.</p>													
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(f)	<p>In light of the unemployment problem in India, discuss whether a cut in corporate taxes or increase in government spending is a better approach for India to achieve sustained and inclusive growth.</p>	[10]												
	<p>Question Analysis</p> <p>Command word: "Discuss" → explain both sides and give an evaluative conclusion</p> <p>Content: "whether a cut in corporate tax or increase in government spending is a better approach for India to achieve sustained and inclusive growth"</p>													

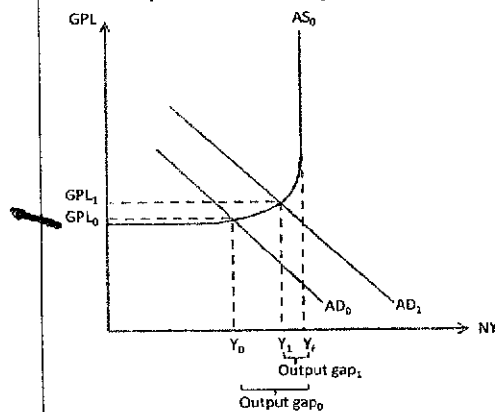
- Thesis: A cut in corporate tax leads to sustained & inclusive growth
 - Anti-thesis: A cut in corporate tax may not lead to sustained & inclusive growth
- (repeat the above for an increase in government expenditure)

Context: "In light of the unemployment problem in India"

Requirement	Suggested Answer
Introduction - Define sustained & inclusive growth	Sustained growth refers to a positive and stable rate of growth that can be maintained over a prolonged period. This would require both actual and potential growth. Inclusive growth refers to a rate of growth that is sustained over a period of time, is broad-based across economic sectors, and creates productive employment opportunities for the majority of the country's population. It is economic growth that takes income distribution into consideration and does not contribute to worsening income inequality. To determine which policy is better, we would have to examine the effectiveness of each policy, the limitations, constraints and unintended consequences in achieving sustained and inclusive growth for India.

Thesis 1:
 Explain how a cut in corporate tax leads to sustained and inclusive growth

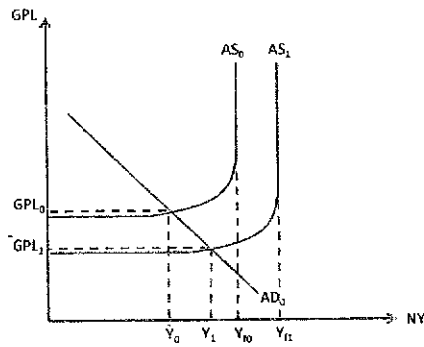
A cut in corporate tax may bring about sustained growth for India. It would result in firms having higher after-tax profits, thus higher expected rate of returns on their investment for firms. As such, firms are likely to demand for more capital goods, leading to an increase in investment expenditure (I). Since the Indian economy is not at full employment, the increase in I would then lead to an increase in AD and a multiplied increase in national income via the multiplier effect, bringing about actual growth.



As shown in the diagram above, an increase in I would lead to an increase in AD, shifting the AD curve to the right from AD_0 to AD_1 . The real NY would increase from Y_0 to Y_1 .

Furthermore, with an increase in investment, the quantity of capital goods in the economy will increase in the future, leading to an increase in LRAS and hence potential growth.

		<p>Thus, a cut in corporate tax would address the economic slowdown and cyclical unemployment that India is facing. Since demand for labour is a derived demand, an increase in real NY implies more production activities and greater employment opportunities for Indian citizens. Hence, a cut in corporate tax would bring about sustained and inclusive economic growth.</p>	
	<p>Anti-thesis 1: Limitations of a cut in corporate tax</p>	<p><u>Limitations in achieving sustained growth</u> However, low corporate tax might not lead to an increase in investment and hence growth. Banks are reluctant to lend because of the "huge crisis" of bad debts (Extract 6). This may result in high interest rate and hence cost of borrowing and investments may fall instead. Also, low corporate tax may not be sufficient to attract FDIs as India is lacking in terms of a well-developed infrastructure and corruption and red tapes make it difficult to conduct business in India. Hence, sustained growth may not materialise.</p> <p><u>Limitations in achieving inclusive growth</u> In terms of inclusive growth, a corporate tax cut may attract investments that benefit only a small portion of the economy. For example, the sectors which are growing are modern services like telecom, education, health, banking which create jobs for workers who are more educated and highly skilled. There is little job creation for the large majority of the population who lacked skills as entry-level jobs are automated with robots and artificial intelligence. Hence, growth brought about by low corporate tax may not be inclusive.</p>	
	<p>Thesis 2: Explain how an increase in government spending leads to sustained and inclusive growth</p>	<p>An increase in government spending could refer to government spending on infrastructure, education as well as healthcare and public services (Extract 6). It leads to either an increase in government expenditure (G) or investment (I), increasing AD and NY in the short run via the multiplier effect. This actual growth would be inclusive if the increase in government spending is targeted at the poorer households.</p> <p>In the long run, government spending with supply-side effects would bring about sustained growth. For example, building more infrastructure such as telecommunication and transportation networks to ensure greater connectivity could result in sustained growth because such infrastructure are capital goods that help increase the productive capacity of the economy both through an increase in quantity of factors of production (i.e., capital) and also through increasing productivity. Similarly, subsidising education and training could result in improved labour productivity and an increase in productive capacity.</p> <p>The increase in productive capacity would cause a rightward shift of the LRAS curve, and the increase in productivity would cause a fall in the average cost of production, which would cause a downward shift of the SRAS curve. Together the outward shift of the AS curve would lead to achieving actual growth (from Y0 to Y1) and potential growth (from Yf0 to Yf1) as shown in the diagram below.</p>	



This growth could be inclusive because improved infrastructure would improve accessibility of necessities like healthcare and education to poorer households. Additionally, this growth can be inclusive since training and education helps to reduce occupational immobility of the workers in the sunset industries, who tend to be low wage workers. With the retraining, they can now take up jobs in other sectors where wages are higher. Therefore, attending retraining courses will also help low-wage workers receive higher income in future, narrow the income gap between the rich and the poor, thus achieving inclusive growth.

Anti-thesis 2:
Limitations of an increase in government spending

Limitations in achieving sustained growth

However, the Indian government may be limited in carrying out these increases in government spending. This is because huge government spending would be required for infrastructure development and the Indian government may be unable to afford it given their budget deficits (Table 1). If the government borrows to finance its increase in spending (Extract 5), it will result in an increase in demand for loans, causing interest rates to rise. Cost of borrowing for households and firms rises and consumption and investment may fall. This is known as the crowding out effect which limits the increase in NY.

Limitations in achieving inclusive growth

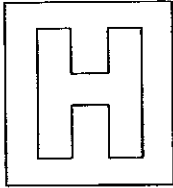
In the long run, higher government borrowing today may mean that taxes will have to rise in the future. This raises inequity issues as the welfare (from higher government spending) of the current generation was enhanced at the expense of the future generations who will experience the rise in tax rates.

Subsidies for education and training may also not bring about inclusive growth if low-wage workers are unable or unwilling to pick up new skills. As such, they would not be able to move into higher-paying jobs. Also, retraining takes time and may not be successful as it is difficult to forecast the future economic needs and hence come up with appropriate and relevant courses.

<p>Evaluative Conclusion: Which policy is better?</p>	<p>In conclusion, given that the investors are unable or unwilling to invest in India because of structural factors, a cut in corporate tax would be unable to bring about a sustained and inclusive growth. With a young and growing workforce (Extract 6), government spending with supply-side effects would be a better approach for India to achieve sustained and inclusive growth in the LR as only better infrastructure and a more educated workforce will create a conducive business environment and attract the right kind of industries which can create productive jobs for the people. Additionally, since fiscal deficit rises slower than GDP growth, the government's ability to raise tax revenue is still rising faster than the national debt, indicating that the government can still service the debt and hence can afford to borrow money to finance its expenditures.</p>															
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Candidate Name: _____

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millennia
institute

2021 Preliminary Exams Pre-university 3

ECONOMICS

Paper 2 Essays

9757/02

16 September 2021

2 hours 15 minutes

Additional Materials: Answer Booklet

READ THESE INSTRUCTIONS FIRST

Write your name and class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams or graphs.
Do not use paper clips, highlighters, glue or correction fluid.

Answer **three** questions in total, of which **one** must be from Section A, **one** from Section B and **one** from either Section A or Section B.

You are reminded of the need for clear presentation in your answers.

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. **If you need additional paper, ask the invigilator for a continuation booklet.**

At the end of the examination, **write the question numbers attempted on the main answer booklet.**

The number of marks is given in brackets [] at the end of each question or part question.

This question paper consists of 3 printed pages and 1 blank page.

[Turn over

Answer **three** questions in total.

Section A

One or two of your three questions must be from this section.

- 1** GDP growth in Singapore fell drastically from 1.35 % in 2019 to -5.39% in 2020. The recent price war between Russia and Saudi Arabia in March 2020 has led to fall in prices of crude oil which is the main source of energy used in production.

Using economic analysis, discuss the likely effects of the above events on high-end coffee machines that brews gourmet coffee and its related markets in Singapore. [25]

- 2 (a)** Explain the difference between public goods and merit goods. [10]

(b) Discuss whether direct provision is the best solution to correct the above sources of market failure. [15]

- 3** Singapore's supermarket landscape is dominated by three big players: NTUC, Dairy Farm Holdings, and Sheng Siong.

(a) Explain how firms in the market structure in which supermarkets operate are likely to compete. [10]

(b) Discuss whether increasing competition in this market structure is likely to be beneficial or costly to society. [15]

Section B

One or two of your three questions must be from this section.

4 Table 1: Selected Key Economic Indicators of Singapore

Year	2018	2019
Gross Domestic Product (GDP) (in US\$ billion)	US\$373B	US\$372.1B
Balance of Trade (in US\$ billion)	US\$108.21B	US\$105.83B
Unemployment rate (%)	3.65%	3.1%

- (a) Explain the factors that will lead to sustainable growth in a country. [10]
- (b) Assess whether the economic indicators provided in **Table 1** are the best measure of changes in standard of living in Singapore. [15]
- 5 The COVID-19 pandemic has severely disrupted global economic activity, and led to both demand-side and supply-side shocks to the Singapore economy. International travel and the retail sectors have been severely affected. At the same time, supply chain disruptions have impacted businesses negatively. This resulted in the Singapore economy contracting by 5.4% in 2020.
- (a) Explain possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic. [10]
- (b) Assess the extent to which policies aimed at increasing the economic growth rate might cause difficulties for the economy. [15]
- 6 In its latest monetary policy statement, the Monetary Authority of Singapore (MAS) stated that it will maintain its policy stance of zero appreciation and concluded that this accommodative stance remains appropriate.

Source: MAS Monetary Policy Statement, April 2021

- (a) Explain why MAS's preferred choice as the instrument of monetary policy in Singapore is exchange rates rather than interest rates. [10]
- (b) Discuss whether exchange rate policy remains the best policy to maintain price stability in Singapore for the next few years. [15]

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Question 1

GDP growth in Singapore fell drastically from 1.35% in 2019 to -5.39% in 2020. The recent price war between Russia and Saudi Arabia in March 2020 has led to fall in prices of crude oil which is the main source of energy used in production.

Using economic analysis, discuss the likely effects of the above events on high-end coffee machines that brews gourmet coffee and its related markets in Singapore. [25]

Planning Table

		Either Market	
	Market 1: Market on coffee machine	Market 2: Related Market 1: Complementary Good – coffee capsules	Market 3: Related Market 2: Substitute Good- other cheaper alternatives
Event 1: Falling income	Effect on P & Q With YED & PES	Relate to Market 1 and explain effect on P & Q With XED & PES	Relate to Market 1 and explain effect on P & Q With XED and PES
Event 2: Falling oil price	Effect on P & Q With PED	Effect on P & Q With PED	Effect on P & Q With PED
Combined effect	Overall effect on P&Q Extent of shifts in DD & SS	Overall effect on P&Q Extent of shifts in DD & SS	Overall effect on P&Q Extent of shifts in DD & SS

Requirement	Suggested answer
Introduction	How the above events may impact the market for high-end coffee makers and its related markets in Singapore can explained using the concepts of demand, supply, price, income and cross elasticity of demand as well as price elasticity of supply.
Body I: Effect of decrease in income on demand (shift in DD) using YED & PES on the coffee makers market.	Demand, or effective demand, for a product refers to the quantity of a good or service which consumers are willing and able to buy at different price levels, over a specific time period, ceteris paribus. A fall in Gross Domestic Product in Singapore will lead to a decrease in the demand for coffee makers. A fall in Gross Domestic Product occurs when there is falling production in the country. When this happens, firms will employ less factor inputs from households and hence will pay them less factor income which will lead to a fall in national income.

As consumers' incomes change, their demand for a product will change too. The direction of the change in demand will depend on whether the good is a normal or inferior good. A normal good is a good which people will buy more when their income rises and vice versa. On the other hand, an inferior good is a good which people will buy more when their income falls since its substitutes are costlier.

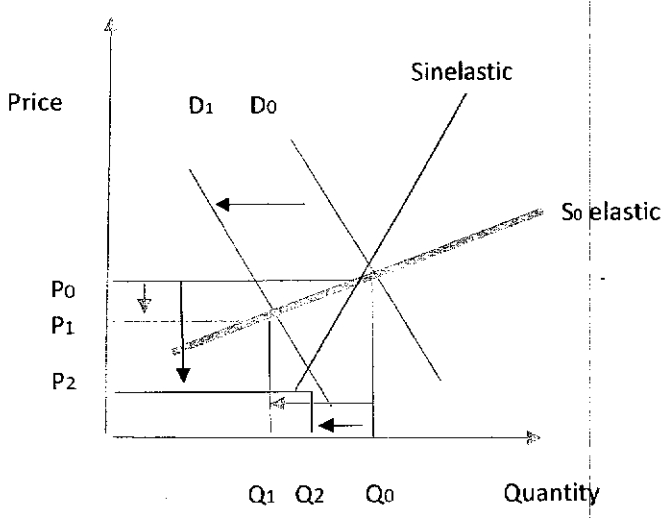
When consumers' income decreases due to the drastic fall in GDP growth in Singapore from 1.35% in 2019 to -5.39% in 2020, their purchasing power decreases. Hence, the demand for normal goods will decrease, shifting the demand curve for normal goods to the right.

