



ST ANDREW'S JUNIOR COLLEGE
PRELIMINARY EXAMINATIONS 2022 (JC2)
General Certificate of Education Advanced Level
Higher 2

ECONOMICS

9757/01

Paper 1

29 August 2022

2 hours 15 minutes

READ THESE INSTRUCTIONS FIRST

An answer booklet will be provided with the 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.

Answer **all** questions.

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

This document consists of 8 printed pages.

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[Turn Over]

Answer all questions.

Question 1: Covid-19 woes in the Steel Industry

Figure 1: EU Steel Production

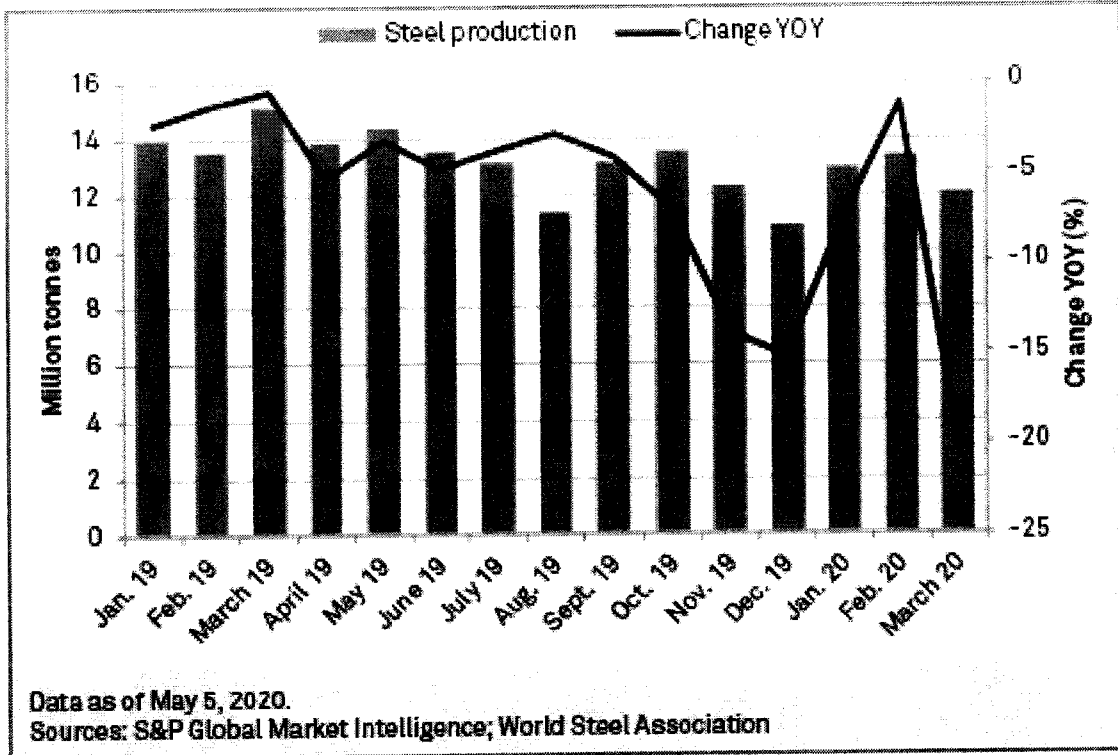
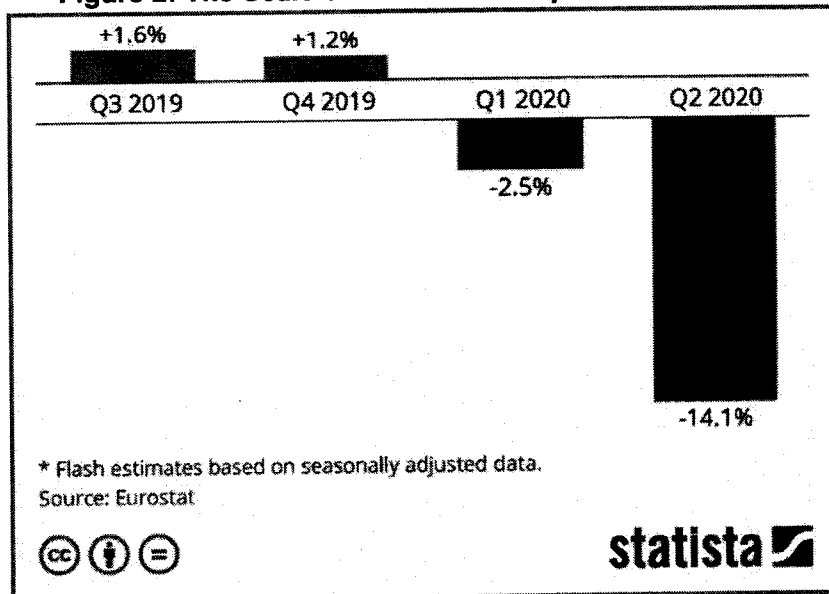


Figure 2: The Scale of COVID-19's Impact on EU's GDP



Extract 1: OECD Steel Committee gravely concerned about impact of COVID-19 crisis on steel market

Steel is a vital material for a modern, industrialised economy. Modern buildings, cars, ships, tools, industrial machinery and household appliances would not be imaginable without its unique and diverse properties. The OECD Steel Committee expressed grave concern at its meeting this week over the deterioration in steel market conditions related to the COVID-19 crisis. The slump in demand caused by the global pandemic comes as steel production and inventories continue to grow in China. The Committee also noted with concern that the difficult market conditions were causing significant job losses in the industry.

The latest OECD data show that global steelmaking capacity could increase to 2,455.8 million metric tonnes (mmt) in 2020. While the gap between global capacity and production narrowed from 2016 to 2019, it is likely to widen to as much as 700 mmt this year due to overall capacity increases and production decreases resulting from COVID-19. The Steel Committee noted that new steelmaking capacities due to come into operation in the Middle East and Asia this year are set to exacerbate excess capacity.

During a virtual four-day meeting, the Committee also reiterated the need for further capacity reductions in relevant economies, including by facilitating the exit of inefficient producers and by supporting workers affected by plant closures.

Adapted from www.oecd.org, 29 Oct 2020

Extract 2: Nature of Steel Industry

One of the serious problems faced by the steel industry has to do with its size. On one hand, due to over production, the export market of China grew substantially and resulted in it dumping its excess inventory in all other countries. On the other hand, some major producers (such as those in Europe and the United States) halted their manufacturing operations internally to compensate for these cheaper imports from China. One of the consequences of Chinese oversupply was the collapse of steel prices. This led to steel industry job losses for several thousands of employees of Luxembourg's ArcelorMittal, South Korea's Posco, and US Steel, just to name a few. It is still unclear how the industry is going to recover from these losses.

Source: <https://www.frost.com/> 04 Apr 2018

Extract 3: Inflation or pollution? Tough choice facing China steel industry

China's vast steel sector is the scene of a conflict between economic growth and a green agenda that points to wider challenges as President Xi Jinping tries to clean up the world's top carbon emitter.

Early squeeze of steelmakers to cut output have fired up prices and created a headache for policymakers fretting about surging inflation. Steel coil in China, used in everything from cars to buildings, is the priciest it's been since 2008. Letting inflation run too hot is a risk to the economy because it ends up provoking the authorities to put restrictions on the monetary and fiscal measures that promote growth.

China produces well over half the world's steel and the sector has long been targeted by the authorities for persistent pollution. On average, 1.83 tons of CO₂ (a dominant greenhouse gas) is emitted for every ton of steel produced. Air pollution itself contributes to an estimated 1.1 million premature deaths in China annually. Moreover, environmental issues cost the

economy billions of dollars each year, with some recent estimates putting the toll at up to 10 percent of GDP.

China has ordered cuts in the key steelmaking hub of Tangshan in the north of the country, and vowed nationwide checks to make sure regions aren't flouting capacity curbs. Tangshan's crackdown will likely be repeated around the country amid "vigorous enforcement of China's supply curtailment policies," Citigroup Inc.'s Tracy Liao said.

Adapted from <https://www.aljazeera.com/> 14 Apr 2021;
<https://www.theworldcounts.com> (accessed on 17 Jan 2022)
<https://www.cfr.org/backgrounder/china-climate-change-policies-environmental-degradation>

Questions

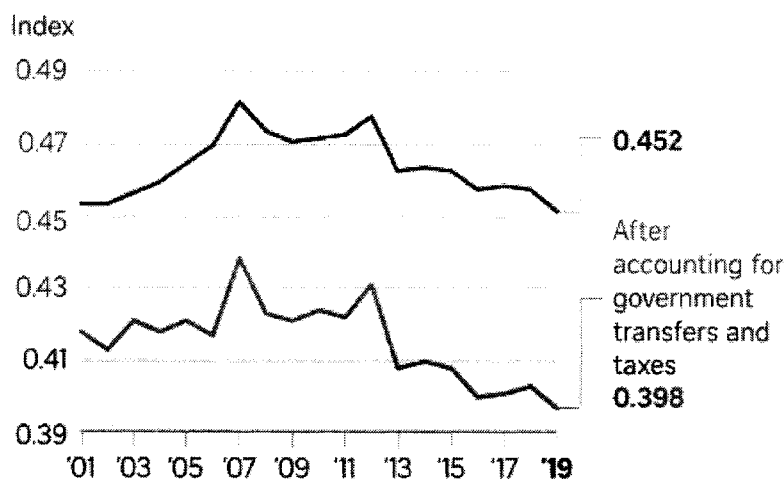
- (a) With reference to Figure 1, compare the change in steel production between Aug 2019 and Oct 2019 with production levels during the same period in the previous year. [2]
- (b) With reference to Extract 1 and Figure 2, and with the use of a relevant diagram, explain why the OECD Steel Committee anticipated significant job losses in the steel industry. [4]
- (c) (i) With reference to Extract 1, explain the likely change in the value of the price elasticity of supply of steel due to the change in global steelmaking capacity. [2]
- (ii) Discuss the factors which the OECD Steel Committee is likely to consider when deciding whether to impose a price floor to improve the steel market conditions in Extract 1. [8]
- (d) With reference to Extract 2, explain the likely market structure that the global steel industry is operating in. [4]
- (e) "China's vast steel sector is the scene of a conflict between economic growth and a green agenda that points to wider challenges as President Xi Jinping tries to clean up the world's top carbon emitter." (Extract 3) [10]

Discuss whether the imposition of steel production cuts may help in achieving the Chinese government's aim of pursuing "economic growth and a green agenda".

[Total: 30 marks]

Question 2: Achieving Inclusive Growth in Singapore

Figure 3: Gini Coefficient Among Resident Employed Households in Singapore



NOTE: Figures based on household income from work per household member.

Source: *The Straits Times*, 21 February 2020

Extract 4: Singapore should focus on economic growth rather than redistributing a smaller pie

In February, Deputy Prime Minister Heng Swee Keat highlighted that income inequality measures in terms of the Gini coefficient in Singapore fell from 0.398 in 2019 to a historic low of 0.375 in 2020 due to “massive transfers” and schemes aimed towards supporting lower-income groups.

Such transfers took the form of continued subsidies to lower-income groups such as the Workfare Income Supplement (WIS) scheme, top-ups to earnings and CPF accounts, as well as one-off financial support for households experiencing a loss of income that tap on the COVID-19 Support Grant, not to mention waivers on HDB loans and support for charities.

Some argue public policy should focus more on redistributive measures to help low-income families. But how much is enough? In Singapore, the top 10 per cent of income earners contribute about 80 per cent of all personal income tax. These are redistributed through schemes such as Workfare, GST vouchers, as well as ongoing subsidies for the lower and middle-income households in education, housing and healthcare among others.