The extent of the shift in demand for a good will depend on the income elasticity of demand. Income elasticity of demand (YED) measures the degree of responsiveness of demand for a good to a change in income, ceteris paribus.

Normal goods are further subdivided into necessities and luxurious goods. In this context, the high-end coffee makers are normal luxury goods. Hence the income elasticity of demand is positive and income elastic. The YED value is greater than 1 which means that a proportionate change in income will lead to a more than proportionate change in demand, ceteris paribus. If the income decreases by 10%, demand will decrease by more than 10%. There is a larger extent in the fall in demand for coffee makers when income falls.

When demand falls, there is a surplus of high-end coffee makers at the original price P_0 . As a result, there is tendency for the price of high-end coffee makers to fall. The fall in price of coffee makers will cause quantity demanded to rise and quantity supplied of coffee makers to fall until a new equilibrium is reached. When this happens, the equilibrium price and quantity will fall. When the demand for high-end coffee makers falls, whether the price or the quantity will fall to a larger extent will depend on the price elasticity of supply.

Price elasticity of supply (PES) measures the degree of responsiveness of quantity supplied of a good to a change in the price of the good itself, ceteris paribus. It involves a movement along the supply curve due to a change in price. The supply of high-end coffee makers is likely to be price elastic as the production time is likely to be short given that they are mass produced on assembly lines which are highly automated.

	 <p style="text-align: center;">Fig 1 : Market for coffee makers</p> <p>Due to the price elastic supply S_0, a fall in the demand from D_0 to D_1 leads to a large fall in the quantity of high-end coffee makers from Q_0 to Q_1 and a smaller fall in the price of high-end coffee makers from P_0 to P_1 compared to a supply curve that is price inelastic, where the fall in price will be of a larger extent from P_0 to P_2 and a smaller fall in quantity from Q_0 to Q_2 in the high-end coffee makers market.</p> <p>Therefore, the quantity of high-end coffee makers is likely to fall by a larger proportion than the fall in price as seen in Figure 1 above.</p>	
<p>Body II: Effect of fall in oil prices on supply (shift in SS) and price elasticity of demand on the private car market.</p>	<p>Supply, or effective supply, of a product refers to the quantity of a good or service which sellers are willing and able to offer for sale at different price levels, over a specific time period, ceteris paribus.</p> <p>A fall in crude oil prices will lead to a rise in the supply of high-end coffee makers in Singapore as crude oil is the main source of energy used in production and transportation. Lower cost of production will increase the supply of high-end coffee makers. When supply increases, there is a surplus of high-end coffee makers at the original price P_0. As a result, there is tendency for the price of coffee makers to fall. The fall in price of high-end coffee makers will cause quantity demanded to rise and quantity supplied of high-end coffee makers to fall until a new equilibrium is reached. When this happens, equilibrium price will fall and the quantity will rise.</p>	

When the supply of high-end coffee makers increases, whether the price or the quantity will change by a larger proportion will depend on the price elasticity of demand. The price elasticity of demand (PED) measures the degree of responsiveness of quantity demanded of a good to a change in the price of the good itself, *ceteris paribus*. It involves a movement along the demand curve due to a change in the price of the good.

The demand for high-end coffee makers is likely to be price elastic due to the large proportion of income spent on the good as coffee makers are generally expensive.

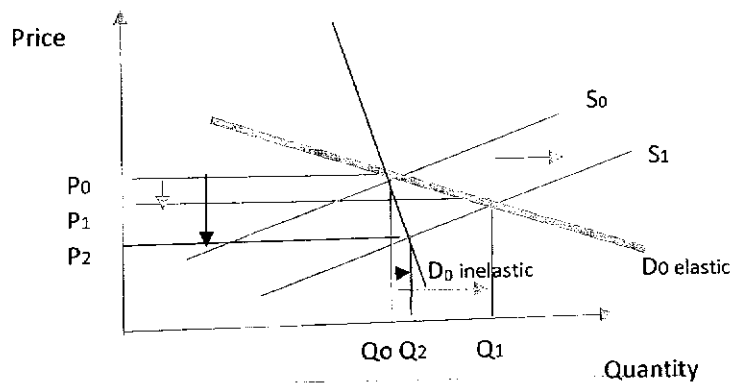


Fig 2 : Market for coffee makers

In the above diagram, due to the price elastic demand for high-end coffee makers $D_{0 \text{ elastic}}$, an increase in the supply from S_0 to S_1 leads to a large rise in the quantity from Q_0 to Q_1 and a small fall in the price from P_0 to P_1 compared to a demand curve that is price inelastic in demand, where the fall in price will be of a larger extent from P_0 to P_2 and a smaller rise in quantity from Q_0 to Q_2 in the high-end coffee makers market.

Therefore, the quantity for high-end coffee makers is likely to increase by a larger proportion than the fall in the price as seen in Figure 2 above.

Combined effect of both events on coffee makers market

The decrease in the demand and the increase in the supply of high-end coffee makers in Singapore will both lead to a **definite fall** in the price of coffee makers.

Although the decrease in the demand will lead to a fall in the equilibrium quantity, the increase in the supply will lead to a rise in the equilibrium

quantity. Therefore, the overall effect on the quantity will depend on the relative shifts in the demand and the supply.

As the decrease in national income is drastic which is stated in the preamble, and the income elasticity of demand for coffee makers is likely to be greater than one which means that the demand is likely to be income elastic as high-end coffee makers is a luxury good. The decrease in the demand is likely to be a larger extent.

Furthermore, the decrease in crude oil prices is likely to be small given that they have only started falling recently, hence the increase in supply of high-end coffee makers is likely to be small as fall in cost of production will usually take some time to kick in. Therefore, the decrease in the demand is likely to be greater than the increase in the supply and hence the overall quantity of high-end coffee makers is likely to fall, *ceteris paribus*.

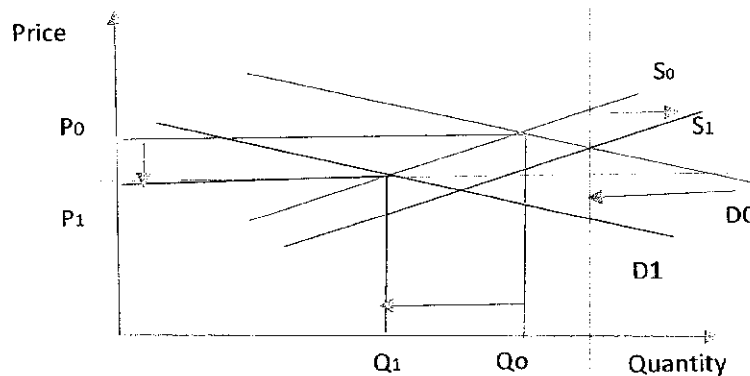


Fig 3 : Market for coffee makers

In the above diagram, a larger decrease in the demand from D_0 to D_1 and a smaller decrease in the supply from S_0 to S_1 leads to a fall in the price from P_0 to P_1 and a fall in the quantity from Q_0 to Q_1 .

Overall, we will see a smaller extent in the fall of high-end coffee makers prices and a larger extent in the fall in quantity.

Body III:
 Related market 1:
 Impact of the
 above events on
 the market for
 coffee capsules
 which is a
 complementary
 good to high-end
 coffee machines.

The above events will also affect the market for coffee capsules which is related to coffee makers. Coffee makers and coffee capsules are complements.

Cross elasticity of demand (XED) measures the responsiveness of demand for a good A to a change in the price of another good B, ceteris paribus. It involves a shift of the demand curve of one good in response to a change in the price of another good, ceteris paribus. As coffee makers and capsules are complements, the cross elasticity of demand is negative. The fall in the price of coffee makers will lead to an increase in the demand for coffee capsules.

However, given that there is an overall fall in the equilibrium quantity for high-end coffee makers, the overall demand for coffee capsules is likely to fall. The extent of the fall in price and quantity of coffee capsules will depend on the price elasticity of supply coffee capsules.

The supply of coffee capsules is price elastic due to the short processing and production time of coffee capsules. Therefore, the price of coffee capsules is likely to fall by a smaller proportion and the quantity will fall by a larger extent compared to if the PES is inelastic where the fall in price will be of a larger extent and quantity will fall by a smaller extent as seen in Figure 4 below:

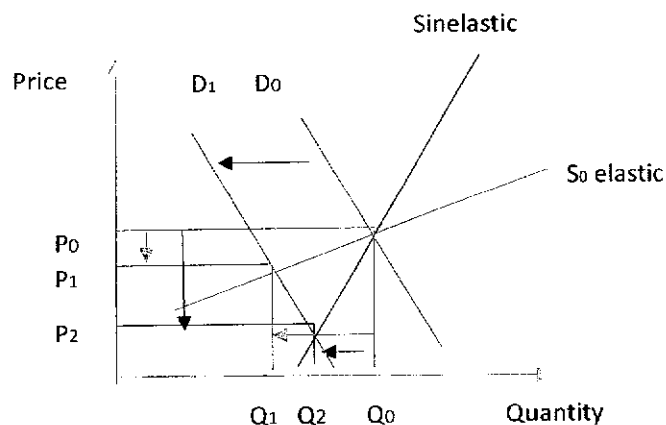


Fig 4 : Market for coffee capsules

The coffee capsules market will likely also be affected by the falling prices of crude oil as crude oil is the main source of energy used in production and transportation, hence there will be a fall in the cost of production for coffee capsules which will cause an increase the supply

of coffee capsules. When this happens, the price of coffee capsules will fall and the quantity will increase. The extent of the change in price and quantity will depend on the PED of coffee capsules.

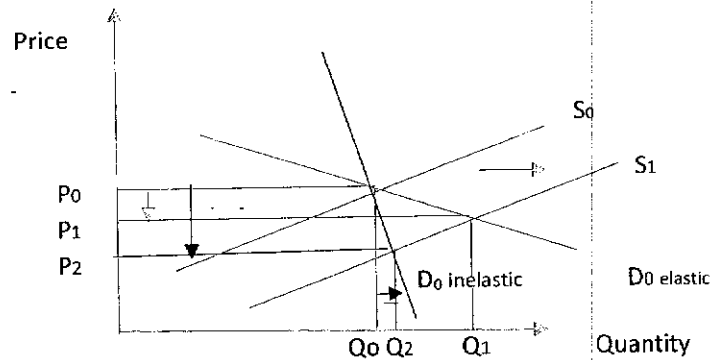


Fig 2 : Market for coffee capsules

The demand for coffee capsules is likely to be price elastic due to the availability of substitutes such as instant coffee. Therefore, the price is likely to fall by a small proportion and the quantity will increase by a larger extent compared to if the PED is inelastic where there will be a larger extent in the fall of price and smaller fall in quantity.

The decrease in the demand and the increase in the supply of coffee capsules will both lead to a fall in the equilibrium price.

Although the decrease in the demand will lead to a fall in the quantity, the increase in the supply of coffee capsules will lead to a rise in the quantity. Therefore, the effect on the overall quantity will depend to a large extent on the relative changes in the demand and the supply.

As the decrease in oil prices is likely to be small given that they have only started rising, the increase in the supply is likely to be small. Therefore, the decrease in the demand is likely to be greater than the increase in the supply and hence the quantity is likely to fall as seen in figure 5 below:

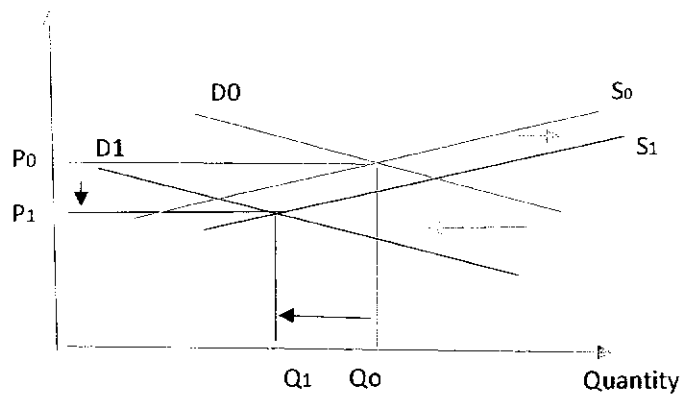


Fig 5 : Market for coffee capsules

Overall, we will see a smaller extent in the fall in price of coffee capsules and a larger extent in the fall in quantity.

Body IV:
Related market 2:
Impact of the
above events on
the market for
instant coffee

The above events will also affect the market for instant coffee which is related to the coffee machine market. Instant coffee are readily available in supermarkets and they are cheaper coffee alternatives and a competitor that does not require coffee machine at all.

Given that the overall quantity of coffee makers is likely to fall, the demand for such instant coffee is likely to increase.

If this happens, the price and the quantity will rise. The extent of the rise in price and quantity of instant coffee will depend on the price elasticity of supply instant coffee.

The supply of instant coffee is likely to be price elastic as the production time of instant coffee is likely to be short and instant coffee can be stocked in large quantities due to their small sizes. Therefore, the price is likely to rise by a smaller extent and the increase in quantity to a larger extent compared to if PES is elastic.

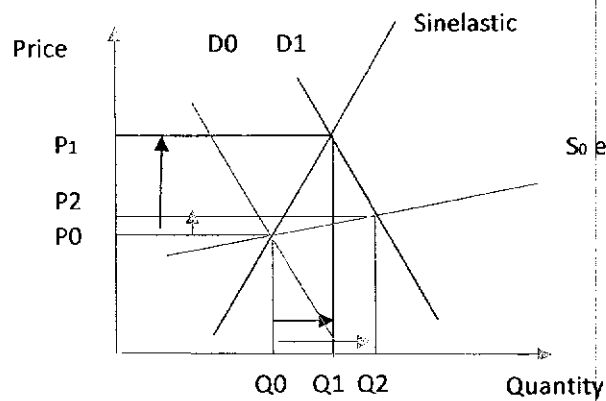


Fig 6 : Market for instant coffee

When oil prices fall, the cost of production of instant coffee falls which will increase the supply for instant coffee. When this happens, the price will fall and the quantity will rise. The extent of the fall in price and the rise in quantity of instant coffee will depend on the price elasticity of demand for instant coffee.

The demand for instant coffee is likely to be price elastic due to the availability of substitutes such as different brands and other beverages available. Therefore, the price is likely to fall by a smaller extent than the rise in the quantity.