As Ong Ye Kung highlighted in 2018 as Education Minister, low-income families (up to the 20th percentile) receive about S\$4 in benefits for every dollar of tax that they pay. Middle-income families (from the 41st to 60th percentile) receive S\$2 for every tax dollar. This rate of distribution is higher than the S\$1.3 to S\$1.40 that middle-income households received for every tax dollar in the UK, US and Finland.

Moreover, any such redistributive focus should be balanced with a focus on economic transformation and growth to expand revenue streams. Given that the global economy is

facing resurging rates of COVID-19 infections due to the Delta variant, Singapore's growth prospects face strong headwinds and could be varied and unpredictable.

China's growth forecasts have been slashed by investment banks last week. While US GDP rose by 6.5 per cent year-on-year in the second quarter, this came well below expectations. In such an environment, wanting to have more to redistribute in the future requires our economy to ready our sails when the winds pick up. We need to grow the pie so each portion can be bigger.

This is why Prime Minister Lee Hsien Loong's National Day message focusing on inclusive growth is a useful one. His emphasis on supporting low-wage workers to reskill to seize new opportunities to achieve job progression and income wage strikes a pragmatic tone.

Source: *Channel News Asia*, 22 August 2021

Extract 5: Perceptions of Globalisation in Singapore

Despite the worldwide backlash against the openness of economies and the mass movement of people around the globe, Singaporeans generally have a positive view of globalisation, an Institute of Policy Studies (IPS) study on national pride and identity found. But more than half of the respondents also believed that immigrants may take their jobs, with people of lower socio-economic status more likely to express such worries.

The study polled 2,001 Singaporeans and permanent residents from a representative national sample of households in 2020.

Overwhelmingly, people - 83 per cent - believed that globalisation benefits the economy and Singaporeans in general. A smaller proportion, 17 per cent, said it benefits only foreigners and the rich.

On immigration, 75 per cent of those polled agreed to a large or moderate extent that immigrants provide a boost to the economy, and 62 per cent agreed that the newcomers improve society by bringing in new ideas and culture. Even then, 50 per cent of the respondents felt that immigrants take jobs away from Singaporeans, and 53 per cent believed that the Government spends too much on helping them.

Those who are of a lower socio-economic class and received less education were more likely to feel the competition. For instance, 58 per cent of those with less education agreed that immigrants take jobs away from Singaporeans, while 43 per cent of those with higher education, who have at least a degree, felt the same way.

This shows issues like foreign competition for jobs affect some groups more keenly than others as they are more likely to suffer economic displacement and job losses as a result of globalisation.

Source: *The Straits Times*, 24 September 2021

Extract 6: Unemployment benefits may be considered if there is high unemployment

Singapore has managed to keep unemployment rates relatively low so far through traineeship and job matching programmes, in spite of the devastating impact of the Covid-19 pandemic.

However, it may have to consider instituting some form of unemployment benefits if this approach fails and Singapore ends up with high structural unemployment over time, Senior

Minister Tharman Shanmugaratnam said. He noted that unemployment benefits or unemployment insurance programmes are needed in advanced countries with high unemployment.

Based on latest available data, Singapore's resident unemployment rate stood at 3.3 per cent and its overall unemployment rate is 2.4 per cent as of March. Mr Tharman reiterated that the Singapore Government has managed to keep unemployment rates "far lower than... elsewhere" because it has been able to quickly coordinate a range of programmes that involve retraining workers, placing them on attachments and traineeships, and getting them back in jobs more quickly.

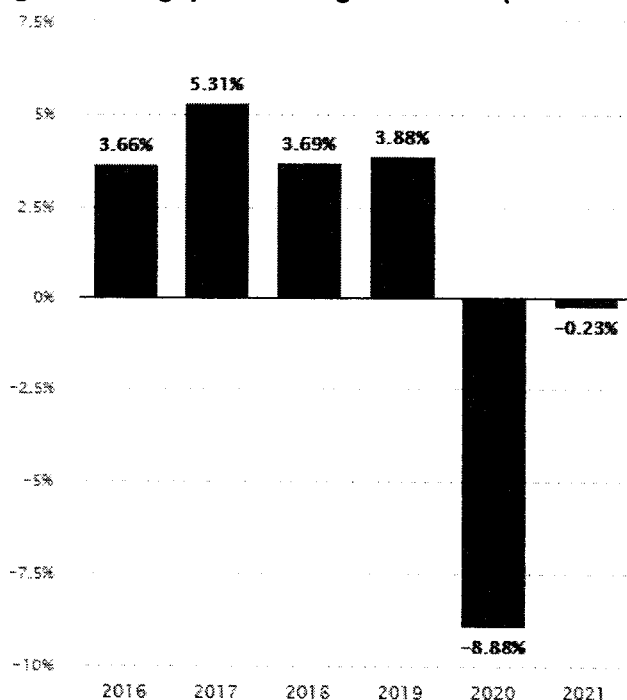
He added that given the weak demand by employers for permanent job roles, Singapore is devising schemes where the Government will subsidise attachments and traineeships in firms so that people are "doing real work", which would hopefully lead to a permanent job position.

Apart from Singapore, Germany and other Northern European countries were examples of advanced countries that have managed to keep unemployment in check through an active labour market policy – measures aimed at helping workers renew their skills and stay employed. This is in contrast with countries such as the United States, which provide those who lost their jobs with unemployment benefits, but leave it to market forces to get them to return to work.

"Once you're unemployed, particularly for some period of time, your skills tend to fade and employers tend to disfavour you when you try to get back into the market," Mr Tharman said. "So the longer you're unemployed, the more difficult it is to get back on track to find a decent job and be on track for wage mobility."

Source: *Today*, 23 July 2020

Figure 4: Singapore's Budget Balance (% of GDP)



Source: <https://www.statista.com/>

Questions

- (a) With the use of an example, explain why there is a difference between the two Gini Coefficients shown in Figure 3. [2]
- (b) (i) Explain one reason why the Singapore government aims to achieve inclusive economic growth. [2]
- (ii) With reference to Extract 5, explain one way in which globalisation can positively impact and one way globalisation can negatively impact Singapore's pursuit of inclusive growth. [4]
- (c) With reference to Extract 6:
- (i) Explain why structural unemployment could be more of a concern compared to unemployment due to "weak demand" (Extract 6). [4]
- (ii) Discuss whether Singapore should change its policies aimed at keeping unemployment rates low, in view of the "devastating impact of the Covid-19 pandemic". [8]
- (d) Discuss the extent to which you agree with the view that to achieve inclusive growth, Singapore should focus more on policies to achieve economic growth rather than on redistributive policies. [10]

[Total: 30 marks]

~End of Paper~



ST ANDREW'S JUNIOR COLLEGE

PRELIMINARY EXAMINATIONS 2022 (JC2)

General Certificate of Education Advanced Level

Higher 2

ECONOMICS

9757/02

Paper 2

12 September 2022

2 hours 15 minutes

READ THESE INSTRUCTIONS FIRST

An answer booklet will be provided with the 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.

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.

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

This document consists of 3 printed pages.

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[Turn Over]

Answer three questions in total.**Section A**

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

- 1 The shortage of semiconductors, the chips that help everything from cars to laptops to toasters to function, has been a persistent snarl in the supply chains for electronics throughout the pandemic. This shortage was supposed to work itself out—either as manufacturing ramped up to meet demand, or as demand cooled down. Instead of fading, the chip problem has become so unmanageable that it's on track to outlast the lockdowns and closures that triggered the shortage in the first place.
- (a) Explain why the price mechanism failed to correct the prevailing shortage of semiconductors. [10]
- (b) Discuss alternative methods that can be adopted by firms and governments to resolve the shortage of semiconductors. [15]
- 2 The traditional brick-and-mortar retail industry in Singapore has been grappling with challenges from a shrunken labour market, rising operating costs as well as intense competition from their online rivals. In response to these challenges, these retailers can either choose to adapt or to shut down. Before it closed, department store operator Robinsons Singapore had tried to embark on digital innovation by setting up its own app as well as selling its products on e-commerce platform Lazada.
- (a) Explain how the above challenges may affect the profits of a brick-and-mortar retailer. [10]
- (b) Discuss the extent to which digital innovation would be the best way to increase profits in view of these challenges. [15]
- 3 The Covid-19 pandemic has exposed severe underinvestment in research and development (R&D) of vaccines to prevent public health crises. Policy makers have attempted to issue patents and grants for pharmaceutical companies to encourage discoveries in vaccine technology. The rights to manufacture vaccines are currently held by a small group of pharmaceutical companies making extraordinary profits by controlling the global supply, which results in expensive vaccines for consumers especially from poor nations.
- (a) Explain why markets might fail in the case of R&D for Covid-19 vaccine technology and where a small group of pharmaceutical companies control the supply of Covid-19 vaccines. [10]
- (b) Evaluate the policies that could be adopted by governments to address both these types of market failure. [15]

Section B

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

- 4** Fiscal policies should enable green and durable economic growth. As part of the Green Plan 2030, Singapore has introduced a carbon tax and is setting aside \$60 million to further support technological adoption in the agri-food sector.

IMF's January 2021 Fiscal Monitor Update

- (a) Using the circular flow of income, explain the effects on national income [10] when a country implements expansionary fiscal policy.
- (b) Discuss the extent to which fiscal policies will be sufficient to achieve [15] 'green and durable economic growth' in Singapore.

- 5** Singapore's recovery from the pandemic is still subjected to risks and uncertainties, both domestic and external. With global inflation on the rise due to border restrictions and supply chain disruptions, the Monetary Authority of Singapore moved to tighten its monetary policy by raising slightly the rate of appreciation of the Singapore dollar.

MAS Monetary Policy Statement Jan 2022

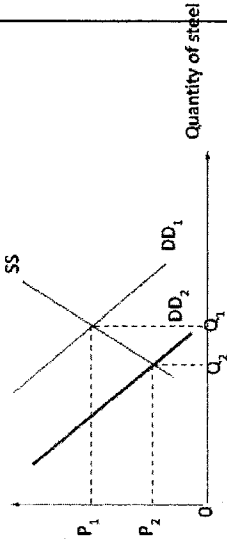
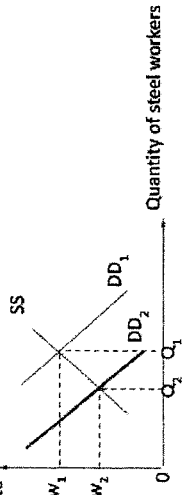
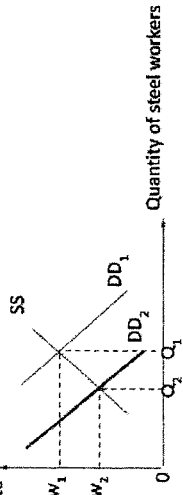
- (a) Explain why Singapore chooses to tighten its monetary policy by [10] appreciating its currency rather than by raising interest rates.
- (b) In view of the uncertainties and uneven recovery in Singapore's economy, [15] discuss whether the Singapore government should focus primarily on achieving price stability over other macroeconomic aims.

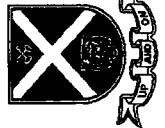
- 6** During times of recession, some governments boost their economy through trade while others protect their economy to improve domestic employment and income.

- (a) Explain two protectionist measures that a government can undertake to [10] achieve higher standards of living.
- (b) Discuss the problems that a government has to consider when [15] implementing protectionist policies to achieve higher standards of living.