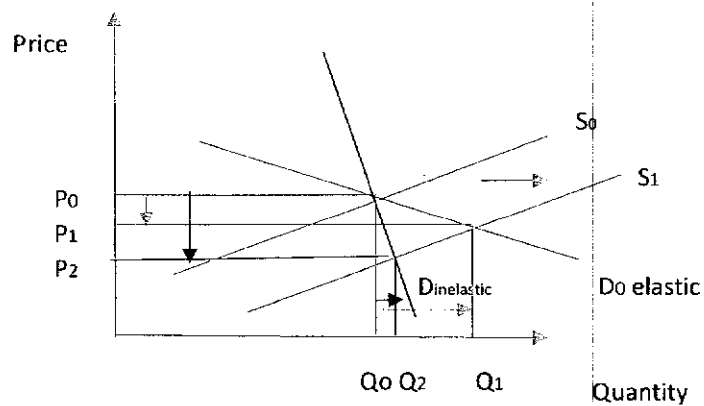


Fig 2 : Market for instant coffee

The increase in the demand and the increase in the supply will both lead to a rise in the quantity for instant coffee.

Although the increase in the demand will lead to a rise in the price, the increase in the supply will lead to a fall in the price for instant coffee.

As the increase in oil prices is likely to be small given that they have only started rising and it usually lags behind, the increase in the supply is likely to be small. Therefore, the increase in the demand is likely to be greater than the increase in the supply and hence the price is likely to rise for instant coffee.

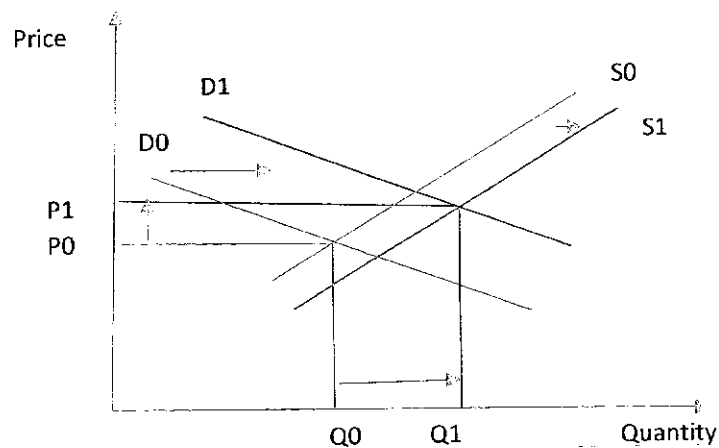


Fig 6 : Market for Instant Coffee

In the above diagram, a larger increase in the demand from D_0 to D_1 and a smaller increase in the supply from S_0 to S_1 lead to a rise in the price from P_0 to P_1 and a rise in the quantity from Q_0 to Q_1 .

Note:

Accept any other reasonable answers.

Conclusion

In the final analysis, although a decrease in national income in Singapore will lead to a decrease in the demand for coffee machines that brew gourmet coffee, the effects will be different on different types of coffee machines. A fall in national income is likely to lead to a large decrease in the demand for high-end coffee machines as high-end coffee machines are likely to be a luxury good and hence the demand is likely to be more income elastic while the demand for mid-range machines might fall by a smaller extent. In the case of low-end coffee machines, the demand may rise instead as low-end coffee machines may be an inferior good and coffee drinkers may switch to lower-end coffee machines when income is falling.

	<p>Although a fall in oil prices will lead to a fall in the cost of production of coffee machines, the cost of production may not stay at the low level in the long run as such low prices of oil may be temporary. If oil prices remain low, coffee machine manufacturers can always increase production now so that they have stock available to sell to consumers once the economy recovers so as to increase profitability.</p> <p>However, this conclusion is based on the ceteris paribus assumption. If ceteris paribus condition does not hold, other factors affecting any of the markets discussed here may cause the demand or supply curves to shift differently and these changes could have a different impact on the price and quantity.</p> <p>In addition, the strength of the elasticities may differ over time and this change would impact the coffee machines and its related markets differently.</p>
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Marking scheme

Level	Descriptor	Marks
L3	<p><u>High L3 (18-20)</u> Explains the effect of both events on the demand & supply of the coffee machines and ONE market related to the coffee machine market accurately. Application of elasticity concept for each of the explanations is accurate and well-developed. Good use of at least 3 elasticity concepts are applied.</p> <p><u>Low L3 (15-17)</u> Explains the effect of both events on the demand & supply of the coffee machine market and ONE market related to the coffee machine market accurately. Application of elasticity concept for each of the explanations is accurate and well-developed. Good use of at least 3 elasticity concepts are applied, however, there are <u>some gaps</u> in the application of the elasticities.</p>	15-20
L2	<p><u>High L2 (12-14)</u> Explains the effect of both events on the demand & supply of the coffee machine market and ONE market related to the coffee machine market accurately. Only two elasticity concept is applied accurately.</p> <p><u>Low L2 (9-11)</u> Explains the effect of both events on the demand & supply of the coffee machine market and ONE market related to the coffee machine market accurately with some attempt at application of elasticity concepts.</p>	9-14

	OR Explains the effect of both events on the demand & supply of the coffee machine market accurately BUT NO explanation of a market that is related to the coffee machine market. Only one elasticity concept is applied accurately in this market.	
L1	<p><u>High L1 (5-8)</u> Explains the effect of both events on the demand & supply of the coffee machine market accurately with no correct application of elasticity concepts.</p> <p>OR</p> <p>Explains the effect of ONE event on the demand & supply of the coffee machine market accurately. Only one elasticity concept is applied accurately in this market.</p> <p><u>Low L1 (1-4)</u> Shows some understanding of basic definitions but answer contains major conceptual errors about demand and supply analysis.</p>	1-8
E3	Provides judgement about the overall effect on P & Q in both markets, with well-explained justifications for the judgement in both markets AND recognition that assumptions underlying the judgements may not hold.	4-5
E2	Provides judgement about the overall effect on P & Q in both markets, with well-explained justifications for the judgement in both markets OR recognition that assumptions underlying the judgements may not hold.	2-3
E1	Provides judgement about the overall effect on P & Q in both markets/just one market with no justification for the judgement.	1

Question 2

- (a) Explain the difference between public goods and merit goods. [10]
(b) Discuss whether direct provision is the best solution to correct the above sources of market failure. [15]

Suggested Answer for Part (a)

CCCA	
Command	Explain
Content	Public Good, Merit Goods
Context	Any appropriate example would be acceptable.
Approach: Students are to elaborate on the key differences between public goods and demerit goods. Appropriate examples are to be used to illustrate these differences.	

Introduction

Public goods e.g. National Defence, are goods that have both the characteristics of non-rivalry and non-excludability. Non-rivalry in consumption means that when one person consumes a good, no less of the benefits of consumption are available to other people; while non-excludability in consumption is when it is impossible (or prohibitively costly) for producers to prevent non-payers from consuming the good/service they produce.

Merit goods e.g. Higher Education, are a special class of private goods which are deemed to be socially desirable by the government. However, they are under-consumed as they generate positive externalities and suffer from imperfect information where consumers tend to underestimate the true benefits of the good to themselves.

Body

- **Unlike Public goods, Merit goods are private goods and hence rivalrous and excludable**
- Public goods such as National Defence are non-rivalrous. This is because when there are armed forces in a country that deters other countries from attacking it, everyone in the country enjoys the same level of safety from invasion. It is not possible for the Singapore Armed Forces (SAF) for example, to exclude non-taxpayers specifically from protection. In contrast, Merit goods such as higher education are excludable since Universities can mandate that students pay fees before being allowed into the programme.
 - Public goods such as National Defence are non-rivalrous. This is because one more person being in the country and enjoying the protection by the army does not reduce the safety enjoyed by others. The presence of the army creates the same deterrence to other countries from invasion regardless of whether there are 5000 or 10000 people. In contrast, Merit goods such as higher education are rivalrous, since at scale, the number of students in a class has a significant impact on the quality of education (at least at traditional brick-and-mortar colleges).

➤ **Unlike Public goods, the marginal cost of providing merit goods is not equal to zero.**

- Due to the characteristic of non-excludability, public goods would suffer from the free rider problem, where it is possible for a person to consume a good without having to pay for it. For example, even if you do not pay taxes, the SAF cannot exclude you from its protection. So, you would still enjoy the protection without having to pay for it. Hence, this weakens the incentive for consumers to offer to pay for the good. Since demand for a good is the ability and willingness to pay for a good, when there is no willingness to pay for the good, there would be no demand for the good. Since there is no effective demand, it is impossible to charge a market price for the good. The good would not be produced at all. Hence, we say that there is a missing market for the good if left to the market. Due to the characteristic of non-rivalry, it also means that the marginal cost (MC) of extending national defence to additional people is zero. It does not cost any extra to protect the 5001st person (or the 5002nd and 5003rd person). Since $MC = 0$, the net benefits ($MB - MC$) of providing the public good to more people is large. Hence, when the good is not produced, the foregone net benefits are large. Thus, the good should be provided for free ($P=0$), however, this means that no profit maximising producers would provide the good. Due to these reasons, pure public goods are normally funded and provided by the government.
- In contrast, merit goods do not suffer from the free-rider problem (since it is excludable) and the marginal cost of providing it is not equal to zero, a seat taken up by one student means the same seat cannot be used by another student at the same time. Likewise, attention given to answering one student's question means that the lecturer will not be able to answer another student's question at the same time.

➤ **Reason for government intervention is different.**

- Hence, merit goods can be provided by either government or the private sector. Governments intervene in the case of merit goods so that consumption does not depend primarily on the ability to pay for the good or service. Whereas, in the case of public goods, it must be provided by the government as there is likely to be a missing market due to lack of effective demand and the private sector would be unable to supply them for a profit.

➤ **Unlike Public goods, Merit goods are rejectable.**

- Lastly, the collective supply of the public good by the government, which is funded by tax payers means that it is non-rejectable. Hence, a person in Singapore will be protected by SAF if war arises, regardless of whether he wants it or not. In contrast, Merit goods are rejectable. If the individual is not willing or able to pay for the good, they do not have to consume it. Hence, individuals who are not willing or able to pay for higher education will not be forced to attend classes.

Conclusion

Due to the implications from these 2 sources of market failure, it is important for the government to intervene. Hence, in the next part, I will be discussing if direct provision is the best approach.

L3	<ul style="list-style-type: none">• Analysis displays sufficient breadth and depth<ul style="list-style-type: none">▪ At least 3 differences between public good and merit good.▪ Rigorous, and accurate economic analysis of the 3 differences.• Application makes use of appropriate examples to support the analysis.	8–10
L2	<ul style="list-style-type: none">• Analysis displays insufficient breadth or depth of analysis<ul style="list-style-type: none">▪ Inadequate points of differences are brought up. (i.e. 1-2)▪ Economic analysis is relevant but may contain minor inaccuracies.• Application makes use of examples, but these may not be explained or accurately applied. (If no examples are used, cap at 5m)	5–7
L1	<ul style="list-style-type: none">• Analysis is irrelevant and/or contains gross inaccuracies<ul style="list-style-type: none">▪ Answer is irrelevant to question requirements (i.e. Answer merely explains characteristics of public good and merit goods without comparison.)▪ Economic analysis contains glaring misconceptions and/or is vague.	1–4

Suggested Answer for Part (b)

CCCA	
Command	Discuss whether
Content	Public Good, Merit Goods, Direct Provision, Market Failure
Context	Any appropriate example would be acceptable.
Approach: Students are to provide an argument on how direct provision is the best policy to solve market failure due to merit goods and public goods; and a counter-argument on how other policies might be better at solving the 2 forms of market failure. This is to be followed by an overall judgement supported by appropriate insight.	

Introduction

Direct Provision is when the government directly provides the good at the socially optimal output, Q_s . They can do so by becoming the producer or by paying private firms to produce the good. Some reasons why the government might carry out direct provision at a low cost or in most cases for free is due to social justice or when the good generates large positive externalities. In this essay, I will consider if direct provision is the best way to solve market failure due to merit goods or public goods, or if other policies are better.

Body

➤ **Thesis: Direct Provision is the best policy to address market failure due to public goods.**

As explained in part (a), the problem of the missing market arising from a lack of effective demand due to the characteristic of non-excludability; as well as the need to provide the good at $P=0$ in order to be allocative efficient, due to the characteristic of non-rivalry causing the marginal cost of providing the good to be zero, rendering no profit-maximising private entity being willing to provide the good - would mean that direct provision would be the best way to deal with public goods, since it would not be produced by anyone else. Hence, national defence has to be provided by the government.

➤ **Anti-thesis: Direct Provision is not the best policy to address market failure due to public goods.**

However, reliance on government as sole provider could bring about unintended consequences in the form of dynamic inefficiency and productive inefficiency. As there is no threat of competition from other producers, this reduces the desire and incentive to innovate and drive progressive changes on technology used or product/service offered, creating a situation of dynamic inefficiency. Society's overall welfare reduces.

In the same way, the absence of competition is likely to result in a sense of complacency to keep costs low. This would result in productive inefficiency whereby the government would incur higher average costs than the lowest possible average cost for a given output level.

➤ **Evaluation**

However, despite the above limitations, direct provision is the only method to address market failure due to public goods. Hence, it would still remain the best method. However, the government can consider out-sourcing some components of the work to private sectors. The expertise of private firms may help the government in reducing dynamic and productive inefficiency. For example, the outsourcing of the washing of armored vehicles, setting up and dismantling of communication equipment as well as store management of combat equipment is out-sourced to civilian private companies by the SAF.

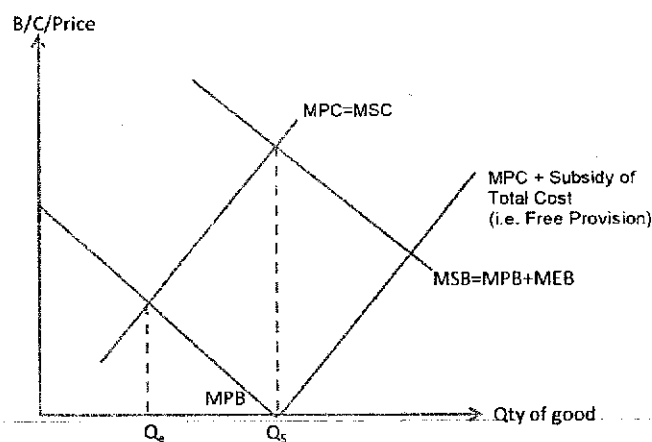
➤ **Thesis: Direct Provision is the best policy to address market failure due to merit goods.**

As defined in Part (a), Merit goods are considered to be socially desirable by the government, but are under-consumed as they generate positive externalities and suffer from imperfect information where consumers tend to underestimate the true benefits of the good to themselves.

Childhood immunization is a merit good that generates tremendous positive externalities as it prevents the spread of infectious diseases such as smallpox and tuberculosis (TB) to third parties, once an individual is vaccinated, hence preventing death. However, this may not be

taken into account by the individual (or their parents). Additionally, they may not be aware of the benefits (i.e. preventing severe illness or death) of these childhood vaccinations to themselves (or their children). These reasons would render childhood immunization under-consumed if there is no government intervention.

As the external benefits to others are large in the case of childhood immunizations, direct provision where the price is zero would be the best policy. When the external benefit is large, the government should provide the good for free ($MPC=0$). Since consumers would consume until $MPC=MPB$, they would maximize their private benefit and consume up to $MPB=0$ (i.e. up to Q_s). This would increase society's consumption to be in alignment with the socially efficient outcome where $MSB=MSC$.



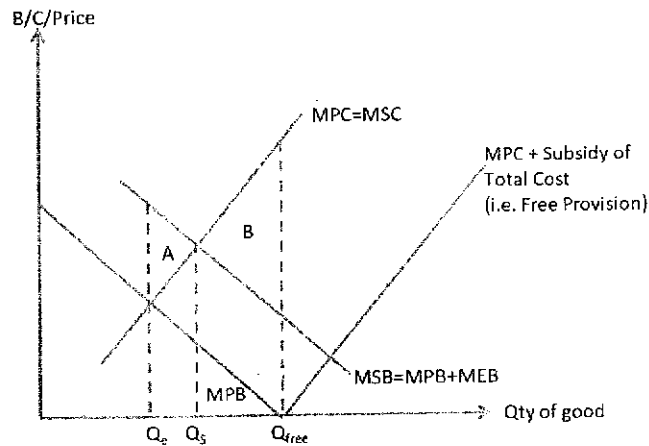
- **Anti-thesis: Direct Provision is not the best policy to address market failure due to merit goods – Not addressing the Root Cause.**

However, although society's consumption level is increased, direct provision does not address the root cause of the problem, especially in the case of imperfect information where consumers underestimate the true benefits of the childhood immunization to themselves.

Hence, public education is a better policy. Thus, the Ministry of Health (MOH) in Singapore has set up the National Immunisation Registry (NIR) which collects and maintains accurate, complete and current vaccination records of all who reside in Singapore. The website not only allows parents to track their children's vaccination schedules but also offers useful information to parents on the benefits of childhood vaccinations. This will help parents to be aware that the actual private benefits of vaccination are higher than the perceived private benefits of vaccination. Hence, socially optimum quantity consumed would be at D (perfect info) = Supply. This directly addresses the root cause of both sources of market failure and is a longer term solution.

➤ **Anti-thesis: Direct Provision is not the best policy to address market failure due to merit goods – May Create a Bigger Welfare Loss**

As explained in part (a), higher education is another example of a merit good. However, in the case of higher education, the positive externalities generated is likely to not be as high as childhood immunisations. Thus, the divergence between MSB and MPB is not great enough to justify direct free provision.



In the figure above, if higher education were directly provided by the government for free, consumers would maximize their private benefit and consume up to $MPB=0$ (i.e. up to Q_{free}). Since the social optimum output is at where $MSB=MSC$ at Q_s , the resultant deadweight loss from the free provision is shown by triangle B. On the other hand if higher education was supplied by the free market without government intervention, production will be where $MPB = MPC$ at output Q_e . The resulting deadweight loss will then be triangle A.

Hence, if higher education is provided free, the resultant over-consumption would lead to a higher welfare loss as compared to the good being provided by the free market. Hence, in such a situation, direct provision would not be the best policy.

➤ **Anti-thesis: Direct Provision is not the best policy to address market failure due to merit goods – May be a huge burden on the government**

Hence, in most countries higher education is subsidised rather than provided for free. The government would provide a per unit subsidy of $MEB=Q_s$. This would lower the cost of production of the higher educational institutions, and their MPC would shift rightwards to MPC^* , such that the consumption of education would be at $MPC^*=MPB$. This would coincide with $MSB=MSC$ (i.e. the socially optimum level of output).

Additionally, the provision of a subsidy is likely to be more sustainable than direct provision as it creates less of a burden in terms of government funding.

Overall Evaluation/Insight

In the case of public goods, direct provision would be the best solution since the good would not be provided by any private entity. However, governments should explore sub-areas where partnership with private entities would be possible so as to increase the efficiency and effectiveness of government provision.

However, in the case of merit goods, direct provision may not be the only way, or the best way. Direct Provision would be most useful where positive externalities are large, nevertheless, it can only be used as a short run strategy, since it does not address the root cause of the problem in helping society to understand why there should be higher consumption levels of the good. In situations where positive externalities are not large, it is clear that other policies should be adopted so as to avoid government failure.

Additionally, the stress on the government budget would be a real concern. Hence, governments should carefully assess the need for direct provision and move towards public education which would help address the problem at its root.

L3	<ul style="list-style-type: none">• Analysis displays sufficient breadth and depth<ul style="list-style-type: none">▪ Balanced discussion addressing benefits and costs of whether direct provision is the best policy in the case of public goods and merit goods.▪ At least 2 alternative policies are considered.• Application makes use of appropriate examples to support the analysis.	8-10
L2	<ul style="list-style-type: none">• Analysis displays insufficient breadth or depth of analysis<ul style="list-style-type: none">▪ Balanced discussion addressing benefits and costs of whether direct provision is the best policy in the case of public goods and merit goods, but with minor inaccuracies.▪ At least 1 alternative policies is considered.• Application makes of use of examples, but these may not be explained or accurately applied. (If no examples are used/ no alternative policies are provided <u>or</u> only public or merit goods are addressed - cap at 5m)	5-7
L1	<ul style="list-style-type: none">• Analysis is irrelevant and/or contains gross inaccuracies<ul style="list-style-type: none">▪ Answer is irrelevant to question requirements (i.e. Answer merely explains direct provision.)▪ Economic analysis contains glaring misconceptions and/or is vague.	1-4
E3	Overall stand is provided, with strong economic justification based on the arguments offered and meaningful insight is provided.	4-5
E2	Overall stand is provided, but some attempt at an economic justification.	2-3
E1	Overall stand is provided, but without justification.	1

Question 3

Singapore's supermarket landscape is dominated by three big players: NTUC, Dairy Farm Holdings, and Sheng Siong.

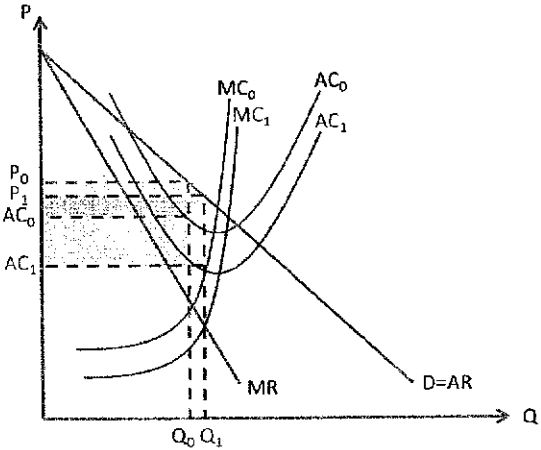
- (a) Explain how firms in the market structure in which supermarkets operate are likely to compete. [10]
- (b) Discuss whether increasing competition in this market structure is likely to be beneficial or costly to society. [15]

Suggested Answer for Part (a)

<p>Question Requirement Command: Explain Content: how firms (supermarkets) compete: price vs non-price strategies Context: oligopolistic market structure (preamble mentioned 'dominated by three big players') Approach: This question aims to explain how the key characteristics of an oligopoly guides it use of price and non-price strategies in order to maximise profit.</p>

Requirement	Suggested Answer
<p>Introduction: Identify the market structure</p>	<p>The market structure the supermarkets are operating in is the oligopolistic market which is dominated by a few large firms. Since the preamble mentioned that the supermarket landscape is 'dominated by three big players', they must then be operating in an oligopolistic market. The assumption is that the firms are profit-maximising.</p>
<p>Body 1: How they are likely to compete: Why they are <u>not</u> likely to use price strategy</p>	<p>Firms in the competitive oligopolistic market are mutually inter-dependent on each other because the action of any firm will have a large effect on the others. Hence, the supermarkets take into account how rivals will respond when making decisions.</p> <p>Once a price is set, the firms do not change the prices. While the rivals would match a fall in price, they would not likely match a price rise. This is because if an oligopolist considers reducing his price, he knows that his rivals will also react by reducing their prices. Thus, his reduction in price will only lead to a less than proportionate increase in quantity demanded of his product as few customers would switch over from his rivals. This would cause his TR to decrease. Hence, he would not decide to decrease his price. If he considers increasing his price, he knows that his rivals will maintain their prices in response. Thus, his increase in price will lead to a more than proportionate decrease in quantity demanded of his product as many of</p>

	<p>his customers would switch over to his rivals. This would also cause his TR to decrease. Hence, he would also not decide to increase his price.</p> <p>Hence there is price rigidity. Since the firms in this oligopoly do not change their prices to compete with their rivals, they would have to compete using non-price strategies.</p>
<p>Body 2: How they are likely to compete: The non-price strategies they might use : product differentiation</p>	<p>Since profits is the difference between total revenue and total cost, the firm could try to maximize its total revenue and minimize its total cost.</p> <p>The first non-price strategy firms could adopt to compete is to practice product differentiation or innovation. This could be done through R&D (product innovation) or creating perceived differences through advertisements. For e.g., supermarkets like NTUC and Dairy Farm Holdings both have their own housebrands of household items while carrying other brands common to each other. Sheng Siong tries to differentiate its brand by hosting the Sheng Siong show regularly which rewards its customers with attractive cash and other prizes. The differentiation of its brand will increase brand loyalty and hence increase the demand for the product and make it more price inelastic as seen in the diagram below.</p> <div data-bbox="523 1070 1045 1512" data-label="Figure"> <p>The graph plots Price (P) on the vertical axis and Quantity (Q) on the horizontal axis. It shows several curves: Marginal Cost (MC), Average Cost (AC), Marginal Revenue (MR), and Demand (D). The initial equilibrium is at quantity Q_0 and price P_0, where $MC = MR_0$. The initial profit is represented by a small shaded rectangle with height $P_0 - AC_0$ and width Q_0. After product differentiation, the demand curve shifts right and becomes steeper, moving from $D_0 = AR_0$ to $D_1 = AR_1$. The new equilibrium is at quantity Q_1 and price P_1, where $MC = MR_1$. The new profit is represented by a larger shaded rectangle with height $P_1 - AC_1$ and width Q_1. The graph also shows the shift in the Marginal Revenue curve from MR_0 to MR_1.</p> </div> <p>Figure 1: Effects of product differentiation/innovation</p> <p>In the diagram above, at the original demand D_0, the profit maximisation price and output where $MC = MR_0$ were P_0 and Q_0 respectively. At P_0 and Q_0, the supernormal profit was the small shaded area $((P_0 - AC_0) \times Q_0)$. With product differentiation/innovation causing an increase in demand and reducing the PED, the demand curve shifts right and becomes steeper from D_0 to D_1. The profit maximisation price and output where $MC = MR_1$ then becomes P_1 and Q_1 respectively. At P_1 and Q_1, the supernormal profit is now the larger shaded area $((P_1 - AC_1) \times Q_1)$. This increase in profit is mainly due to an increase in TR (from $P_0 \times Q_0$ to $P_1 \times Q_1$).</p>

	Hence, product differentiation helps firms increase their profits.
<p>Body 3: How they are likely to compete: The non-price strategies they might use: innovation</p>	<p>Another way in which the supermarkets compete is by directing its R&D towards finding more efficient ways to produce its products, e.g. using automated process in different parts of the production process. Examples include the introduction of self-service check-out stations, and offering online purchases. This process innovation reduce both the average cost of production and the marginal cost of production.</p>  <p style="text-align: center;">Figure 2: Effects of process innovation</p> <p>With reference above, with the original MC_0 and AC_0, the profit maximisation price and output where $MC_0 = MR$ were P_0 and Q_0 respectively. At P_0 and Q_0, the supernormal profit was the small shaded area $((P_0 - AC_0) \times Q_0)$. With process innovation, the MC and AC decrease from MC_0 and AC_0 to MC_1 and AC_1. The profit maximisation price and output where $MC_1 = MR$ then becomes P_1 and Q_1 respectively. At P_1 and Q_1, the supernormal profit is now the larger shaded area $((P_1 - AC_1) \times Q_1)$. This increase in profit is mainly due to a fall in TC (from $AC_0 \times Q_0$ to $AC_1 \times Q_1$).</p> <p>Hence process innovation has caused a decrease in price, an increase in output, and an increase in profit.</p>
<p>Conclusion:</p>	<p>Therefore supermarkets, being a competitive oligopoly will compete using non-pricing strategies, rather than pricing strategies due to price rigidity in this type of market structure.</p>

Mark Scheme for (a)

Level	Mark	Knowledge, Application/Understanding and Analysis
L3	8-10	<p>Thorough economic analysis of how supermarkets in the oligopolistic market compete by non-price strategies (product differentiation and innovation) rather than price strategies. There is explanation of price rigidity.</p> <p>Diagrams are accurately drawn and explained.</p> <p>Application is made to supermarkets using appropriate examples.</p> <p>(If no application is made to supermarkets using appropriate examples max L2 - 7m.)</p>
L2	5-7	<p>Sufficient economic analysis (diagrams are not accurately drawn/missing) of how supermarkets in the oligopolistic market compete by the non-price strategies (product differentiation and innovation) rather than price strategies. There is mention of price rigidity.</p> <p>Sufficient explanation of the 2 non-price strategies but no mention of price rigidity: max 6m</p> <p>Sufficient explanation of only 1 non-price strategy and price rigidity: max 6m</p>
L1	1-4	<p>For a descriptive answer with glaring conceptual errors.</p> <p>Mere listing of non-pricing strategies (max 2 m)</p>

Suggested Answer for Part (b)

<p>Question Requirement Command word: Discuss Content: Thesis: Increasing competition is likely to be beneficial to society Antithesis: Increasing competition is likely to be costly to society. Context: from oligopolistic market structure to 'monopolistic competitive' market structure</p>