~End of Paper~

Question 1: Covid-19 woes in Steel Industry

<p>(a)</p>	<p>With reference to Figure 1, compare the change in steel production between Aug 2019 and Oct 2019 with production levels during the same period in the previous year. In both periods of time, the steel production level increased [1] but the rate of increase in 2018 (27.9%) was faster than in 2019 (22.7) [1].</p> <p>For reference:</p> <table border="1" data-bbox="400 412 525 851"> <thead> <tr> <th></th> <th>%YOY change</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Aug</td> <td>-3%</td> <td>11.34</td> <td>11</td> </tr> <tr> <td>Sep</td> <td>-4%</td> <td>13.52</td> <td>13</td> </tr> <tr> <td>Oct</td> <td>-7%</td> <td>14.5</td> <td>13.5</td> </tr> </tbody> </table>		%YOY change	2018	2019	Aug	-3%	11.34	11	Sep	-4%	13.52	13	Oct	-7%	14.5	13.5	<p>[2]</p>
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<p>(b)</p>	<p>With reference to Extract 1 and Figure 2, and with the use of a relevant diagram, explain why the OECD Steel Committee anticipated significant job losses in the steel industry.</p> <p>Global pandemic GDP falls (NY falls) Demand for goods and services falls (assume normal goods) Amt of G&S to be produced falls Dd for raw materials/fop, including steel, falls [derived demand] Steel-producing firms may dismiss workers, leading to significant job losses due to prolific use of steel in the manufacturing of a large variety of G&S in most economies.</p> <p>Diagram showing fall in demand for steel.</p>  <p>Diagram showing fall in demand for steel workers.</p>  <p>OR</p> <p>Diagram showing fall in demand for steel workers.</p> 	<p>[4]</p>																



ST ANDREW'S JUNIOR COLLEGE
 PRELIMINARY EXAMINATIONS 2022 (JC2)
 General Certificate of Education Advanced Level
 Higher 2

ECONOMICS

Paper 1

9757/01

29 August 2022

2 hours 15 minutes

Suggested Answers

(c)	<p>(i) With reference to Extract 1, explain the likely change in the value of the price elasticity of supply of steel due to the change in global steelmaking capacity. State change in PES value: rises [1]</p> <p>Explain: [1] Rise in PES value due to greater ease/higher ability to increase Q_s (as there is greater spare capacity now compared to before) when there is a rise in prices caused by rise in demand for steel.</p>	[2]
(ii)	<p>Discuss the factors which the OECD Steel Committee is likely to consider when deciding whether to impose a price floor to improve the steel market conditions in Extract 1.</p> <p>Command Discuss Content Decision making framework Context OECD, Steel market</p> <p>Schematic Plan Introduction: Conditions of steel market, price floor Body: Factor #1 – Benefits of price floor Factor #2 – Costs of price floor Factor #3 – Availability of information, intended/unintended consequences, etc. Evaluation: Make a stand on which factor is most critical to the Committee in deciding whether to impose the price control. Substantiate the stand.</p> <p>Briefly state conditions of steel market as indicated in Extract 1:</p> <ul style="list-style-type: none"> - Falling steel prices - Significant job losses due to cut in steel output (probably due to plant closure as well) Hence, price control (i.e. price floor in this case). Briefly explain how price floor works. <p>Factor #1 – Benefits (Effectiveness) Benefit (i): Able to reduce fall in TR of steel firms and keep some steel firms afloat. Referring to Fig. 1:</p> <ol style="list-style-type: none"> Suppose original TR_1 earned by steel firms = $OP_1E_1Q_1$. <u>PED of steel is assumed to be less than 1</u> due to "Steel is a vital material for a modern, industrialised economy" (Ext 1). If a price floor of OP_2 were to be imposed, this will lead to a fall in quantity demanded for steel. As $PED < 1$, quantity demanded will fall less than proportionate to the increase in price. $TR_2 = OP_2AQ_2$, which is higher than TR_1. Hence, this will help to reduce closure of firms and number of workers to be retrenched. 	[3]

	<p>iii. If governments of OECD countries are able to buy the surplus, this will further increase TR and help protect jobs. TR will increase to $TR_3 = OP_2BC_3$</p> <p>Factor #2 – Costs (Surplus) - Due to higher PES value, increase in price to P_2 will lead to a more than proportionate increase in quantity supplied. Since quantity demanded falls and quantity supplied increases, it can result in a large surplus. - allocative inefficiencies in the market. - If government were to purchase the surplus, then there will be a toll on government spending, leading to opportunity cost. The impact can be reduced if the surplus can be sold to other countries at a competitive price. However there is a potential large opportunity cost if they are not able to as the funding could have been used in the next best alternative such as funding hospitals. - Consumer surplus will fall. As steel is an important FOP for manufacturing, the increase in price will lead to a rise in cost of production leading to a fall in supply. Price of manufactured goods will rise while quantity will fall. This might affect the derived demand for steel in the long run and less worker may be needed, worsening the employment in the steel industry.</p> <p>Factor #3 – Availability of information Committee would need estimation of values of PED (to estimate expected fall in Q_d for steel) and PES (to estimate expected increase in Q_s). Doing so will allow the computation of estimated amount of surplus of steel produced ($Q_s - Q_d$).</p> <p>Evaluation [2]</p>
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	<p>Action by one steel producer caused sufficient impact on other major producers that led to counter-actions/reactions by the latter (some major producers [1] (such as those in Europe and the United States) halted their manufacturing operations internally to compensate for these cheaper imports from China [1]).</p>	<p>“(China’s vast steel sector is the scene of a conflict between economic growth and a green agenda that points to wider challenges as President Xi Jinping tries to clean up the world’s top carbon emitter.” (Extract 3)</p> <p>Discuss whether the imposition of steel production cuts may help in achieving the Chinese government’s aim of pursuing “economic growth and a green agenda”.</p> <table border="1" data-bbox="587 230 657 878"> <tr> <td>Command</td> <td>Discuss</td> </tr> <tr> <td>Content</td> <td>Economic growth vs maintaining green agenda</td> </tr> <tr> <td>Context</td> <td>Steel industry, China</td> </tr> </table> <p>Schematic Plan</p> <table border="1" data-bbox="721 271 858 878"> <tr> <td>Introduction: Explain Chinese gov’t aim</td> <td>Cutting steel output may not achieve gov’t aim (economic growth)</td> </tr> <tr> <td>Judgment: Make a stand on whether imposition of steel output cuts will help Chinese gov’t achieve its aim. Substantiate stand.</td> <td></td> </tr> </table> <p>Chinese gov’t conflicting aims: – maintaining a green agenda vs achieve economic growth</p> <p>Explain: i. First Requirement: Steel Production Cuts easier to be aligned with the green agenda</p> <p>Negative externalities are generated from the production of steel. Cutting steel output helps to reduce 1.1 million premature deaths, an impact on third parties who are not involved in the production of steel. Due to marginal external costs (MEC), there is a divergence between MPC and MSC. Profit-maximising producers would produce at Qp, where MPC = MPB. However, society’s welfare is maximised at Qs, where MSC = MSB. As a result, there is over-production of steel, and a deadweight loss is incurred as society’s welfare is not maximised.</p> <p>When steel production cuts are imposed, this is similar to a quota set at Qs. This allows for the socially optimal level of production to be achieved, and deadweight loss is eliminated.</p> <p>With a less polluting environment, China’s residents are able to breathe cleaner air, enjoy more outdoor activities and live healthier lives.</p>	Command	Discuss	Content	Economic growth vs maintaining green agenda	Context	Steel industry, China	Introduction: Explain Chinese gov’t aim	Cutting steel output may not achieve gov’t aim (economic growth)	Judgment: Make a stand on whether imposition of steel output cuts will help Chinese gov’t achieve its aim. Substantiate stand.	
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	(e)	[10]										

<p>- Steel Committee would need to weigh the costs and benefits of imposing price floor and should only do so if benefits outweigh costs. - It is not recommended in the current context. As prices had fallen significantly as a result of the fall in demand due to global pandemic, it will require the price floor to be significantly higher than the initial equilibrium price to help protect the steel firms and workers. However this might lead to a sharp increase in COP for manufacturing firms, which will lead to derived demand for steel to fall significantly hence it would be undesirable as the higher costs in the long run will outweigh/erode the benefits enjoyed in the SR. It might be better to think of ways to increase the demand for steel such as reviving automobile and construction industries. - That said, the committee may also take this opportunity to facilitate closure of relatively old/inefficient steel plants may also help industry to ready itself to compete internationally once the pandemic is over. This will also reduce supply of steel producers in the long run.</p>	<p>Mark Scheme</p> <p>Level 2 (4-6)</p> <ul style="list-style-type: none"> Thorough knowledge and an excellent ability to explain various factors that needed to be taken into consideration Analytical skills could also be assessed via good use graphs. Reasoned (analytic) structure to the whole answer <p>Level 1 (1-3)</p> <ul style="list-style-type: none"> Answer shows some knowledge of the policies adopted OECD to inform of setting a price floor. Meaning of question not properly grasped Basic errors of theory Inadequately explained <p>For 1-2m:</p> <ul style="list-style-type: none"> A few valid points Answer mostly irrelevant or inaccurate Synthesises economic arguments to arrive at well-reasoned judgements about which factor is the dominant one. <p>E2 (2)</p> <p>E1 (1)</p> <p>Unsupported evaluative judgment.</p>	<p>(d)</p> <p>With reference to Extract 2, explain the likely market structure that the global steel industry is operating in. [4]</p> <p>Oligopoly.</p> <p>Large market share/Dominance [2]</p> <p>Evidence of changing of one country’s supply influencing global market price of steel [1] (“consequences of Chinese oversupply was the collapse of steel prices” [1])</p> <p>Interdependence [2]</p>
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<p>Cutting steel output also saves the Chinese economy up to 10 percent of GDP a year. Funds devoted to cleaning up of polluted river and air could otherwise be diverted to more productive uses such as building of better social facilities (parks, bridges, better housing, etc) to benefit its residents. As a result, China's green agenda is achieved.</p> <p><u>Evaluation of First Requirement:</u> The effectiveness of the quota depends on the ability of the government to accurately determine the socially optimal level of output at Q_s. If there is an over-estimation or under-estimation of Q_s, a deadweight loss to society would remain. Nevertheless, given China's extent of overproduction, it is likely that the deadweight loss implemented would be reduced with the implementation of the quota.</p> <p>Additionally, there are high enforcement and monitoring costs incurred due to China's stringent implementation of the quota. This can result in a strain on the government budget.</p>	<p><u>ii. Second Requirement: Steel Production Cuts harder to achieve economic growth</u> Early experience of cutting steel output fired up prices (Ext 3 para 2). As a key FOP for the economy, the rise in price of steel coil, ceteris paribus, will lead to a fall in SRAS from SRAS₁ to SRAS₂, leading to negative real economic growth (Y_1 to Y_2). Should cost-push inflation be too rampant, the authorities may have to restrict use of monetary and fiscal measures so as to not worsen the situation by introducing any demand-pull inflation. In restricting AD growth, economic growth is also hampered.</p>	<p><u>Evaluation of Second Requirement:</u> However, steel production cuts can also bring about economic growth. Being the world's largest steel producer, China's steel industry has long been targeted for persistent pollution (Ext 3 para 3). Cutting steel</p>
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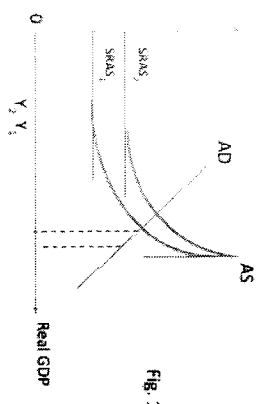