Requirement	Suggested Answer
<p>Introduction: Explain terms: Increasing competition, Beneficial/ Costly To society</p>	<p>Increasing competition in this market structure would mean allowing or making it easier for more firms to enter this industry. It could mean moving from an oligopolistic market structure where there is domination by the three supermarkets to one where other firms can enter the industry and compete with these three. If the entry to this industry becomes increasingly easy, the industry could become monopolistically competitive in the long run.</p> <p>Whether this is likely to be beneficial or costly to society would be discussed in terms of whether society would be better off or worse off in terms of prices they pay for the goods due to improvement in efficiency, the choices/variety of goods they have and whether there is reduction in inequity.</p>
<p>Body 1: Thesis: Increasing competition is beneficial to society: Increase in allocative efficiency → lower prices, higher output</p>	<p>This essay will first discuss how increasing competition is beneficial to society.</p> <p>Firstly, when there is increasing competition in this market structure, there will be an increase in allocative efficiency. Allocative efficiency is achieved when the value that consumers place on the good or service (reflected in the price they are willing and able to pay) equals the marginal cost of the scarce factor resources used up in production. Hence, it occurs when $P=MC$.</p> <p>The nature of oligopolies means that with the downward sloping demand curve that each firm faces, they would not be allocatively efficient.</p>

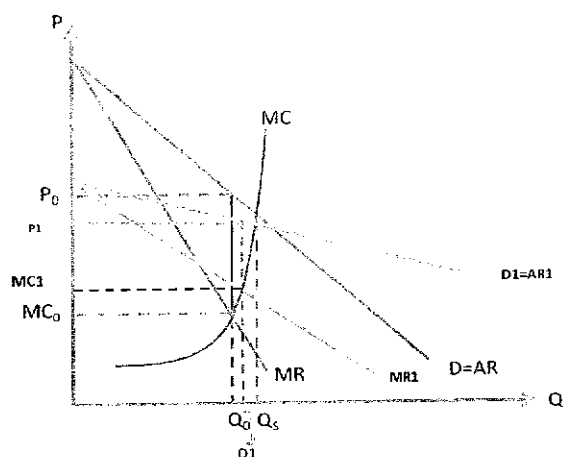


Fig 3: Equilibrium price and output of an oligopolist

With reference to Figure 3, initially with $D=AR$ and MR , profit is maximised when $MC = MR$ where price and output are at P_0 and Q_0 . At the profit-maximising level of output, the price is always above the MC .

$P=MC$ occurs at Q_s level of output but only Q_0 is produced by the oligopolist. Hence, the blue shaded triangle shows the deadweight loss which is caused by under-production of the good. The oligopolist's price exceeds its marginal cost ($P_0 > MC_0$). Since consumers value the last unit of the good (measured by price) more than it costs to produce (measured by marginal cost), increasing the output can increase the welfare of the consumers.

When there is increasing competition into the market, the demand ($D1$) and MR ($MR1$) of the firm becomes more elastic as their share of the market decreases. Profit is now maximized when $MC=MR1$ at $P1$ and $Q1$. Price ($P1$) is lower than P_0 and output ($Q1$) higher than Q_0 when there is more competition. $Q1$ is nearer Q_s , the output that society desires. The allocative inefficiency of the oligopolist ($P>MC$) is lessened with increasing competition, showing a reduction in the deadweight loss.

Hence, increasing competition is beneficial to society as consumers now pay a lower price and enjoy a larger output. Although allocative efficiency is still not achieved, the inefficiency and deadweight loss has been reduced. With an increase in output, there is less under-production in the society. Hence, increasing competition into the supermarket industry is likely to allow consumers to enjoy lower prices and greater output.

<p>Body 2: Thesis: Increasing competition is beneficial to society: Reduction in inequity</p>	<p>Secondly, increasing competition is beneficial to society as it reduces inequity in the society. Inequity occurs when there is a lack of fairness in the distribution of economic welfare.</p> <p>Oligopolists can earn supernormal profits even in the long run because of high barriers to entry. As firm owners were profiting at the expense of consumers, there is inequity. With increasing competition, firms are less able to earn supernormal profits in the long run. They are less likely to profit at the expense of consumers. This will improve the income distribution in the economy. Hence, increasing competition can reduce inequity and therefore this is beneficial to society.</p>
<p>Body 3: Thesis: Increasing competition is beneficial to society: Increase in Productive efficiency → lower</p>	<p>Lastly, increasing competition may help to eliminate X-inefficiency and bring about productive efficiency in the market. X-inefficiency is the situation when firms produce above the lowest possible cost at a given level of output i.e. above the LRAC. Productive efficiency occurs when firms are producing on the LRAC, indicating that they are producing at the lowest possible cost.</p> <p>The lax cost controls (e.g. overstaffing and spending on unnecessary equipment) in oligopolies could happen because of the lack of competitive pressure resulting in complacency since Oligopolists are able to earn supernormal profits in the long run.</p>
<p>cost → lower price</p>	<p>Hence, increasing competition into this market would mean that firms will be more focused on cost controls as that could affect their profit margins. Higher level of competition forces firms to be productive and cut out wasteful spending. This is beneficial to society as productive efficiency implies lowest a possible cost of production which may bring about a lower price for consumers.</p>
<p>Body 4: Thesis: Increasing competition is beneficial to society: More choice</p>	<p>Moreover, increasing competition gives society more choice and variety of the product. Choice is beneficial for society as they are not 'forced' to buy from a few sellers. This improves society's welfare.</p>
<p>Body 5 Antithesis: Increasing competition is costly to society</p>	<p>On the other hand, increasing competition in this market structure may also be costly to the society.</p> <p>Firstly, increasing competition may result in higher prices of goods for the consumers as it limits the amount of internal economies of scale that could be reaped.</p>

<p>: Increase in cost of production : inability to reap economies of scale → higher cost of production → higher price of good</p>	<p>As there are only a few firms producing a product, each oligopolist operates on a large scale and is able to reap internal economies of scale (cost savings). However, with increasing competition, the market is now shared with more firms, each of which would have a smaller share of the market. The smaller scale of production means that the firms may not be able to reap internal economies of scale (cost savings). Hence, firms may produce at a higher cost of production than the oligopolists. This may therefore result in higher prices of goods as internal economies of scale are not reaped.</p> <p>Moreover, it could also be argued that since oligopolists do not engage in price competition, it is in their own interests to keep their costs low so as to maximize their profits. They would have a strong incentive to cut out wasteful spending, making them productively efficient.</p>
<p>Body 6: Antithesis: Increasing competition is costly to society : no funds to engage in dynamic efficiency → less chance of development of goods → less product variety</p>	<p>Secondly, increasing competition may mean that dynamic efficiency has to be forgone. Dynamic efficiency is affected by whether firms have the ability and incentive to conduct R&D to develop and innovate products and or process, leading to better products/lower costs for consumers.</p> <p>Increasing competition may lead to more but smaller firms which would not be able to earn as much profits in the long run, as the oligopolist. This would limit the amount of funds (as well as lower the incentive) each firm has to engage in R&D.</p> <p>This inability or lack of incentive for development or innovation of products can be seen as 'costly' to society as there is lack of development/innovation of products or lower costs of goods that could have happened in the case of process innovation. The firms which enter the market because of increasing competition may provide more variety of goods but not necessary innovative or better quality products because they do not have that resources to pursue R&D.</p>
<p>Conclusion: Evaluative conclusion</p>	<p>While increasing competition in this market structure can be beneficial to society in increasing output and lowering price and reducing inequity and therefore income distribution, it can be costly to society in increasing cost of production (as internal economies of scale may not be achieved), reducing variety and development /innovation of goods.</p> <p>Whether increasing competition is likely to be beneficial or costly to society depends on the nature of the industry and the context in which it operates. In the case of supermarkets in Singapore, while it is dominated by the three big players, there are also many other firms co-existing with the big players. While their offer may not be as varied as the products offered by the big</p>

	<p>players, they do cater to a section of the society, for e.g. those who prefer the personalized service of neighborhood shops, those who prefer 'boutique' grocery stores. Hence, increasing competition further opens up choices for the consumers. Increasing competition is not likely to threaten the performance of the big three supermarkets due to their current market share. Increasing competition is therefore likely to be beneficial rather than costly to the society.</p>
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Mark Scheme for (b)

Level	Mark	Knowledge, Application/Understanding and Analysis
L3	8-10	<p>Thorough and balanced economic analysis of how increasing competition to the oligopolistic supermarket sector could be beneficial or costly to society in terms of allocative efficiency, productive efficiency (X-inefficiency), (presence of) internal economies of scale, choice and inequity. There is excellent ability to use the diagram(s) to explain the result of increasing competition in the oligopolistic market.</p> <p>Good use of examples appropriate to the context presented in both preamble and the question set</p>
L2	5-7	<p>Sufficient economic analysis of how increasing competition to the oligopolistic sector could be beneficial for costly to society. The analysis for the points are not always thorough although accurate.</p> <p>Answer is mainly one-sided (i.e. explanation of either beneficial/costly) but well-explained- max 5 m</p>
L1	1-4	<p>Shows smattering knowledge of the result of increasing competition on the industry. The meaning of the question is not fully grasped. There are some errors in concepts.</p> <p>Mere listing of points of benefits/costs to society. (max 2 m)</p>
E3	4-5	Well-explained judgment on whether increasing competition is likely to be beneficial or costly to society. The judgement is supported by good relevant examples and economic analysis.
E2	2-3	Attempt to explain evaluative comments is incomplete or inaccurate at times. No attempt to evaluate using the context of the supermarket.
E1	1	Evaluative comments are unexplained or unsupported by economic analysis.

Question 4

Table 1: Selected Key Economic Indicators of Singapore

Year	2018	2019
Gross Domestic Product (GDP) (in US\$ billion)	US\$373B	US\$372.1B
Balance of Trade (in US\$ billion)	US\$108.21B	US\$105.83B
Unemployment rate (%)	3.65%	3.1%

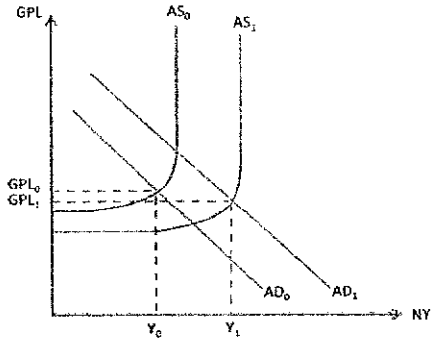
- (a) Explain the factors that will lead to sustainable growth in a country. [10]
- (b) Assess whether the economic indicators provided in **Table 1** are the best measure of changes in standard of living in Singapore. [15]

Suggested Answer for Part (a)

<p>Question Requirement: Command: Explain (cause and effects) Content: Sustainable economic growth: Sustained growth with rise in both AS and AD, the sustained growth must be done in a way that conserves the environment. Context: Singapore</p> <p>Approach: This answer requires an explanation of the factors that would lead to actual and potential growth, in order to achieve sustained growth. It also requires an acknowledgement of the importance of sustainable growth and the factors that would lead to it.</p>
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Requirement	Suggested Answer
<p>Introduction: - Define sustainable growth and indicate the factors that will lead to it</p>	<p>Sustainable economic growth refers to a rise in real GDP into the long run, at a rate which can be maintained without creating significant economic problems such as price instability, environmental and resource depletion for future generations.</p>
<p>Body 1: Rise in AD</p>	<p>The rise in aggregate demand for domestically produced goods and services such as from the household sector, firms, government and the foreign trade sector can be caused by a rise in the income of a country.</p> <p>For example when there is a rise in its national income, the level of consumption (C) for consumer goods and services such as normal and</p>

Requirement	Suggested Answer
	<p data-bbox="496 376 1353 846">luxury items such as houses and cars can also rise as household's power increases. If there is global economic growth, a country's net exports (X-M) will also increase. This has been true for trade dependent countries like Singapore where world economic growth brought about a rise in global purchasing power and hence witnessed increased demand for Singapore exports such as high end electronic, pharmaceutical and petrochemical products. Firms will want to increase their investment (I) on capital goods and expand their business to meet the rise in consumption and exports. The government can also increase aggregate demand by encouraging more spending through an expansionary fiscal policy (increase in G) by increasing its own capital expenditure such as building physical infrastructure and/or reducing taxes to increase the level of AD in the country.</p> <p data-bbox="496 880 1353 1093">The aggregate demand curve will shift outwards to AD1, leading rise in real national income via the multiplier. Hence bringing about actual economic growth. At the initial GPL_0, there is shortages with the increase in AD. This will push up the price and there is movement along AS. The new equilibrium is reached at GPL_0 and Y_1. National output has increased from Y_0 to Y_1. Actual Economic Growth is achieved.</p> <div data-bbox="699 1171 1161 1541" style="text-align: center;"> </div>
<p data-bbox="260 1671 355 1704">Body 2:</p> <p data-bbox="260 1738 384 1771">Rise in AS</p>	<p data-bbox="496 1659 1353 1877">However, a rise in aggregate demand alone will not ensure sustained economic growth. This is because an economy will overheat and raise the general price level to OP_1 when it reaches full employment of resources. Real GDP remains stagnant whilst the country struggles with rising prices. Hence another key factor to ensure real GDP continues into the long run would involve increasing the quantity and</p>

Requirement	Suggested Answer
	<p>quality of resources and the level of technology, which would allow potential economic growth to occur.</p> <p>Countries with challenges of ageing population like Singapore has seen government's continued investment in human capital to improve the quality of their workforce of both young and old through skills deepening and lifelong learning to sustain a rise in aggregate supply. Shortage of skilled labour would constrain economic growth in the long run due to a limit to the rise in its potential growth.</p> <p>Singapore labour productivity drive can be seen in Enhanced Continuing Education and Training (CET) Masterplan in 2014. This includes online training courses that adult learners can access. In addition, the 2015 SkillsFuture aims to develop an integrated system of education, training and career progression for Singaporeans, promote industry support for workers to advance based on skills, and to foster a culture of lifelong learning. This will increase the productive capacity of the country and enable the aggregate supply to continuously shift outwards from AS_0 to AS_1. With the rise in quality of labour force, unit cost of production will also fall, leading to rise in SRAS.</p> <p>Combining rise in AS and AD (i.e. actual with potential growth), GPL actually falls from GPL_0 to GPL_1 and national output rises from Y_0 to Y_1. Hence, there is sustained growth and price stability.</p> 
<p>Body 3:</p> <p>Having sustained growth is not enough – need to consider the</p>	<p>However, having sustained growth is not enough. It is also important for growth to be sustainable. This depends on whether factors of production will be depleted in the long run e.g. non-renewable resources such as oil. Similarly, environmental issues like pollution arising from greater production can affect sustainability. Hence, it is important for governments to ensure that sustainability is encouraged</p>

Requirement	Suggested Answer
depletion of resources	via investment and adoption of new technology that harnesses environmental friendly and efficient methods of production.
Conclusion Summarize the factors	Hence, factors influencing the rate of growth of aggregate demand and aggregate supply can determine whether a country's economic growth is sustained. Sustainable growth requires both actual and potential growth as well as a sustainable environment and resources pool in the long run.