Fig. 1

<p>production and its accompanying huge fall in amount of CO₂ (1.83 tons of CO₂ per ton of steel) makes it easier for China to relinquish its unglamorous title of the world's 'top carbon emitter' (Ext 3 para 3). Being a cleaner economy, China could then attract even more FDI which would also want to associate themselves with environmentally-friendly and sustainable economies to attract more customers who are also getting more environmentally conscious. With higher investments, this results in an increase in AD. Via the multiplier effect, China could enjoy sustainable economic growth in the long run.</p> <p><u>EVALUATION</u> The Chinese government ought to determine the right balance in trying to achieve these two conflicting aims through a carefully calibrated approach in its steel output cuts. Given the strict stance it adopted in Tangshan and to be repeated around the country (Ext 3 para 4), the Chinese government seems to place more emphasis on adhering to its green agenda by cutting steel output.</p> <p>The Chinese government could also relieve some of the ensuing cost pressure in the economy via the use of other supply-side policies so that the option to expand steel production would no longer be a tempting one, thereby resuming its growth path and maintaining its green agenda in the years to come.</p>	<p><u>Mark Scheme</u></p> <p>Level 2 (5-7)</p> <ul style="list-style-type: none"> • Thorough knowledge and an excellent ability to explain how cutting steel production achieves one aim at the expense of the other. • Use of relevant economic tool of analysis (e.g. AD/AS) is expected. • Reasoned (analytic) structure to the whole answer. <p>Level 1 (1-4)</p> <ul style="list-style-type: none"> • Answer shows some knowledge of how cutting of steel production could achieve one aim at the expense of the other. • May lack use of analytical tool in explanation. • Meaning of question not properly grasped (e.g. aim of Chinese government not used as an anchor to the answer). • Basic errors of theory • Inadequately explained <p>For 1-2m:</p> <ul style="list-style-type: none"> • A few valid points • Answer mostly irrelevant or inaccurate <p>E 2 (2-3)</p> <ul style="list-style-type: none"> • Synthesises economic arguments to arrive at well-reasoned judgements on whether Chinese govt ought to cut steel production.
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	<p>(Increase in quantity of FOP) and lead to an increase in AS, thereby increasing real NY and hence positively impacting Singapore's pursuit of inclusive growth.</p> <p>OR</p> <p>The increase in residents in Singapore resulted in larger population size which can lead to greater C which leads to an increase in AD. The real NY can increase via the multiplier effect, leading to increase in economic growth. This therefore positively impacts Singapore's pursuit of inclusive growth.</p> <p><i>[Negative impact on pursuit of inclusive growth -2m]</i></p> <p>However, due to greater inflow of foreign labour, Extract 5 suggests that less educated/low skilled workers may lose their jobs as foreign workers (who may be more skilled or who may be willing to take a lower pay) will replace them. There may be higher unemployment rates among Singaporeans, particularly those who may have low skills and low wages. This worsens income inequality and negatively impacts Singapore's pursuit of inclusive growth.</p> <p>OR</p> <p>The increase in foreign labour may also lead to a rise in supply of labour, especially in the market for low-skilled labour. This may lead to a fall in wages of low-skilled workers, worsening the income inequality between low and high-skilled workers, negatively impacting Singapore's pursuit of inclusive growth.</p>	
(c)	<p>With reference to Extract 6:</p>	
(i)	<p>Explain why structural unemployment could be more of a concern compared to unemployment due to "weak demand" (Extract 6).</p> <p>Suggested Answer:</p> <p>Demand Deficient Unemployment tends to be short-term as it follows the business cycle. When there is a fall in AD, there will be a fall in NY and demand for labour, resulting in demand-deficient unemployment. However, once the economy recovers, the rise in AD will lead to a rise in NY and demand for labour, automatically correcting demand-deficient unemployment.</p> <p>OR</p> <p>On the other hand, structural unemployment tends to be more permanent since once a person's skills are obsolete, they are unlikely to be able to find a job unless they reskill. Over time, workers who become discouraged from not being able to find a job may leave the labour force. This reduces the LRAS of the country. Hence structural unemployment could lead to more long term negative impacts and may not be easy to resolve.</p> <p>OR</p> <p>Demand Deficient Unemployment is easier to correct as governments can adopt expansionary fiscal policy. An increase in G would lead to an increase in AD which results in an increase in real national income via a multiplier effect. This would lead to an</p>	[4]

	<p>Increase in demand for labour which would reduce demand deficient unemployment.</p> <p>On the other hand, structural unemployment is harder to correct. Skills retraining is dependent on workers' attitudes and mindsets. Despite going for training courses, workers might still not be able to master the relevant skills needed. Skills training also takes a long time and the effects of policies to encourage reskilling may not be seen in the near-term. This makes structural unemployment a greater concern.</p>									
(ii)	<p>Discuss whether Singapore should change its policies aimed at keeping unemployment rates low, in view of the "devastating impact of the Covid-19 pandemic".</p> <p>Question Analysis</p> <table border="1" data-bbox="989 1321 1101 1478"> <tr> <td>Command</td> <td>Discuss whether</td> </tr> <tr> <td>Content</td> <td>Singapore policies to keep U rates low</td> </tr> <tr> <td>Context</td> <td>Covid 19-pandemic</td> </tr> </table> <p>Schematic Plan</p> <p>Introduction: Identify the current policies Singapore has adopted to keep unemployment rates low</p> <table border="1" data-bbox="829 1321 989 1478"> <tr> <td>Thesis: Singapore should not change its policies aimed at keeping U rates low</td> <td>Anti-Thesis: Singapore should NOT change its policies aimed at keeping U rates low</td> </tr> </table> <ul style="list-style-type: none"> Explain how the current policies work and explain their effectiveness Explain the limitations of other alternative policies/approaches Explain the limitations of current policies Explain the effectiveness of other policies/approaches <p>Synthesis: Whether or not Singapore should change its policies would depend on....</p> <p>Suggested Answer</p> <p>Intro: Identify current policies from Extract 6</p> <ul style="list-style-type: none"> traineeship and job matching programmes programmes that involve retraining workers, placing them on attachments and traineeships, and getting them back in jobs more quickly. 	Command	Discuss whether	Content	Singapore policies to keep U rates low	Context	Covid 19-pandemic	Thesis: Singapore should not change its policies aimed at keeping U rates low	Anti-Thesis: Singapore should NOT change its policies aimed at keeping U rates low	[8]
Command	Discuss whether									
Content	Singapore policies to keep U rates low									
Context	Covid 19-pandemic									
Thesis: Singapore should not change its policies aimed at keeping U rates low	Anti-Thesis: Singapore should NOT change its policies aimed at keeping U rates low									

generous, it may create a **disincentive to work**. If people decide to stay out of the labour force, LRAS may decrease. Extract 6 also suggests that countries like the US leave it to the market forces to get people to return to work. However, there is a risk that if people take a long time to find a job, skills can be eroded. This will also reduce labour productivity causing LRAs to shift left.

Antithesis: SG should change its policies aimed at keeping U rates low because

- There are limitations to the current policies
 - Extract 6 suggests that there is weak demand by employers for permanent job roles, this means that **demand-deficient unemployment may be severe**. Hence there should be more policies aimed at increasing AD. This could take the form of expansionary fiscal policy where the government provides more cash handouts to increase disposable incomes and C. Although this may be costly, it may be a short-term cost. Once AD increases and real NY increases, higher tax revenue can be collected.
 - Supply-side policies like retraining also take a long time** for significant impact to be observed. Furthermore, there are uncertain effects as labour productivity may not necessarily increase even with training. Workers must be willing to learn and adapt to new challenges.

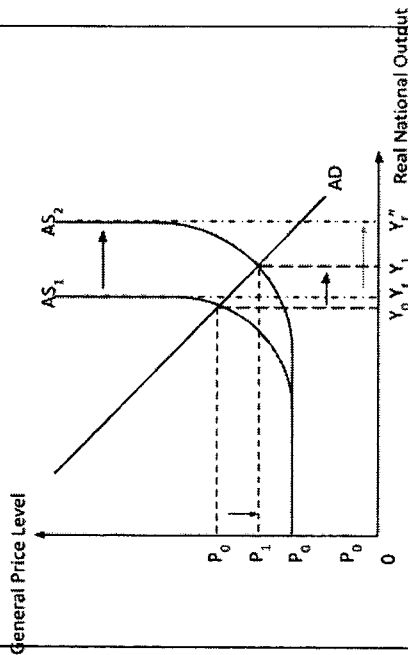
- There are better alternatives
 - Extract 6 suggests that unemployment benefits may be necessary if unemployment is high. **Unemployment benefits are automatic stabilisers that will dampen the fall in C and AD, and hence dampen the fall in real NY. This will keep unemployment rates low.** Furthermore, this helps Singapore to achieve inclusive economic growth. While this may be costly, it can be seen as a short term cost and higher tax revenue can be collected once the economy recovers.
 - Free market policies**, such as those adopted in the U.S. might also work well. This will **not require much funding** from the government. Workers in declining industries will move to industries with growing demand for workers and hence higher equilibrium wages. Thus, **free market forces will incentivise workers to pick up the skills** required by new industries.

Judgment:
To conclude, whether Singapore should change its policies would depend on the priorities of the government. If it prioritises long term economic growth, the current supply-side policies remain to be the most appropriate ones and there is no need for change. But if it prioritises the achievement of current inclusive growth, there may be a need to offer help to the unemployed through unemployment benefits.

Secondly, it would depend on whether the predominant type of unemployment is structural unemployment. The data provided is insufficient to tell how high structural unemployment is, compared with demand-deficient unemployment. If structural unemployment is the main type of unemployment present, then the current policies aimed at

Thesis: SG should not change its policies aimed at keeping U rates low because

- There are benefits to these policies:
 - Despite the pandemic, data in Extract 6 shows effectiveness of Singapore's current policies (Singapore Government has managed to keep unemployment rates "far lower than... elsewhere")
 - Supply side policies that focus on **retraining help to reduce the mismatch of skills** between workers and what job markets require. This will reduce structural unemployment.
 - At the same time, such policies **increase labour productivity and lead to increases in LRAS**.
 - The pandemic has resulted in weak demand for workers but when the government **subsidises attachments and traineeships in firms, it reduces the costs of hiring these workers** which will lead to lower unemployment. Furthermore, if these workers are found suitable, the firms may offer them a permanent job position.
 - The increase in AS causes and increase in Y_f (from Y_f to Y_f') and real Y (from Y_0 to Y_1). This leads to **greater demand for labour, which would reduce the U rate**, dampening the effect of the weak demand due to the pandemic/recession.