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	Thorough explanation of factors affecting AD and AS and hence real GDP. At least 3 clear factors. Well labelled Diagram included. Concept of sustainable economic growth is clear: actual, potential, price stability and environmental and resource depletion issue	8-10
L2	Sufficient explanation of factors affecting AD and AS and hence GDP. At least one factor of AD and AS <u>or</u> one factor that could affect AD and AS. Lack of diagrammatic analysis – Cap at 6m One-sided answer i.e. either AD or AS- Cap at 6m	5-7
L1	Splattering of points. Some mention of relevant concepts, but explanation is vague and/or with gross inaccuracies.	1-4

Suggested Answer for Part (b)

<p>Question Requirement: Command: Assess Content: Thesis: Economic Indicators are good measures of changes in SOL (material and non-material SOL) vs Anti-Thesis: There are limitations to these indicators. Other indicators that may be needed. Context: Singapore</p> <p>Approach: This answer requires an argument on how the economic indicators provided are good measures of changes in SOL (both material and non-material), as well as a counter-argument on how other factors are need to measure changes in SOL.</p>

Requirement	Suggested Answer
Introduction:	GDP, employment rate and Balance of Trade (BOT) help to measure the economic performance and SOL in Singapore. Standard of living (SOL) refers to the welfare of the people and has both material and non-material aspects. The material aspect refers to the amount of goods and services that the average residents can consume and the non-material aspect refers to the intangibles that affect welfare such as the quality of the environment, the level of stress, etc. This essay seeks to discuss if the indicators referred to in Table 1 are the best measure of changes in SOL in Singapore.
Thesis Body 1: The GDP indicator is a good measure of changes in SOL in Singapore.	<p>From Table 1, we can see that there is a fall in GDP from 2018 to 2019. The fall in RNY in Singapore would lead to a similar change in Singapore's SOL.</p> <p>Assuming that there is no change in price levels, this would also indicate a fall in real GDP and hence real national income (i.e. Real NY). Assuming Singapore's population remains constant, real GDP per capita would have fallen. This implies that average incomes in Singapore would fall, causing average purchasing power to fall. This would mean that Singapore residents would decrease their consumption of goods and services. This would affect their material SOL.</p> <p>Additionally, the fall in purchasing power explained above may have resulted in less Singaporeans consuming higher quality food and healthcare, which contributes to worsening health. Since health is also an aspect of non-material SOL, the fall in RNY would also lead to worsening in non-material SOL.</p>

Requirement	Suggested Answer
	(Note: Also accept other plausible links from fall in NY to increase in non-material SOL if it can be explained in a sensible way)
<p>Thesis Body 2:</p> <p>BOT is a good measure of changes in SOL in Singapore.</p>	<p>A favourable BOP is one where the balance of trade is in surplus. Governments aim to avoid large and persistent BOT deficits because such deficits have negative consequences. If a country's balance of trade position worsens such that it has a balance of trade deficit, then the reduction in X-M would have caused AD to fall, causing a fall in NY and also a rise in demand-deficient unemployment.</p> <p>From the table, there is BOT surplus in 2018 and 2019. Singapore has a balance of trade surplus, it means that X exceeds M.</p> <p>Since M is a form of consumption (imports are consumed) while X is a form of production (exports are produced to be sold abroad), X exceeding M means that the country is actually producing more than it is consuming. A BOT surplus can improve future SOL. A BOT surplus can only come about when export revenue exceeds import expenditure. This implies that for the purpose of exchanging currencies to pay for goods and services, foreigners have bought more of the local currency (to pay for the exports) in the Forex market than locals have sold (to exchange for foreign currency to pay for imports). This mismatch implies that other locals must have sold local currency to buy foreign currency to purchase foreign assets. A BOT surplus would lead to an increase in AD and hence an increase in NY, which would lead to an increase in material SOL.</p>
<p>Thesis Body 3:</p> <p>Unemployment rate is a good measure of changes in SOL in Singapore.</p>	<p>Unemployment rate, which refers to the percentage of unemployed persons to the total labour force, plays an important role in determining the economic performance.</p> <p>From the table, there is a fall in unemployment rate, this indicates that people are able to earn higher income levels. Hence, they are able to enjoy greater consumption and purchasing power of more and better quality goods and services, leading to rise in material and non-material SOL.</p> <p>Additionally, severe hardships can be caused by prolonged periods of unemployment. Social research has shown that crime, mental illness and general social unrest tend to be positively associated with unemployment. All these social issues would have a harmful impact on non-material SOL. Hence, falling unemployment rates suggests that these have been reduced.</p>

Requirement	Suggested Answer
<p>Anti-Thesis:</p> <p>Limitations of the measures</p>	<p><u>GDP</u></p> <p>In my analysis above, population and price levels were assumed to be constant. However, if there a sharp increase in price levels between 2018 and 2019, this would imply that real GDP would have been more drastically affected than previously assumed. Hence, purchasing powers and consumption levels (in terms of quantity and quality of goods) would be affected more, resulting in a worse outcome for material SOL and non-material SOL.</p> <p>Likewise, if population had increased at a faster rate than GDP, this would also imply that material SOL and non-material SOL would have been worse.</p> <p>Another factor to take into consideration is the goods and services that have contributed to the fall in GDP. This is because the GDP has many components. So, if the fall in real GDP was due to a fall in the production of the production of defence goods, then even though real GDP per capita has fallen, there may not have been an actual impact on household consumption and so material SOL may not have fallen.</p> <p><u>Unemployment rate</u></p> <p>For unemployment rate, it may be limited in assessing the change in SOL because we may not know the types of jobs being generated. There could be more jobs created than lost but the jobs created may be low-paying ones while the jobs lost could be high paying ones. In this scenario, even though the unemployment rate falls, SOL may not improve. And income gaps between the rich and poor could worsen implying greater inequity.</p> <p><u>Other aspects</u></p> <p>Moreover, there are other aspects of non-material SOL such as mental wellness, leisure hours, crime, and political unrest. For example, Singapore has been high the ranks of many global surveys of having poor work-life balance. Thus, if increases in GDP is as a result of people putting in longer hours, this would actually be a undesirable impact on non-material SOL.</p> <p>Another thing to look at is air quality, due to economic production and industrialization, Singapore failed to meet its air quality targets for 2020 for certain air particles. Thankfully, Singapore is putting in place</p>

Requirement	Suggested Answer
	several measure to improve this, since worsening air quality would contribute to a worsening non-material SOL.
Anti- Thesis Other Indicator is needed	<u>HDI</u> Other than the indicators as mentioned above, it is good to also include HDI. The Human Development Index (HDI) is developed and published by the United Nations. It is a composite indicator of SOL, measuring 3 basic dimensions of human development, i.e. health, education and standard of living. The health dimension is assessed by life expectancy index. The education dimension is assessed using the education index, calculated using the mean years of schooling and expected years of schooling. Lastly, the standard of living dimension is assessed using the Gross National Income (GNI) per capita. This indicators takes into consideration the material and non-material aspects of SOL.
Evaluative Conclusion	To conclude, there are no best measures of economic performance to reflect changes in SOL. Each indicator has its pros and cons. The commonly used main indicators are GDP, growth rate, inflation rate, unemployment rate and BOP current account. To improve the reliability of the main economic indicators, it would be ideal to complement them with other indicators such as HDI and Gini Coefficient to give a more accurate insight change in SOL in Singapore. Gini coefficient provided a more assessment of welfare as it provides how the real national income is distributed among members of the population.

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	Well-developed 2-sided answer in explaining the use of the indicators in assessing the change in the standard of living (covering both material and non-material) in the Singapore economy over time and suggest at least one more indicator.	8-10
L2	Undeveloped 2-sided answer in explaining the use of the indicators in assessing the change in the standard of living in the Singapore economy over time.	5-7

	If only material SOL is covered-Cap at 5m	
L1	For answer that shows some knowledge of how the statistics can be used to measure either material or non-material standard of living over time.	1-4
	Evaluation	
E3	A well-reasoned conclusion that clearly addressed the question.	4-5
E2	Some attempt to make conclusive judgements about the economic indicators in reflecting changes in SOL.	2-3
E1	A judgement that is unsupported.	1

Question 5

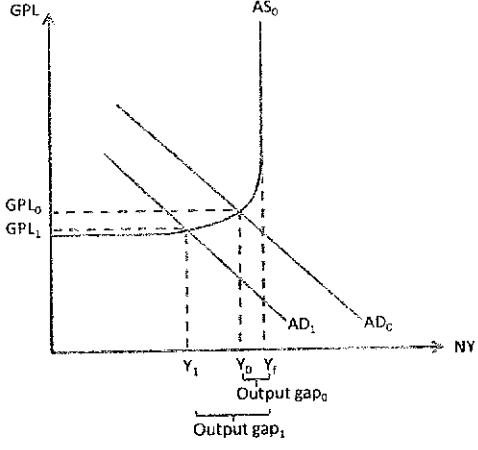
The COVID-19 pandemic has severely disrupted global economic activity, and led to both demand-side and supply-side shocks to the Singapore economy. International travel and the retail sectors have been severely affected. At the same time, supply chain disruptions have impacted businesses negatively. This resulted in the Singapore economy contracting by 5.4% in 2020.

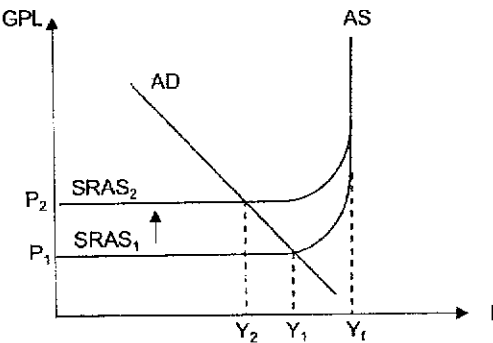
- (a) Explain possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic. [10]
- (b) Assess the extent to which policies aimed at increasing the economic growth rate might cause difficulties for the economy. [15]

Suggested Answer Scheme for Part (a)

<p>Question Analysis</p> <p>Command Word: Explain Concepts: Demand and Supply-side impact on macroeconomic objectives, using AD-AS analysis Context: Singapore economy</p> <p>Approach: The answer would seek to provide an explanation of possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic, with reference to the preamble.</p>	
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<p>Introduction</p>	<p>The COVID-19 pandemic has significantly reduced international travel and human traffic in shopping malls which led to a fall in retail trade. These are the demand-side shocks to the Singapore economy. Supply-side shocks led to a rise in cost of production due to supply chain disruptions e.g. stringent regulations regarding import of raw materials and restriction of foreign worker entry into Singapore.</p> <p>The impact on the Singapore economy would refer to the possible effects on the macroeconomic goals of economic growth, employment, price stability and balance of payment position.</p>
<p>Explain how AD factors will affect NY,</p>	<p>Demand-side shocks e.g. fall in retail trade and food trade will mean consumption expenditure (C) will fall. International travel curtailment further reduces international transactions. With the pessimistic outlook domestically and internationally, business confidence would fall and</p>

<p>employment, GPL, BOP</p>	<p>investments (I) in Singapore will fall. With the reduction in global activity, Singapore's exports (X) would fall too. Aggregate demand (AD) shows the total value of goods and services demanded in the economy at a given price level. AD would fall as $AD = C + I + G + X - M$. When AD decreases, firms in the economy will produce less output in response. Hence, real GDP decreases. Since less output is being produced, firms will lay off workers. This causes demand-deficient unemployment.</p>  <p>Using AD AS analysis, when AD falls from AD_0 to AD_1, national output decreases from Y_0 to Y_1. The increase in unemployment is illustrated by the increase in the output gap from Output gap₀ to Output gap₁. The output gap shows the difference between the equilibrium output (Y_0 and Y_1) and the full employment output (Y_f). Since the full employment output for the economy is Y_f, any output below Y_f will be an indication of unemployment in the economy. The larger the output gap, the higher the unemployment.</p> <p>With the fall in NY & employment, there is a chance that the general price level (GPL) may fall too if AD falls significantly. This signals deflation in the economy and a recession will result too. As exports fall, the balance of trade (BOT) will be negatively affected.</p>
<p>Explain how AS factors will affect NY, employment, GPL, BOP</p>	<p>Supply-side shocks which causes supply chain disruptions e.g. stringent regulations regarding import of raw materials and restriction of foreign worker entry into Singapore will increase cost of production (COP) and doing business in Singapore. The increase in COP will cause short run aggregate supply (AS) to fall. AS refers to the total quantity of goods and services (i.e. national output) that firms produce in the economy at different general price levels.</p>

	 <p>Using AD AS analysis, the increase cost of production will cause a decrease in SRAS, represented by an upward shift from SRAS₁ to SRAS₂, this causes a rise in the GPL from P₁ to P₂. The higher costs of production would lower aggregate supply as firms would want to produce lesser now if NY fall from Y₁ to Y₂. As a result of the fall in SRAS, cost-push inflation occurs.</p>	
<p>Conclusion: Combined impact of demand and supply shocks</p>	<p>Given the fall in AD & AS, NY will fall drastically meaning a recession is likely to result with demand deficient unemployment. The impact on GPL may not be as significant as the economy's AD falls. As Singapore is highly dependent on international trade, BOT will likely fall too.</p>	

Marking scheme

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	For an answer that gives a detailed and analytic explanation of possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic, with close reference to the preamble.	8 – 10
L2	For an answer that describes possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic, without close reference to the preamble. An answer that gives a detailed and analytic one-sided explanation i.e. AD/AS.- Max 6	5 – 7
L1	For an answer that shows some knowledge of possible demand-side and supply-side shocks to the Singapore economy as a result of the COVID-19 pandemic.	1 – 4

Suggested Answer for Part (b)

Question Analysis

Command Word: Assess the extent

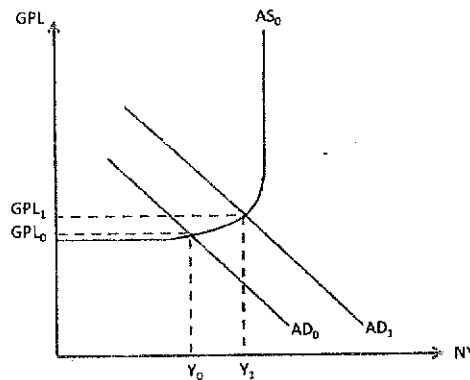
Concepts: Demand & supply-side policies aimed at increasing the economic growth rate and possible conflicts/difficulties for the economy – one demand and one supply-side policy.