- Other alternative measures/approaches may be ineffective/lead to unintended consequences:
 - Extract 6 suggests that **unemployment benefits** may have to be introduced like in the U.S. However, such benefits will require substantial funding and may lead to **worsening budget deficits**. Figure 4 shows that Singapore has already incurred a huge budget deficit in 2020. While it may help dampen the fall in AD due to the pandemic, such expenditure will not lead to increases in LRAS and hence there may be no potential growth. Furthermore, if unemployment benefits are too

<p>retraining workers would be most appropriate and there would not be a need for change.</p> <p>Finally, my judgement is that Singapore may not need to change its policies for now but must continue to monitor the unemployment situation. If the pandemic drags on and unemployment worsens, there may be a need to consider the use of more expansionary measures to increase AD which includes the use of unemployment benefits.</p>	<p>Mark Scheme:</p> <p>Level 2 (4-6)</p> <ul style="list-style-type: none"> Thorough knowledge and an excellent ability to analyse and evaluate policies adopted in Singapore (including those mentioned in the case study), with analysis of alternative policies Reasoned (analytic) structure to the whole answer <p>Level 1 (1-3)</p> <ul style="list-style-type: none"> Answer shows some knowledge of the policies adopted in Singapore to address unemployment (there may be little/no discussion of policies in the case study) Meaning of question not properly grasped Basic errors of theory Inadequately explained <p>For 1-2m:</p> <ul style="list-style-type: none"> A few valid points Answer mostly irrelevant or inaccurate <p>E 2 (2)</p> <ul style="list-style-type: none"> Synthesises economic arguments to arrive at well-reasoned judgements about whether there is a need to change the policies adopted in Singapore. <p>E1 (1)</p> <ul style="list-style-type: none"> Unsupported evaluative judgment. 	<p>(d) Discuss the extent to which you agree with the view that to achieve inclusive growth, Singapore should focus more on policies to achieve economic growth rather than on redistributive policies.</p>	<p>[10]</p> <p>Question Analysis</p> <table border="1"> <tr> <td>Command</td> <td>Discuss the extent to which you agree</td> </tr> <tr> <td>Content</td> <td> Policies to achieve inclusive growth OR Focus on economic growth OR Focus on redistributive policies </td> </tr> <tr> <td>Context</td> <td>Singapore</td> </tr> </table> <p>Schematic Plan</p> <table border="1"> <tr> <td>Introduction: Explain inclusive growth</td> <td>Anti-thesis: To achieve inclusive growth, SG should focus more</td> </tr> <tr> <td>Thesis: To achieve inclusive growth, SG should focus more</td> <td>Thesis: To achieve inclusive growth, SG should focus more</td> </tr> </table>	Command	Discuss the extent to which you agree	Content	Policies to achieve inclusive growth OR Focus on economic growth OR Focus on redistributive policies	Context	Singapore	Introduction: Explain inclusive growth	Anti-thesis: To achieve inclusive growth, SG should focus more	Thesis: To achieve inclusive growth, SG should focus more	Thesis: To achieve inclusive growth, SG should focus more
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<table border="1"> <tr> <td> <p>on policies to achieve economic growth</p> <ul style="list-style-type: none"> Explain how focusing on economic growth achieves inclusive growth Explain how redistributive policies might conflict with economic growth (therefore it is better to focus on policies to achieve economic growth) </td> <td> <p>on redistributive policies to achieve inclusive growth</p> <ul style="list-style-type: none"> Explain how focusing on redistributive policies achieves inclusive growth Explain how policies to achieve economic growth might conflict with achieving equity (therefore it is better to focus on redistributive policies) </td> </tr> </table> <p>Judgment: Make a stand on whether SG should focus more on policies to achieve economic growth or on redistributive policies. Consider how these policies may not always be in conflict.</p>	<p>on policies to achieve economic growth</p> <ul style="list-style-type: none"> Explain how focusing on economic growth achieves inclusive growth Explain how redistributive policies might conflict with economic growth (therefore it is better to focus on policies to achieve economic growth) 	<p>on redistributive policies to achieve inclusive growth</p> <ul style="list-style-type: none"> Explain how focusing on redistributive policies achieves inclusive growth Explain how policies to achieve economic growth might conflict with achieving equity (therefore it is better to focus on redistributive policies) 	<p>Suggested Answer</p> <p>Introduction: Inclusive economic growth indicates 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.</p> <p>Achieving economic growth means growing Singapore's GDP. This can be done through increasing AD and AS. Redistributive policies aim to promote greater equity, by transferring income from those with higher incomes to those with lower incomes through taxes and subsidies.</p> <p>Thesis: To achieve inclusive growth, SG should focus more on policies to achieve economic growth</p> <p>Argument 1: Benefits of such policies in achieving inclusive growth</p> <ul style="list-style-type: none"> The pre-requisite to achieving inclusive growth is achieving actual growth. Extract 4 also suggests that "We need to grow the pie so each portion can be bigger" This means there is a need for policies like expansionary FP. When the government increases spending on infrastructure such as MRTs or healthcare facilities, there is an increase in G and AD (from AD0 to AD1) which leads to a multiplied increase in national income (from Y0 to Y1) since the increase in G results in further increases in induced consumption. Furthermore, many of the policies to achieve growth such as spending on infrastructure and training also increase LRAS from AS0 to AS1. This results in potential economic growth as well, ensuring sustained economic growth. As shown in the diagram below, the increase in AD and AS has led to an increase in real NY from Y0 to Y2.
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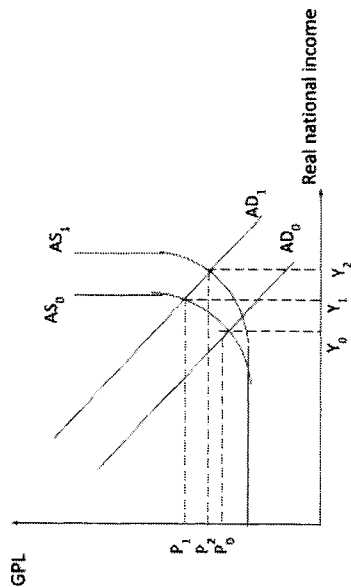
Antithesis: To achieve inclusive growth, SG should focus more on redistributive policies
Argument 1: Policies that focus on achieving economic growth may conflict with equity.

- **When policies focus on achieving economic growth, there may be aggressive adoption of technology and digitalisation.** In particular, due to the pandemic, many businesses were forced to rely more on automation and technology.
- This may displace many low-skilled workers, worsening inequality.
- On the other hand, larger firms which already adopted digitalisation were better able to cope with the pandemic. For example, F&B outlets that were already on online food delivery platforms were able to continue business but smaller hawkers who were not, were unable to adapt and many were forced to close down, **worsening inequality.**

Argument 2: Benefits of such policies in achieving inclusive growth

- Hence, there is an urgent need to focus on redistributive policies in order to achieve inclusive growth. For example, the progressive income tax may need to become even more progressive so that higher income workers pay more taxes to fund government expenditure.
- Another example is that of unemployment benefits, as suggested in Extract 6, which may be needed to help workers who are unable to find jobs. Such unemployment benefits can also help the economy grow as they dampen the fall in AD by dampening the fall in C. Coupled with other measures to increase AD, this may result in economic growth.

Judgment:
[Stand] To a large extent, I agree with the view that to achieve inclusive growth, there is a need to focus more on policies that achieve economic growth.
[Substantiate]
[Consider context] This is especially so in the current environment where there is uncertainty and global concerns about economic growth.
[Consider assumptions] Having said that, policies that achieve economic growth must also ensure that productive employment opportunities are created for majority of the population. Hence Singapore's choice of policies to retrain low-skilled workers is an example of how a focus on economic growth can result in inclusive growth.
[Consider combination of policies] Redistributive policies on the other hand, in themselves, may not help generate growth. But they are still important as efforts must be made to ensure that the benefits of economic growth are shared with all Singaporeans. Only then can inclusive growth be achieved.



- Some of these policies that support low-wage workers to reskill also contribute to greater equity, thereby achieving inclusive economic growth.
- Therefore, in a situation where global growth forecast is bleak, SG needs to focus on growth so that we "have more to redistribute in the future"

Argument 2: Redistributive policies may conflict with economic growth.

- Furthermore, if Singapore focuses more on redistributive policies by increasing the tax rates of higher income earners, it may reduce FDI and inflow of foreign talent.
- Singapore has always kept tax rates competitive to attract FDI and foreign talent so as to increase AD and LRAS to promote economic growth. In view of the weak demand and uncertainties, FDI inflow has already fallen and it would not be prudent to increase tax rates further.
- Redistributive policies in the form of providing subsidies to lower income workers might also have unintended consequences of reducing incentives to work. This may further reduce the size or productivity of the labour force, and potential economic growth would be affected.
- Furthermore, in view of the large budget deficit shown in Figure 4, it would not be sustainable for Singapore to continue spending a lot on subsidies to help lower income households, especially if the increase in tax rates for higher income households cannot be raised too much.

Mark Scheme:	
Level 2 (5-7)	<ul style="list-style-type: none"> • Thorough knowledge and an excellent ability to explain benefits of implementing policies that focus on achieving economic growth vis-a-vis policies that focus on redistributing income, in order to achieve inclusive growth • Answer should recognise that achieving economic growth is a pre-requisite for achieving inclusive growth. • Answer should attempt to address whether focusing on economic growth first is more important than focusing on redistributing income. • Reasoned (analytic) structure to the whole answer
Level 1 (1-4)	<ul style="list-style-type: none"> • Answer shows some knowledge of how to achieve inclusive growth • Meaning of question not properly grasped (e.g. answer may focus on explaining different types of policies to achieve inclusive growth without realising that the question is about whether there should first be a focus on achieving economic growth or a focus on redistributing income) • Basic errors of theory • Inadequately explained
E2 (2-3)	<p>For 1-2m:</p> <ul style="list-style-type: none"> • A few valid points • Answer mostly irrelevant or inaccurate • Synthesises economic arguments to arrive at well-reasoned judgements on whether Singapore should focus more on policies to achieve economic growth or on redistributive policies.
E1 (1)	Unsubstantiated evaluative judgment.

-End of Paper-



ST ANDREW'S JUNIOR COLLEGE
 PRELIMINARY EXAMINATIONS 2022 (JC2)
 General Certificate of Education Advanced Level
 Higher 2

ECONOMICS

9757/02

Paper 2

12 September 2022

2 hours 15 minutes

Suggested Answers

1 The shortage of semiconductors, the chips that help everything from cars to laptops to toasters to function, has been a persistent snarl in the supply chains for electronics throughout the pandemic. This shortage was supposed to work itself out—either as manufacturing ramped up to meet demand, or as demand cooled down. Instead of fading, the chip problem has become so unmanageable that it's on track to outlast the lockdowns and closures that triggered the shortage in the first place.

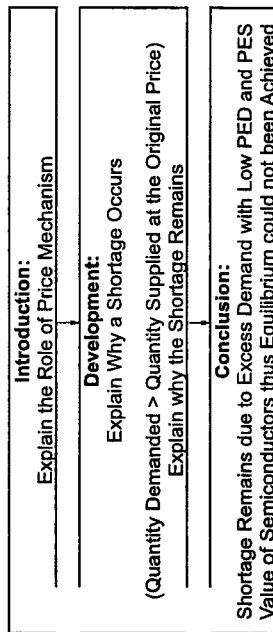
- (a) Explain why the price mechanism failed to correct the prevailing shortage of semiconductors. [10]
- (b) Discuss alternative methods that can be adopted by firms and governments to resolve the shortage of semiconductors. [15]

(a)

Question Analysis

Command Content	Explain Price mechanism, shortage Two required elements: 1. Analysis to show why the price mechanism failed to correct the shortage of semiconductors using demand and supply framework. 2. Application of elasticity concepts to explain the extent and the inability of price mechanism to adjust itself in the short run.
Context	Market for semiconductors

Schematic Plan



Suggested Answer

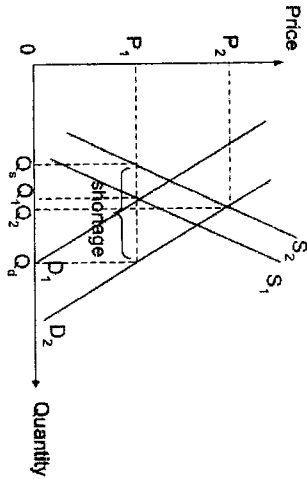
Introduction:

In a free market, prices are determined by the interaction between demand and supply. Changes in market prices act as a signal about how scarce resources should be allocated. If prices are rising because of high demand from consumers, this is a signal to suppliers to expand production to meet the higher demand thus the price mechanism will help to eliminate a shortage of a good. If there is excess supply in a market, the price mechanism will help to eliminate a surplus of a good by allowing the market price to fall.

Development:

In this case, a shortage ensues when the quantity demanded of semiconductors exceeds the quantity supplied at the current price. As mentioned in the pre-amble, there was 'persistent snarl in the supply chains for electronics throughout the pandemic'. This could imply that since many supply chains had been affected due to the lockdown, supply of semiconductors would likely fall. There has also been an increase in the demand for semiconductors as there was an increase in demand for electronic devices in light of the increase in number of people working and studying remotely. Since semiconductors are factors of production of these electronic devices, the increase in demand for electronic devices would have caused an increase in the derived demand for semiconductors.

As seen in the diagram below, supply curve shifts from S_1 to S_2 while demand curve shifts from D_1 to D_2 . As such, there will be a shortage of Q_3, Q_4 at the existing equilibrium price of P_1 . This is because as P_1 , the quantity supplied is at Q_3 but the quantity demanded is now at Q_4 , resulting in excess demand and a lack of supply. Usually, when there is a shortage, this will create an upward pressure in prices as consumers will bid up prices to get the semiconductors. When the price increases, quantity demanded will fall. The increase in price signals to producers to increase production of semiconductors, increasing quantity supplied. If the increase in price reaches P_2 , the shortage would be eliminated because quantity demanded will fall from Q_4 to Q_2 and quantity supplied will rise from Q_3 to Q_2 . When quantity demanded = quantity supplied, a new equilibrium is reached at P_2 and Q_2 .



However, while the price of semiconductors has increased, it has been insufficient to clear the shortage. This could also be due to the price elasticity of demand and supply for semiconductors. The demand for semiconductors might be relatively price inelastic since there are no close substitutes available for semiconductors. As stated in the pre-amble, semiconductors are "the chips that help everything from cars to laptops to toasters to function." This also shows that they are vital components thus a necessity for the production of various consumers' goods. With a rise in price, quantity demanded will fall less than proportionately, ceteris paribus.

Furthermore, the supply of semiconductors is likely to be relatively price inelastic as the pandemic had disrupted semiconductor firms' access to its factors of production to be able to respond quickly to the sudden increase in demand that led to a rise in price. This means that quantity supplied of semiconductor would increase less than proportionately to the increase in price, ceteris paribus.

Hence, a large rise in price might be needed to reduce the quantity demanded and increase the quantity supplied of semiconductors so as to eliminate the shortage.

Conclusion:
In view of the large increase in demand for semiconductors due to the lockdown, coupled with low PED and PES value for semiconductors, the shortage will be quite substantial. Thus the shortage is unlikely to be eliminated in the short run even with a huge rise in price as

consumers and producers will require time to adjust their consumption and production patterns in reaction to any price change and the changing market conditions.

Mark Scheme

Level	Description	Mark
L3	<ul style="list-style-type: none"> There is thorough knowledge, understanding and an excellent ability to explain why the role of price mechanism failed to correct the shortage of semiconductors. Diagram(s) are well used to show the role of price mechanism and how a shortage exists when the quantity demanded exceeds the quantity supplied at the original price of semiconductors. Application of the concept of elasticities to demonstrate that the existence of a shortage could mean that both demand and supply for semiconductors are price inelastic. There is in-depth analysis which might include explaining that the price rise would not be sufficient to reach the equilibrium price and the shortage would remain. There is a reasoned (analytic) structure to the whole answer. <p>The two required elements for this question are:</p> <ol style="list-style-type: none"> Clear analysis to show why the role of price mechanism failed to correct the shortage of semiconductors using demand and supply framework. Able to apply elasticity concepts to explain the extent and the inability of price mechanism to adjust itself in the short run. 	8 - 10
L2	<ul style="list-style-type: none"> Answers relevant to the question but theory incompletely explained. Underdeveloped or under-developed explanations of why the role of price mechanism failed to eliminate the prevailing shortage of semiconductor despite a rise in the price of semiconductor. Diagram(s) may not be well-used to show how a shortage exists or diagram(s) may not align with the analysis. There may be irrelevant explanations about the potential causes of a rise in demand &/or fall in supply of semiconductor. 	5 - 7
L1	<ul style="list-style-type: none"> Meaning of question not properly grasped. Answer may not show understanding of how a shortage arises. A few valid points. Basic errors of theory. Answer mostly irrelevant or inaccurate. 	1 - 4

(b) Discuss alternative methods that can be adopted by firms and governments to resolve the shortage of semiconductors. [15]

Question Analysis

Command | Discuss:

	Two sided analysis of the different methods adopted by both firms and governments to resolve the shortage of semiconductors
Content	Two required elements: 1. Analysis of methods adopted by firms to resolve the shortage (e.g. increase production, expand production capacity) 2. Analysis of methods adopted by governments to resolve the shortage (e.g. subsidies, R&D, recycling)
Context	Tool of Analysis: Demand and Supply Framework Semiconductor Industry

Schematic Plan

Introduction

As price mechanism failed to correct the prevailing shortage of semiconductors, thus alternative methods will need to be adopted by both firms and governments to address the shortage of semiconductors

<p>Thesis 1:</p> <ul style="list-style-type: none"> • Increase supply of semiconductors • Increase production capacity (increase PES) <p>Anti-thesis 1 (Eval):</p> <ul style="list-style-type: none"> • Increase COP 	<p>Thesis 2:</p> <ul style="list-style-type: none"> • Govt. regulation (prevent fall in supply) • Subsidies / R&D (increase supply) • Recycling (reduce demand) <p>Anti-thesis 2 (Eval):</p>
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Judgment:

The shortage of semiconductors may be reduced but it is unlikely to be resolved in the short run. Both firms and governments will need to work together to adopt various measures to reduce the shortage while overcoming future shortage of semiconductors and the possibility of less reliance of the semiconductors

Suggested Answer:

Introduction:

As explained in (a), the price mechanism failed to eliminate the shortage of semiconductors. Hence, in attempting to resolve the shortage, the semiconductor firms will need to consider various methods such as to increase production to cater to the sudden surge of demand while taking into consideration the high cost of production so as to augment its profit. The governments could play a coordinating role by facilitating domestic firms' transition towards a more self-reliant business model in both the short and long run while taking into account the constraints faced and the potential conflict of other objectives.

Development:

Methods Adopted by Firms to Reduce the Shortage of Semiconductors

Thesis 1:

One of the methods that could be adopted by firms is to increase the supply of semiconductors. As explained in the pre-amble, there is "persistent snarl in the supply chains for electronics throughout the pandemic." Thus, existing firms or even new firms may be encouraged to enter the market thus allocating more resources to expand the production of semiconductors. When more producers enter the market, supply will rise. At the same time, firms could also invest in research and development (R&D) to harness more advanced

technology to be more efficient in production. With a rise in supply, it will lead to a fall in the price of semiconductors. If the supply is sufficient enough, it may be able to resolve or reduce the extent of the shortage of semiconductors.

Given that one of the reasons for the shortage is that the supply of semiconductors is price inelastic, firms can also reassess their production capacity. They could increase their access to factors of production. This will make the supply more price elastic so that any increase in price would lead to a larger increase in quantity supplied. With the increase in both equilibrium price and quantity, this will also lead to an increase in revenue and thus profits, ceteris paribus.

Anti-Thesis 1 (Eval):

With the easing of border restrictions, and reduced disruptions to the movement of goods and services, this will lead to greater access to factors of production which can accelerate the increase in price elasticity of supply of semiconductors. However, the extent to which the supply can become more price elastic also depends on other factors such as the availability of spare capacity for the firms to increase their production of semiconductors in response to the shortage. If the firms are already operating at full capacity, there will be little increase in the price elasticity of supply and thus there would be more increases in price for semiconductors before the shortage can be resolved.

In addition, the process of erecting a semiconductor factory is extremely capital and labour intensive, time-consuming and complex. At the same time, such high cost of production will likely deter some companies to undertake such a project which may take years. The investment will only be worthwhile if demand continues to rise in the future. Hence it is unlikely to see a rise in supply in the short run.

Methods Adopted by Governments to Reduce the Shortage of Semiconductors

Thesis 2:

The shortage of semiconductors was due to the pandemic leading to the lockdown of all electronic devices and that demand will only be higher, governments could support the firms by allowing such essential businesses to continue to operate with regulations regarding the precautions to be taken to reduce the transmission of the virus.

In order to encourage existing firms or new firms to enter the market, the governments could provide funding or subsidies to help firms engage in R&D or to expand their production capacity in order to increase the supply of semiconductors. By increasing the supply of semiconductors, this will help to remove the shortage at the current price.

Governments supporting the semiconductor industry to increase the production of semiconductors will also allow them to achieve their macro aim. This is because they can export the products to other countries thus leading to increased export revenue which can bring about an improvement in the balance of trade, assuming import expenditure increases to a smaller extent as they may also need to import factors of production for the semiconductor production.

Governments can also address the increasing demand by investing in recycling of semiconductors. This can be done via collection centres to collect old electronic devices to salvage components to be repurposed. This will reduce the demand for new semiconductors which will then reduce the shortage. Recycling also promotes sustainability in reducing the pollution due to electronic waste management as well as slow down the depletion of resources used to produce these semiconductors.

Anti-Thesis 2 (Eval):

The ease of regulation to allow essential businesses to continue to operate despite the pandemic may lead to higher transmissions of the virus. Furthermore, even if the government allows such operation, firms would still face shortage of labour and the lack of production capacity.

To support the firms via subsidies, the governments would need to consider the feasibility of such an intervention given the constraints of the budget. A reallocation of budget to support the semiconductor industry would lead to an opportunity cost incurred in terms of the next best alternative forgone, which could be the net benefit derived such as healthier workforce if the governments allocate the funds to improve and expand the healthcare industry especially due to the pandemic.

Recycling may not be effective if there is a lack of efforts to recycle unwanted electronic devices or if there is a lack of expertise to salvage the components from the electronic devices sent for recycling.

Judgment:
The shortage of semiconductors is unlikely to be resolved in the short run. It can at most be reduced as all the methods would require a fair amount of time and resources to increase the production of semiconductors.

The sudden shortage of semiconductor is due to a wave of panic-buying due to the pandemic. Demand for products that require lots of semiconductors will likely continue to rise, and there's little indication that this appetite for electronics will abate anytime soon. It's likely that the pandemic has permanently changed certain modes of working and communicating to rely more heavily on electronic (that is, semiconductor-driven) devices. With the increasing use of technology and electronic devices, the demand will increase rapidly. This would only worsen the shortage situation rapidly. Efforts to dampen demand may be fairly ineffective. As such, firms and governments should focus more on increasing supply due to the benefits it could bring to them in the long run. In addition, firms and governments could work together to invest in R&D to reduce the reliance on semiconductors.

Mark Scheme

Level	Knowledge, Application, Understanding, Analysis	Marks
L3	<ul style="list-style-type: none"> Thorough knowledge and an excellent ability to explain facts and theory in a precise, logical and reasoned manner (an analytic explanation) pertaining to the various methods adopted by both firms and governments to resolve the shortage of semiconductors. For a well-developed answer that demonstrates a good understanding of various methods adopted by both firms and governments to resolve the shortage. Well-balanced analysis of the various methods adopted by BOTH firms and governments to reduce the shortage of semiconductors and limitations of the various methods which may only be feasible if certain conditions are met. <p>The two required elements for this question are: 1. One method by EACH economic agent to reduce / resolve the shortage of semiconductors. 2. One limitation faced by EACH economic agent adopting the method suggested.</p>	8 - 10

L2	<ul style="list-style-type: none"> For an under-developed answer that demonstrates some understanding of the various methods adopted by either firms or governments to resolve the shortage. Answer given is relevant to the question but theory incompletely explained. There is some consideration of how the various methods could work &/or how the methods suggested could only be appropriate if certain conditions are met. 	5 - 7
L1	<ul style="list-style-type: none"> For an answer that demonstrates little knowledge of the various methods adopted by firms and governments. Meaning of question not properly grasped. Basic errors of theory. Various methods suggested are mostly irrelevant or inaccurate. 	1 - 4
Evaluation		
E3	For a well-developed judgement on the various methods adopted by BOTH firms and governments to address the shortage of semiconductors. For example, the ability to recognise unstated assumptions, time period etc.	4 - 5
E2	Some attempt to evaluation or a summative conclusion. For an under-developed judgement on the various methods adopted by firms &/or governments. For example, relevant to the question but does not explain the judgement or base it on relevant analysis.	2 - 3
E1	For an unexplained judgement on the various methods adopted by firms &/or governments.	1

foreign manpower would bear the brunt of a fall in the labour supply. With a fall in labour supply, assuming ceteris paribus, this would lead to a rise in the wages of workers. Labour cost is assumed to be a variable cost. When more output is produced, more workers are hired. As wages rise, this increase in labour cost would lead to the marginal cost and average cost of brick-and-mortar retailers to increase.