Context: Singapore economy

Approach: The answers seeks to provide an argument on how demand and supply side policies (at least 1 each) would help to achieve actual and potential growth; followed by a counter-argument that provides the possible conflicts/ difficulties for the Singapore Economy.

<p>Introduction</p>	<p>Policies aimed at increasing the economic growth rate includes demand management policies and supply-side policies. Demand management policies include expansionary monetary policy and fiscal policy. These policies aim at increasing AD to generate growth for the economy. Supply-side policies must aim at reducing COP to increase AS so that growth can be at lower COP. However, these polices have their limitations and might cause difficulties for the economy.</p>
<p>Policy 1 Thesis: Explain how expansionary FP can increase EG</p>	<p>To increase AD, fiscal policy can be used. It refers to the use of government spending (G) and taxes (T) to influence the economy. Discretionary fiscal policy refers to the deliberate change in G and T to achieve macroeconomic aims. Expansionary fiscal policy is used to increase national income (achieve growth) and reduce unemployment i.e. it is used to get the economy out of a recession. It involves increasing its government spending (G) and/or reduces its taxes (T).</p> <p>An increase in G raises aggregate demand (AD) directly since $AD = C + I + G + (X-M)$.</p> <p>On the other hand, reductions in income taxes and corporate taxes raise AD indirectly. A reduction in income taxes would increase the disposable income of households. Thus, with the greater purchasing power, households can consume more, leading to a rise in consumption expenditure (C). A reduction in corporate taxes would increase the after-tax profit of investments. Hence, with higher profitability of investments, investments (I) increases. Together, the increase in C and I would raise AD.</p>

The rise in AD due to the expansionary fiscal policy would increase national income via the multiplier process, achieving economic growth. This is illustrated below.



With the increase in AD from AD_0 to AD_1 due to expansionary FP & the resultant increase of G, C, and I, national output increases from Y_0 to Y_1 through the multiplier process.

Policy 1 Anti-thesis:
Explain how expansionary FP may create difficulties for the economy while trying to increase EG

Opportunity cost of too high a G

As the multiplier effect in Singapore is small, to generate economic growth, a high G increase is needed which will put a strain on government resources which may lead to the government having to borrow to fund its spending which may lead to crowding-out effect i.e. it may raise interest rate which will conflict with private sector borrowing. However, as the Singapore government has past savings, it needs not resort to borrowing. It can also dip into reserves as Singapore has savings in the National Treasury. But too high a G in helping the economy grow now will have opportunity cost on future infrastructure spending and development for future generations.

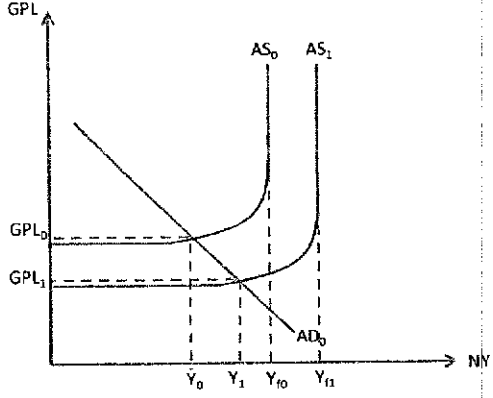
Conflict with price stability

If there is a lack of spare capacity or structural rigidities in the economy, an expansionary fiscal policy will lead to AD increasing, causing GPL to increase with no corresponding increase in real output level. Thus, expansionary fiscal policy would not be effective in stimulating economic growth. In fact, it would conflict with the aim of price stability. However, this is unlikely to be the case during the Covid-19 pandemic.

Conflict with external aim of achieving a BOT surplus

An expansionary fiscal policy may conflict with the aim of achieving a BOT surplus. There are two ways that this can happen. First, the increase in national income would cause an increase in purchasing power. As purchasing power increase, households would not only increase consumption of domestically produced goods. They would also increase the consumption of

	<p>imports. This increase in import expenditure would worsen the balance of trade.</p> <p>Second, if the GPL increase, this would make exports (which are domestically produced) more expensive to foreigners and also make imports appear relatively cheaper compared to domestically produced goods. Assuming the demand for exports is price elastic (as there are many substitutes from other countries), the quantity demanded of exports would fall more than proportionately. Thus, export revenue would fall. Coupled with the increase in import expenditure, the BOT would worsen.</p>
<p>Policy 2 Thesis: Explain how SS-side policies can increase EG</p>	<p>The government can implement supply-side policies to reduce COP eg encouraging businesses to use technology to improve productivity. To encourage firms to adopt newer and more technology-intensive methods of production, the government subsidizes firms in technological improvement. With better methods of production, AS will increase.</p> <p>As illustrated in the Figure above, AS will shift downwards from AS₀ to AS₁ as the increase in productivity will lead the unit cost of production to fall. This increases NY from Y₀ to Y₁ and decreases GPL from GPL₀ to GPL₁.</p> <div data-bbox="678 1131 1173 1534" data-label="Figure"> </div> <p>They can also encourage businesses to send workers for training to ensure that they are adept to changes in this new economy by increasing productivity. An increase in labour productivity means that each worker can produce more output. This means that the unit labour cost will decrease. This increase SRAS (shifts down) and hence increases NY, achieving actual growth. Additionally, when each worker can produce more, the full employment output would also increase. This increases LRAS (shifts right) achieving potential growth. The actual growth can be seen from the increase in NY from</p>

	<p>Y_0 to Y_1, while the potential growth can be seen from the increase in full employment output from Y_{f0} to Y_{f1}.</p> 
<p>Policy 2 Antithesis: Explain how SS-side policies may create difficulties for the economy while trying to increase EG</p>	<p>However, subsidising R&D may create problems for the government as R&D requires large amounts of funding and thus places a strain on the government budget. This would reduce the government's ability to help out the households in such difficult times. Additionally, there is no guarantee that the R&D efforts will be successful. Finally, even successful R&D efforts often take a long time to bear fruit. This makes the policy ineffective in the short run.</p> <p>Furthermore, use of technology production methods may worsen income inequality as technology favours skilled workers and puts lower-skilled workers out of job. That is why the government also subsidises skills training under the SkillsFuture programme which allows structurally unemployed workers to pick up new skills, reducing the skills mismatch between what workers can do and what employers want.</p> <p>However, subsidising education and training has its limitations. Heavy government expenditure is required in education and training. Hence, there is a huge opportunity cost incurred as the money could have been allocated to other critical national needs such as healthcare and national defence. Additionally, adults are often reluctant to attend training for various reasons such as disinterest and time constraints. This reduces the effectiveness of the policy.</p>
<p>Evaluative Conclusion</p>	<p>Whether policies aimed to increase economic growth rate cause difficulties for Singapore's economy depends on the type of policy adopted as well as the current economic situation. Currently, Singapore is facing recession which suggests that priority is adopting an expansionary fiscal policy to increase actual growth is necessary and probably a quick way. But given that</p>

	<p>expansionary FP may be inflationary in impact, Singapore should adopt supply side policies as not only can it help to attain both actual and potential growth, it can also help to ease inflationary pressures.</p> <p>Additionally, whether policies to pursue economic growth cause difficulties for the economy depend on whether complementary mitigating policies are adopted. For example, in Singapore, there has been a conscious effort to increase the progressiveness of the government budget by raising the top income tax rate and increasing wage subsidies to the poor through the Workfare Income Supplement. Such policies would reduce the income inequality caused by the economic growth.</p>
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Note: Students can use other policies e.g. i.e. Exchange Rate Policy for Singapore

Marking scheme

Level	Knowledge, Application/Understanding and Analysis	Mark
L3	For an answer that gives a detailed and well-explained assessment of how at least 2 policies aimed at increasing the economic growth rate (both actual and potential) might cause difficulties for the Singapore economy – one demand and one supply-side policy.	8 – 10
L2	For an answer that assesses at least 2 measures without detailed analysis OR Ans only assesses 1 measure – Cap at 6m Ans refers to traditional MP i.e. does not apply to Singapore – Cap at 6m Ans looks at actual but not potential growth – Cap at 7m	5 – 7
L1	For an answer that shows superficial discussion of some measures.	1 – 4
Evaluation		
E3	For an answer that arrives at an analytically well-reasoned judgement about the extent to which policies aimed at increasing the economic growth rate might cause difficulties for the economy.	4 – 5
E2	For an answer that makes some attempt at evaluating the measures.	2 – 3
E1	For an answer that gives an unsupported statement about the measures.	1

Question 6

In its latest monetary policy statement, the Monetary Authority of Singapore stated that it will maintain its policy stance of zero appreciation and concluded that this accommodative stance remains appropriate.

Source: MAS Monetary Policy Statement, April 2021

- (a) Explain why the Monetary Authority of Singapore's preferred choice as the instrument of monetary policy in Singapore is exchange rates rather than interest rates. [10]
- (b) Discuss whether exchange rate policy remains the best policy to maintain price stability in Singapore for the next few years. [15]

Suggested Answer for Part (a)

<p>Question Analysis</p> <p>Command: 'explain'; one sided straightforward explanation. Content: 'why exchange rates rather than interest rates is chosen as a main tool of monetary policy'</p> <ul style="list-style-type: none">• Briefly explain how the two policies work• Describe the key characteristics of the Singapore economy;<ul style="list-style-type: none">○ small and open economy○ small multiplier○ lacking natural resources and dependent on trade• Explain how the above characteristics determine exchange rates as the preferred choice <p>Context: Singapore</p> <p>Approach: Student needs to briefly explain how the 2 policies work and how Singapore's characteristics help determine exchange rates as its preferred choice, in particular its size and openness.</p>
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Requirement	Suggested answer
Introduction: Explain monetary policy	Monetary policy refers to the deliberate use of interest rates (i/r) or exchange rates (e/r) as instruments to achieve macroeconomic objectives such as economic growth, full employment, price stability and favourable balance of trade. Monetary Policy is typically carried out by a country's central bank which in the case of Singapore is the Monetary Authority of Singapore.

<p>Body 1: Briefly explain how monetary policy is carried out using interest rates.</p> <p>Explain how monetary policy is carried out using exchange rates.</p>	<p>In the case of monetary policy using interest rates, central banks may change the interest rates through influencing money supply in the economy through its interactions with commercial banks. As there is an inverse relationship between money supply and interest rates, a country pursuing an expansionary monetary policy will increase domestic money supply to bring about a fall in interest rates.</p> <p>On the other hand, a rise in interest rates happens when there is a contraction in domestic money supply. These changes in interest rates will affect consumption (C) and investments (I) and hence the aggregate demand (AD).</p> <p>The Monetary Authority of Singapore (MAS) uses exchange rates instead as the tool for monetary policy. MAS adjusts the exchange rate through intervention in the forex markets to influence the demand or supply of the domestic currency in the forex markets. MAS can cause the currency to depreciate by selling the domestic currency and increasing its supply.</p> <p>Similarly, MAS can also cause the currency to appreciate by buying the domestic currency and increasing its demand. Whether MAS chooses to appreciate or depreciate the currency will depend on the economic conditions in Singapore. The change in the exchange rate then impacts and causes a change in the net exports (X-M) and hence AD.</p>
<p>Body 2: Explain why MAS uses exchange rates over interest rates.</p> <ul style="list-style-type: none"> ○ Singapore's small and open economy means that it is an interest rate taker 	<p>MAS uses exchange rates instead of interest rates for the following 3 reasons.</p> <p>Firstly, Singapore has no control over the money supply in the economy due to its small and open economy. Singapore is an interest rate taker. Singapore is also highly dependent and open to trade (X and M), capital flows (FDI and 'hot' money), and labour flows. The following example illustrates why changing interest rates as a monetary tool will not work for Singapore.</p> <p>Suppose Singapore wants to decrease interest rate in the economy. MAS would then have to increase the money supply. However, the decrease in interest rate in Singapore causes the interest rate in Singapore to be less than interest rates in the rest of the world. As such, there would be large outflow of 'hot' money from Singapore since the returns on 'hot' money would be higher in the rest of the world than in Singapore. The outflow of 'hot money' would reduce the domestic money supply and</p>

<ul style="list-style-type: none"> ○ The small multiplier compromises the effectiveness of interest rates as a tool 	<p>drive up the interest rate in Singapore to the same level as the world interest rate.</p> <p>To prevent this from happening, the MAS would need the ability to 'absorb' the outflow of 'hot money' to prevent the money supply from contracting. However, being a small economy, it lacks the ability to do so as the 'hot money' flows would be too large relative to the domestic money supply. As such, the 'hot money' flows will ensure that the interest rates in Singapore follow the global interest rates. Hence, the move to decrease domestic interest rates will not work as Singapore is an 'interest rate taker'.</p> <p>Secondly, Singapore's multiplier is also rather small due to high withdrawals. This reduces the effectiveness of interest rates as a tool to achieve macroeconomic goals.</p> <p>Increased injections into the economy (for instance, an increase in investment expenditure due to lowered interest rates) can result in many subsequent rounds of increase in national income until the total withdrawals rise to the new level of injections in the economy. This effect where a change in injections causes a multiplied change in the national income is called the multiplier process.</p> <p>The multiplier (k) measures the number of times that the change in income (ΔY) is greater than the initial injections (ΔJ). The value of multiplier is given by one divided by the marginal propensity to withdraw (MPW). ($k = 1/MPW = 1/(MPS + MPM + MPT)$). As the withdrawals from savings, taxes and imports are high in Singapore the multiplied effect of any advantages from changes in interest rates will be rather small reducing the effectiveness of an interest rate policy.</p> <p>Therefore, for the reasons of being an interest taker and having a small multiplier, interest rate is not the preferred tool of monetary policy in Singapore.</p>
<ul style="list-style-type: none"> ○ Exchange rate has a bigger impact on the economy than interest rates. <ul style="list-style-type: none"> ○ small and open economy ○ small domestic consumption 	<p>On the other hand, Singapore uses exchange rate as this tool has a bigger impact on the economy. This is because not only can exchange rate be used to influence net exports, the exchange rate is also an important tool used to manage inflation.</p> <p>Singapore's lack of natural resources causes it to import most of the raw materials and intermediate merchandise needed for producing goods and services. Apart from this high import content in final goods and services in Singapore, it also imports a lot of final goods and services for final consumption. This makes the country very susceptible to imported</p>