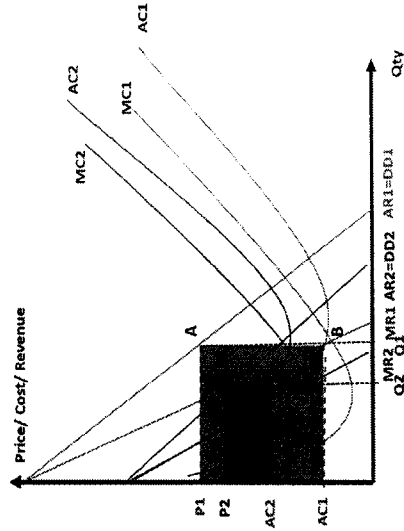
Additionally, the brick-and-mortar retailers are also faced with rising rental costs as the economy reopens from the Covid-19 restrictions previously placed. Rental costs are considered fixed costs as they do not vary with the level of output. For example, even when production is 0, in the absence of government intervention, firms still have to incur full rental costs. As a result of the increase in rental prices, brick-and-mortar retailers would see an increase in the fixed cost incurred and leads to the average cost to increase.

With technological adoption rising as a result of Covid-19, there are now more online retailers, and this would lead to rising competition for the traditional brick-and-mortar retailers. With the rising competition, this would also mean a fall in the demand for the goods and services sold by brick-and-mortar retailers, as consumers switch to shopping online. In particular, if goods sold are close substitutes and the XED value is large, then if online shops lower prices, the fall in demand of goods sold by brick-and-mortar retailers would be significant. There would thus be a fall in both the average revenue and marginal revenue of the retailer.

Referring to diagram, a profit-maximising brick-and-mortar retailer would seek to produce Q1 and charge price P1. Profits at this level of output can be derived by taking $TR (P1 \times Q1) - TC (AC1 \times Q1)$ and this is shown by the shaded area P1ABAC1 below.

As a result of the challenges identified above, this would lead to a fall in the $DD = AR$ curve from $AR1 = DD1$ to $AR2 = DD2$. Due to the rising operating costs and labour costs, this would lead to AC to increase from AC1 to AC2 and MC1 to MC2.

As a result, a profit-maximising brick-and-mortar retailer would now seek to produce at Q2 and charge price P2. This would lead to profits of P2CDAC2, which is smaller than the original level of profits earned.



Conclusion

2 The traditional brick-and-mortar retail industry in Singapore has been grappling with challenges from a shrunken labour market, rising operating costs as well as intense competition from their online rivals. In response to these challenges, these retailers can either choose to adapt or to shut down. Before it closed, department store operator Robinsons Singapore had tried to embark on digital innovation by setting up its own app as well as selling its products on e-commerce platform Lazada.

- (a) Explain how the above challenges may affect the profits of a brick-and-mortar retailer. [10]
- (b) Discuss the extent to which digital innovation would be the best way to increase profits in view of these challenges. [15]

Question Analysis (a)

Command Word	Explain
Content	Shrunken labour market Rising operating costs Intense competition from online rivals Affect profits (TR-TC) Brick-and-mortar retailer
Context	Brick-and-mortar retailer

Schematic Plan

Requirement 1: Effect on TR	Requirement 2: Effect on TC
Total Revenue (TR) Intense competition from online rivals (DD decreases -> AR & MR falls) Assuming c.p. TR will also fall	Total Cost (TC) Shrunken labour market (Rise in labour costs - VC increases) Rising operating cost (Rise in rental - FC increases, electricity prices - VC increases) Assuming c.p. Fixed Cost & Variable Cost rises resulting in both AC & MC to increase TC will increase
Effects on profits (TR - TC) of brick-and-mortar retailer	

Suggested Answer (a)

Introduction

Profits is derived by subtracting total cost from total revenue (TR-TC). As provided in the preamble, there are a number of challenges faced by a brick-and-mortar retailer and these challenges would have an effect on the total revenue and total cost of a brick-and-mortar retailer.

Body

Singapore has been experiencing the phenomena of a shrunken labour market because of both an ageing population as well as the manpower crunch brought about by the international travel restrictions due to the Covid-19 pandemic. As the economy reopens and rebuilds, industries such as the retail and food services sector which has been traditionally reliant on

As a result of the above challenges, this would lead to lower profits earned by the brick-and-mortar retailer as the demand decreased due to rising competition from online retailers as well as due to the rising cost of production due to the rising rent and wages incurred.

Mark Scheme

Level	Knowledge, Application, Understanding, Analysis	Marks
L3	<ul style="list-style-type: none"> There is thorough knowledge, understanding and an excellent ability to explain how the challenges may affect the profits of a brick-and mortar retailer. Diagram(s) are well used to explain how the challenges may affect the profits of a brick-and mortar retailer. Application of the concept of cost and revenue to demonstrate and explain how the challenges may affect the profits of a brick-and mortar retailer. There is in-depth analysis which might include explaining how the challenges may affect the profits of a brick-and mortar retailer There is a reasoned (analytic) structure to the whole answer. <p>The two required elements for this question are:</p> <ol style="list-style-type: none"> Clear analysis to show how the intense competition from online rivals may lower profits as the total revenue decreases. Clear analysis to show how the shrunken labour market and rise in operating cost may lower profits as total cost increases. 	8 – 10
L2	<ul style="list-style-type: none"> Answers relevant to the question but theory incompletely explained. Undeveloped or under-developed explanations on how the challenges may affect the profits of a brick-and mortar retailer Diagram(s) may not be well-used to show how the challenges may affect the profits of a brick-and mortar retailer. There may be irrelevant explanations about effects of total cost or total revenue 	5 – 7
L1	<ul style="list-style-type: none"> Meaning of question not properly grasped. Answer may not show understanding of how a shortage arises. A few valid points. Basic errors of theory. Answer mostly irrelevant or inaccurate. 	1 – 4

Question Analysis (b)

Command Word	Discuss the extent
Content	Digital Innovation Best way Increase Profits In view of challenges
Context	Brick-and-mortar retailer
Schematic Plan	
Requirement 1: Digital Innovation is the best way	Requirement 2: Digital Innovation is not the best way.

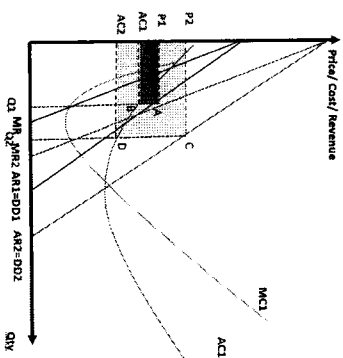
Explain how digital innovation can help to increase profits	Other ways that are better e.g. Brand Loyalty etc
Synthesis	
Stand & Justification	

Introduction

A firm usually seeks to maximise profits. In view of the challenges discussed in part (a), this would lead to a fall in the profits of brick-and-mortar retailers. As such, in reaction to these challenges, brick-and-mortar retailer may choose to use a variety of strategies to increase their profits.

Body 1: Digital Innovation is the best way

In light of the intense competition from its online rivals, a brick-and-mortar retailer may look to use technology to create an immersive, personalized and unique retail experience for its customers. Brick-and-mortar retailers can make use of cutting-edge technologies such as artificial intelligence (AI), augmented reality (AR) and virtual reality (VR) to enhance the shopping experience of its customers. Commune, a homegrown furniture retailer employs the use of virtual reality (VR) and augmented reality (AR) together with its Commune: In Motion app to allow its customers to instantly see what furniture pieces would look like in a space so as to help customers better visualize the end product and feel comfortable with the design before making a purchase. Assuming the success of the strategy, this would lead to an increase demand for brick-and-mortar retailer's product and thus lead to an increase in AR and MR which is represented by a rightward shift in the diagram below from AR1=DD1 to AR2=DD2 and MR1 to MR2. Assuming ceteris paribus, this would lead to increased profits from areas P1ABAC1 to P2CDAC2.



Additionally, given the rising costs, brick-and-mortar retailers can adopt digital automation as a way to reduce costs, improve efficiency and boost customer experiences. Automation introduced to time-consuming, routine, tedious and repetitive retail tasks in the form of stock-taking can be performed by the automated inventory management system. Additionally, given the manpower crunch, robots or even automated checkout counters could be employed to reduce the reliance of labour and thus mitigate the rise in cost of production. With rising rental costs, brick-and-mortar retailers can also look to move some of its operations online via the setting up of an online retail store while maintaining a smaller physical storefront. This would help to manage the rising rental costs.

their profits as it can allow the retailers to increase the revenue as well as reduce costs incurred compared to building brand loyalty which only allows the increase in revenue.

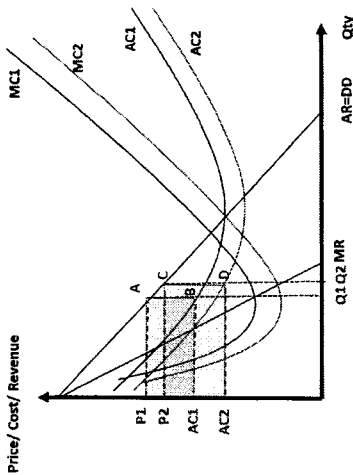
In light of changing consumer purchasing behaviour, brick-and-mortar retailers can seek to undertake digitalization and offer an omni-channel strategy by providing for customers a fully integrated shopping experience. An omni-channel strategy unites user experiences across various touchpoints, including brick-and-mortar, web and mobile apps. For instance, a clothing brand may sell its products on its website, app, Instagram's 'Shopping' tab, Amazon as well as in its brick-and-mortar stores. This allows retailers to be able to engage better with customers on both the online and offline platforms.

Nevertheless, the ultimate success depends on whether brick-and-mortar retailers are able to keep up with the changing consumer purchasing behaviour in its bid to increase their profits.

Mark Scheme

Level	Knowledge, Application, Understanding, Analysis	Marks
L3	<ul style="list-style-type: none"> Thorough knowledge and an excellent ability to explain facts and theory in a precise, logical and reasoned manner (an analytic explanation) pertaining to the extent in which digital innovation would be the best way to increase profits in view of the challenges. For a well-developed answer that demonstrates a good understanding of whether digital innovation would be the best way to increase profits in view of the challenges. Well-balanced analysis of the various strategies that can be used to increase profits in view of the challenges. <p>The two required elements for this question are:</p> <ol style="list-style-type: none"> Digital Innovation as the best way to increase profits in view of the challenges Another strategy (e.g. building brand loyalty) to increase profits in view of the challenges. 	8 – 10
L2	<ul style="list-style-type: none"> For an under-developed answer that demonstrates some understanding of the various strategies that can be used to increase profits in view of the challenges. Answer given is relevant to the question, but theory incompletely explained. There is some consideration of how the various strategies could work to increase the profits given the challenge 	5 – 7
L1	<ul style="list-style-type: none"> For an answer that demonstrates little knowledge of the possible strategies adopted by firms to increase the profits. Meaning of question not properly grasped. Basic errors of theory. Various methods suggested are mostly irrelevant or inaccurate. 	1 – 4
Evaluation		
E3	For a well-developed judgement on whether digital innovation is the best way to increase profits in view of the challenges. For example, the ability to recognise unstated assumptions, time period etc.	4 – 5
E2	For an under-developed judgement on whether digital innovation is the best way to increase profits in view of the challenges. For example, relevant to the question but does not explain the judgement or base it on relevant analysis.	2 – 3

Assuming the success of these strategies, this would lower the MC and AC which is shown by a downward shift of MC1 to MC2 and AC1 to AC2. Assuming ceteris paribus, this would lead to an increase in profits area P1ABC1 to P2CDAC2.