<p>and investment</p> <ul style="list-style-type: none"> o Singapore has a high share of FDI within the I, and FDI are not influenced by domestic interest rates 	<p>inflation. As such, the exchange rate policy, not interest rate policy, can be used effectively to target imported inflation.</p> <p>Furthermore, Singapore's small size means that domestic consumption and investment are relatively low. To grow, Singapore needs to increase AD through exporting overseas. This has resulted in the external component of AD for Singapore to be much higher than many other countries. Singapore's total trade is more than three times the size of its GDP. Again, this makes exchange rate policy much more effective than interest rate policy as it targets exports and imports while interest rate policy doesn't.</p> <p>Lastly, while the domestic investments are low, most of the investments in Singapore are foreign direct investments (FDI) which are not influenced by domestic interest rates as their funding is from overseas.</p>
<p>Conclusion: Sum up reasons for the choice of exchange rate policy</p>	<p>Hence, Singapore chooses exchange rate over interest rates as its main tool of monetary policy because it is an interest rate taker, and also because the exchange rate policy yields a bigger impact on its economy.</p>

Suggested Marks Scheme

Level	Descriptor	Marks
L3	<p>Explanation of both interest rate and exchange rate as tools of monetary policy. Clear explanation of at least 2 reasons why Singapore uses exchange rate over interest rates. (One of the reasons must be that Singapore is an interest-rate taker as this is the most important reason why interest rate-centred monetary policy is not used in Singapore.)</p> <p>Application of points must be linked to the smallness and openness of the Singapore economy.</p>	8-10
L2	<p>Sufficient explanation of both interest rate and exchange rate policy. Good explanation of only one reason for Singapore's use of exchange rate.</p> <p>OR Sufficient explanation of 2 reasons why Singapore uses exchange rate over interest rates, with some gaps.</p>	5-7
L1	<p>Inaccurate/unclear/scanty understanding of monetary policy. Mere listing of points or no reason given for choice of exchange rate over interest rate.</p>	1-4

Suggested Answer for Part (b)

Question Requirement

Command: "Discuss whether", two sided, needs an evaluative conclusion

Content: "exchange rate policy remains the best policy to maintain price stability in Singapore for the next few years"

- Thesis: Yes.
- Anti-thesis: No. Other policy instruments, such as supply side policy or contractionary fiscal policy may be better
- Address price stability, chief causes of inflation, exchange rate policy, other policies, best policy, next few years

Context: Singapore

Approach: Students should start by briefly explaining the main causes of inflation in Singapore (demand-pull and cost-push (including imported inflation); and the important role that Exchange rate policy plays in managing them. Next, the answer should explain the limitations of Exchange rate policy in addressing certain causes of inflation and how fiscal and supply side policy are needed too.

Requirement	Suggested Answer
Introduction:	<p>The macroeconomic goal of price stability is achieved when inflation rates are kept low and stable in an economy, meeting the target of 2-3% inflation rate set by the central bank.</p> <p>Inflation in Singapore is primarily caused by demand pull factors and / or cost push factors, respectively known as demand pull inflation and cost push inflation. Imported inflation which also afflicts Singapore is subsumed under cost push inflation. As the Singapore economy is often operating close to full employment the inflationary pressures are immense.</p> <p>As a small and open economy, internal causes of inflation in Singapore are contributed by wages rising faster than productivity growth (cost push inflation) coupled with rising private consumption expenditure (demand pull inflation) during periods of strong positive economic growth. The external causes of inflation for Singapore comprise both imported inflation (cost push inflation) and rising external demand (demand pull inflation).</p>

	<p>Singapore has used the exchange rate policy of 'modest and gradual appreciation' as its primary approach for maintaining domestic price stability and sustaining economic growth. The MAS maintains the SGD within an undisclosed policy band.</p> <p>While the exchange rate appreciation policy is effective in curbing both imported inflation and externally led demand-pull inflation, there have been doubts over the relevance of this policy in situations when either domestic or global economic conditions weaken and/or inflationary pressures are being induced more by domestic factors such as rising unit labour cost and other supply-side constraints.</p> <p>Therefore, other policies may be needed to maintain price stability in Singapore, depending on the strength of the economic growth as well as the root causes of inflation faced.</p>
<p>Thesis 1: Explain reasons why Singapore uses exchange rate policy</p>	<p>A modest and gradual appreciation of the SGD is highly effective in mitigating imported inflation.</p> <p>As elaborated in part a, Singapore is an open economy with free flow of foreign capital in and out of Singapore affecting money supply, which makes it difficult for MAS to control the domestic interest rate. Singapore is also a price-taker in interest rate due to its small economy size. Therefore, the lack of flexibility in the use of interest rate suggests that an exchange rate policy, particularly maintaining a strong SGD, is more appropriate.</p> <p>Being very highly import dependent for production and consumption, imported inflation can become a significant contributor of inflation in Singapore. Thus, having a modest and gradual appreciation of the SGD helps in lowering import prices in SGD. The cost of production is reduced, increasing SRAS and allows firms to pass on cost savings to consumers, thus bringing about a decrease in GPL, particularly due to cost push inflation.</p> <p>With the cost of living being kept stable in Singapore, it allows for increases in wages to be linked to productivity increases and positive economic performance instead of inflation, hence ensuring more stability in unit labour cost. Thus, exchange rate appreciation is able to mitigate imported inflation and prevent inflation caused by wage-push pressures by keeping the domestic cost of living stable.</p> <p>The appreciation causes export prices to be relatively more expensive and in order to remain competitive, firms are incentivised to find better innovative methods of production to reduce costs. If successful, productivity</p>

	<p>may increase allowing the AS curve to shift rightwards and reducing cost push inflation.</p> <p>A modest and gradual appreciation of the SGD is also needed to address externally led demand-pull inflation during times of healthy economic conditions.</p> <p>When the SGD appreciates, prices of exports in foreign currencies would rise. Given that the demand for Singapore's exports is price elastic, the higher export prices will help to buffer the economy against excessive expansion of external demand which can cause demand-pull inflation if the excessive increase in AD is not accommodated by supply-side expansion.</p>
<p>Anti-thesis 1: Limitations of exchange rate policy in addressing certain causes of inflation and transition to other policies</p>	<p>However, exchange rate appreciation does not address supply-side constraints and inflationary pressures caused by domestic factors such as rising unit labour cost or rising domestic demand. Thus while exchange rate appreciation works well in the short term to reduce inflation, long term issues such as raising the productive capacity of the economy to relieve the full employment will require different policy prescriptions.</p> <p>In addition, with Singapore moving towards a services-driven economy, exchange rate appreciation becomes less useful to services industries that do not benefit significantly from lower imported cost due to their higher dependence on labour for production. For these service industries, rising rental and unit labour costs are key factors causing higher production costs.</p> <p>These justifications reflect the need for other policies such as supply-side measures and contractionary fiscal policy to be implemented alongside exchange rate appreciation in maintaining price stability in Singapore.</p>
<p>Anti-Thesis 2: Explain why supply-side policy should be used</p>	<p>To address inflation caused by rising unit labour cost, supply-side policies instead of exchange rate appreciation are needed to increase the country's productive capacity at a faster rate.</p> <p>In the long run, an increase in LRAS due to an increase in quantity and quality of capital will increase the productive capacity of the economy. LRAS shifts rightwards from AS_0 to AS_1. As a result, national income increased from Y_1 to Y_2 but GPL decreases from GPL_1 to GPL_2. The development will be similar if the supply side policies are directed towards infrastructure building and improving the skills of workers through retraining and education.</p> <p>Overall, real GDP increases and inflation rate is moderated as GPL increased by a smaller extent from GPL_0 to GPL_2, thus achieving price stability.</p>

Employment improves. In addition, sustained economic growth is achieved since there is an increase in both actual and potential growth.

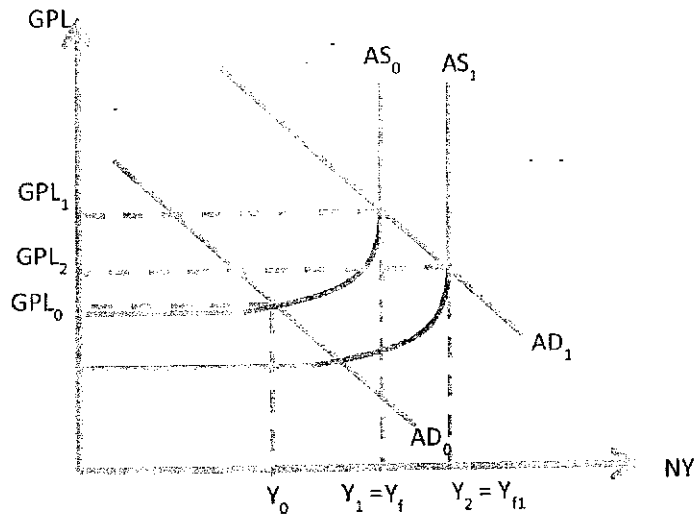


Figure 3: Impact of SS policies on Inflation

Productive capacity can be increased through encouraging private investment, skills upgrading, education and R&D. For example, the Productivity Solutions Grant is available for smaller firms that require subsidies to pursue innovation and productivity-enhancing activities. To raise labour productivity, the Skills Future Credit provides an initial \$500 subsidy for eligible Singaporeans to take ownership of their skills development.

By doing so, rising wages due to a tight labour market becomes less of a concern since there will be an expected increase in productivity in the long run which will help ease rising unit labour cost experienced currently.

Limitation of supply-side policy

However, productivity growth in Singapore has remained low despite the implementation of these measures. Therefore, perhaps a modification of current supply-side measures is needed rather than constant rolling out of new measures. For instance, the government can increase the Skills Future Credit given to each Singaporean since training costs are often more than the initial \$500 subsidy provided.

Yet, on the other hand, workers may not be keen to take up such training to improve productivity due to disinterests and time constraints. In addition if the labour force is already tight, employers may not be willing to let their

	<p>workers take time off to go for retraining and furthering their education. Time is also needed for supply-side policies to take effect.</p> <p>R&D requires large funding and is a long term investment which may not be suitable to curb rising inflation in the short term. In addition, outcomes may be uncertain in improving the productivity of the economy.</p>
<p>Anti-Thesis 3: Contractionary fiscal policy should be used</p>	<p>To address inflation caused by strong domestic demand, the Singapore government will need to run a budget surplus instead of depending entirely on exchange rate appreciation policy.</p> <p>In recent years, Singapore's economic growth has been slowing down due to the gloomy global economic conditions and greater competition from other economies. Throughout the period, Singapore has been adopting a budget surplus which is in line with the government's principle of accumulating reserves when economic growth is still positive despite being low or decreasing.</p> <p>By reducing government expenditure while keeping tax rates constant, a contractionary fiscal policy will help to dampen the growth in AD caused by strong domestic demand, hence reducing inflationary pressures given the decrease in competition of resources among firms. With a contractionary fiscal policy already implemented and in light of the economic slowdown, there are strong justifications for the MAS to abandon the appreciation policy and switch to a zero appreciation policy as a way to boost external demand, as suggested in the preamble. This policy may be the mainstay for the next few years as deglobalisation and the covid-19 pandemic has complicated and intensified competition.</p>
<p>Limitation of contractionary fiscal policy</p>	<p>However, implementing a contractionary fiscal policy can trigger unintended consequences such as reducing economic growth and increasing unemployment rate.</p>
<p>Evaluative conclusion:</p>	<p>While exchange rate appreciation is still effective in buffering Singapore against excessive price fluctuations in the short run, its limitations however clearly suggest that it cannot be the sole policy instrument used. Therefore, it cannot be the best policy instrument.</p> <p>It is also not desirable to concurrently adopt a contractionary monetary policy via the appreciation policy and a contractionary fiscal policy via the budget surplus in times of weak / negative economic growth such as the present. The damaging effects especially on employment and exports can be severe. A zero appreciation policy, therefore may yield better results in maintaining export competitiveness.</p>

The tightness of the domestic labour market and greater competition among economies calls for a greater emphasis on a range of supply-side measures to improve productive capacity and quality of the labour force. Such long run measures will enable the economy to increase the national output without imposing inflationary pressures caused by operating the economy at full employment.

All in all, the government should exercise flexibility in adjusting the policy instrument used based on the more dominant cause of inflation in Singapore at any point in time. Given the recent falling global demand for many raw materials and persistence of labour shortages coupled with low productivity growth, the Singapore government should combine an exchange rate policy with relevant supply-side policies to ease the inflationary pressures caused by these factors.

Suggested Marks Scheme

Level	Descriptors	Marks
L3	<p>Conceptually accurate, well-developed and balanced analysis in examining whether exchange rate appreciation should remain the best policy to maintain price stability</p> <p>Both Demand-pull and cost-push (including imported) inflation causes should be addressed.</p> <p>Comparison with at least one other policy, such as fiscal or supply-side policies should be brought in.</p> <p>Answer considers the characteristics and nature of Singapore's economy in discussion.</p>	8-10
L2	<p>Conceptually sound, balanced but under-developed analysis in examining whether exchange rate appreciation should remain the best policy to maintain price stability</p> <p>Both Demand-pull and cost-push (including imported) inflation causes should be addressed. (Cap at 6m if only demand or supply-side inflation is addressed)</p> <p>At least one other policy, such as fiscal or supply-side policies should be brought in. However, answer may not fully address the question of 'best policy.' (Cap at 6m if no other policies are brought in.)</p> <p>Lacking applications to the Singapore's economy.</p>	5-7
L1	Lacking economic analysis and with major conceptual errors.	1-4
E3	Evaluation considers the sources of domestic inflation in recent years and the economic structure of Singapore to determine the overall approach.	4-5
E2	Attempts to evaluate but mostly without sound conceptual or factual support about sources of domestic inflation.	2-3
E1	Unsupported evaluative judgments.	1