Body 2: Digital Innovation is NOT the best way

The use of digital innovation comes with a large cost involved as the brick-and-mortar retailer would have to incur the costs of digitalization before seeing the results (be it a rise in DD or fall in costs). Additionally, the success of using digitalization such as the digital tools, augmented reality (AR), virtual reality (VR), etc is not guaranteed as it must meet the tastes & preferences of consumers ultimately.

Instead of digital innovation, brick-and-mortar retailers can seek to build brand loyalty with actual or perceived differences. Actual differences can be created by developing a product through R&D that is unique and thus gives the brick-and-mortar retailer an edge over its rivals such as the online retailers. Brick-and-mortar retailers can also engage in perceived differences by engaging in advertisement campaigns to market the quality of their products to those offered by their online rivals. Assuming the success of the strategies, this would help increase the demand for the brick-and-mortar retailers, leading to an increase in total revenue. With higher total revenue, assuming ceteris paribus, this would lead to higher profits for the firm. Additionally, this strategy would also help to make demand more price inelastic and reduce the degree of substitutability to the products sold by online retailers. If PED > 1, then the firm might be able to increase price (for example, due to increase in costs of production) and there would be a less than proportionate fall in quantity demanded which would lead to a rise in total revenue.

Nevertheless, building brand loyalty takes time especially in today's globalized world. It would take a while for brand loyalty to be built and usually a high cost is involved too. In the short term, the rise in costs might be higher than the rise in revenue. Through building of brand loyalty, it does not help to address the challenge of rising operating costs and labour crunch.

Note: other ways such as product innovation, price discrimination, pricing strategies etc. are also acceptable

Synthesis:

In conclusion, faced with the multitude of challenges, digital innovation, when used appropriately, is to a large extent, the best way to allow a brick-and-mortar retailer to increase

E1	For an unexplained judgement on whether digital innovation is the best way to increase profits in view of the challenges.	1
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3 The Covid-19 pandemic has exposed severe underinvestment in research and development (R&D) of vaccines to prevent public health crises. Policy makers have attempted to issue patents and grants for pharmaceutical companies to encourage discoveries in vaccine technology. The rights to manufacture vaccines are currently held by a small group of pharmaceutical companies making extraordinary profits by controlling the global supply, which results in expensive vaccines for consumers especially from poor nations.

- (a) Explain why markets might fail in the case of R&D for Covid-19 vaccine technology and where a small group of pharmaceutical companies control the supply of Covid-19 vaccines. [10]
- (b) Evaluate the policies that could be adopted by governments to address both these types of market failure. [15]

Suggested Answers

Part (a)
 Explain why markets might fail in the case of R&D for Covid-19 vaccine technology and where a small group of pharmaceutical companies control the supply of Covid-19 vaccines. [10]

Schematic Plan

<p>Introduction:</p> <ul style="list-style-type: none"> Briefly state the source of market failures in the 2 different cases i.e. <ul style="list-style-type: none"> 1) R&D for Covid-19 vaccine technology and 2) small group of pharmaceutical companies controlling the supply of Covid-19 vaccines. Recognize that in both cases result in underproduction of R&D and Covid-19 vaccines and hence result in allocative inefficiency 	
<p>Body 1: In the case of R&D for Covid-19 vaccine technology Positive externality in production Draw MSB-MSC diagram and explain with use of diagram how the ignorance of positive externalities results in underproduction and hence DWL</p>	<p>Body 2: In the case of small group of pharmaceutical companies controlling the supply of Covid-19 vaccines Market Dominance Draw oligopolistic firm diagram and explain with use of diagram how the market dominance result in P > MC and hence DWL</p>
<p>Brief Conclusion that summarise answers.</p>	

Introduction

There are several reasons why a market fails to allocate resources efficiently.

- In the case of R&D for Covid-19 vaccine technology, the market fails to allocate resources efficiently as producers (the pharmaceutical companies) ignore the presence of the positive externalities that fall on third parties.

- In the case where there is a small group of pharmaceutical companies controlling the supply of Covid-19 vaccine, the market fails as there is **market dominance** which allows the firms to have significant market power.

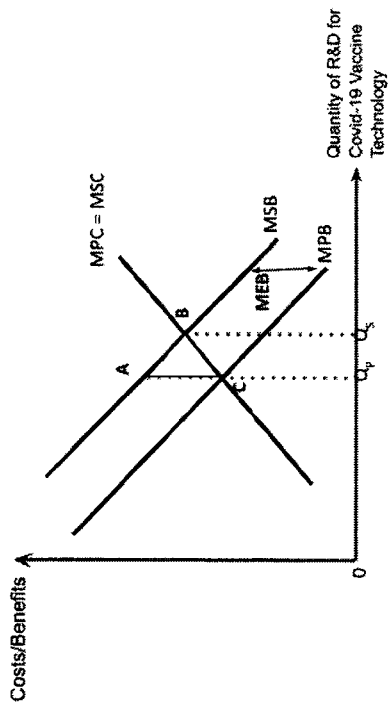
Both of these cases result in underproduction of Covid-19 vaccines and hence more resources should have been allocated to the production of Covid-19 vaccines to maximise society welfare.

Body

Explain how the presence of positive externalities in the market of R&D for Covid-19 vaccine technology would result in market failure.

In the market of R&D for Covid-19 vaccine technology, there is a presence of positive externalities that are ignored by the pharmaceutical companies. R&D for Covid-19 technology might cause breakthrough in medical field and create new knowledge that might help spur innovation in similar diseases such as Covid-19. Hence, this might benefit third parties such as other pharmaceutical firms that are not directly involved in the R&D for Covid-19 technology but yet able to make use of the breakthrough knowledge to create new drugs or vaccines that benefits the society at large.

Due to the presence of positive externality in production of R&D for Covid-19 technology, there would be a divergence between MSB and MPB as represented in diagram below, where $MSB > MPB$ at all output levels.



Left to the free market, the production of R&D for Covid-19 Vaccine will be at Q_p . This is because the pharmaceutical companies that aim to maximise profits will produce up to the point where Marginal Private Benefit (MPB) = Marginal Private Cost (MPC). Hence, Q_p represents the market equilibrium level of production.

However, the socially optimum level of output of R&D for Covid-19 vaccine technology, Q_s , occurs where $MSB = MSC$ where the society welfare is maximised.

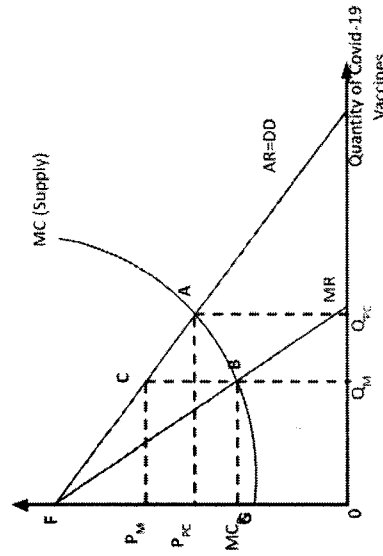
As Q_p is lower than Q_s , there is an underproduction of R&D for Covid-19 vaccine technology. More resources could have been allocated to the production of R&D for Covid-19 vaccine technology.

Due to the underproduction of $Q_p - Q_s$ amount, the social benefits accorded to the society of this quantity of $Q_p Q_s$ that is not produced is equal to area $Q_p A B Q_s$, while the social costs of using resources to produce $Q_p Q_s$ is equal to area $Q_p C B Q_s$. Since social benefits $>$ social costs for the amount under-produced i.e $Q_p Q_s$, there will be a welfare/deadweight loss of area ABC as a result of the under-production by $Q_p Q_s$.

Body

Explain how market dominance in the Covid-19 vaccine would result in market failure.

In the global Covid-19 vaccine industry, there are only a few large dominant pharmaceutical companies that control the global supply of Covid-19 vaccines. As a result, these oligopolistic firms enjoy market power that allows them to restrict output or raise prices above the perfectly competitive level.



With reference to the diagram above, under perfect competition, the industry/market produces an output of Q_{pc} and charges a price of OP_{pc} at equilibrium point A, the point of intersection between the market demand and market supply curve. This price OP_{pc} is equal to the marginal cost of producing the last unit of the output, i.e. $P = MC$.

Thus, given an output of Q_{pc} and a price of OP_{pc} , allocative efficiency is achieved in perfect competition because the sum of producer surplus ($GP_{pc}A$) and consumer surplus ($P_{pc}FA$) is maximised.

However, given the oligopolistic nature of Covid-19 vaccines industry, it will produce at output level Q_{ol} where $MR = MC$ in order to maximise its profit.

At the profit-maximising output Q_{ol} , the pharmaceutical company charges a higher price of OP_{ol} . By producing Q_{ol} , the pharmaceutical company's output of Covid-19 vaccines is less than the perfectly competitive output of Q_{pc} and the price OP_{ol} charged by the pharmaceutical firm is higher than the marginal cost (MC_c) at output Q_{ol} .

In restricting its output to Q_{ol} to charge a higher price OP_{ol} , the pharmaceutical company is allocatively inefficient because the price charged is greater than marginal cost ($P > MC$). Since beyond Q_{ol} , for every additional unit produced and sold, the value of the additional benefit gained is greater than the additional cost incurred by society, there would be a society welfare loss or deadweight loss of ABC. Thus, the good is said to be under-produced by the monopolist and there is under-allocation of resources as societal welfare is maximised when output is at Q_{pc} . Due to the deadweight loss of area ABC, societal welfare is not maximised. Therefore, market failure results where there is market dominance a small group of pharmaceutical companies control the supply of Covid-19 vaccines.

Conclusion

In conclusion, markets might fail in the case of R&D for Covid-19 vaccine technology and where a small group of pharmaceutical companies control the supply of Covid-19 vaccines due to the presence of positive externalities and market dominance respectively.

Mark scheme

L3	Thorough explanation of two sources of market failure as well as being able to apply to real-life context and with the use of examples relating to R&D and Covid-19 vaccines	8 – 10
L2	Incomplete/ Insufficient explanations of two sources of market failure.	5 – 7
L1	Inability to explain two sources of market failure satisfactorily, resulting in an incomplete answer.	1 – 4

Part (b)

Evaluate the policies that could be adopted by governments to address both these types of market failure. [15]

Schematic Plan

<p>Introduction:</p> <ul style="list-style-type: none"> Briefly state the policies that could be adopted to solve the 2 different market failures identified in part (a). State that the objective of the policies is to achieve allocative efficiency through increasing production of R&D for Covid-19 technology as well as Covid-19 vaccines. 	
<p>Body 1: In the case of R&D for Covid-19 vaccine technology To solve positive externality in production, students should suggest any <u>one</u> of the policies: 1) Subsidies or grants to pharmaceutical firms to engage in R&D 2) Patents to protect innovation</p>	<p>Body 2: In the case of small group of pharmaceutical companies controlling the supply of Covid-19 vaccines To solve market dominance, students should suggest any <u>one</u> of the following policies: 1) Legislation to increase competition through enforcement of Competition Act / Anti-trust laws 2) Nationalisation</p>
<p>Explain advantages and disadvantages the policy suggested.</p>	
<p>Conclusion</p> <ul style="list-style-type: none"> Evaluate if the policies suggested are overall effective in various context by considering the extent of their advantages or disadvantages. 	

Introduction

To correct the market failure caused by presence of positive externalities in the market of R&D for Covid-19 technology, the governments could implement the following policies:

- Provide subsidies or grants as well as
- Issue patents to the pharmaceutical firms.

On the other hand, to correct the market failure caused by market dominance among the pharmaceutical companies that control the global supply of Covid-19 vaccines, the governments could implement the following policies:

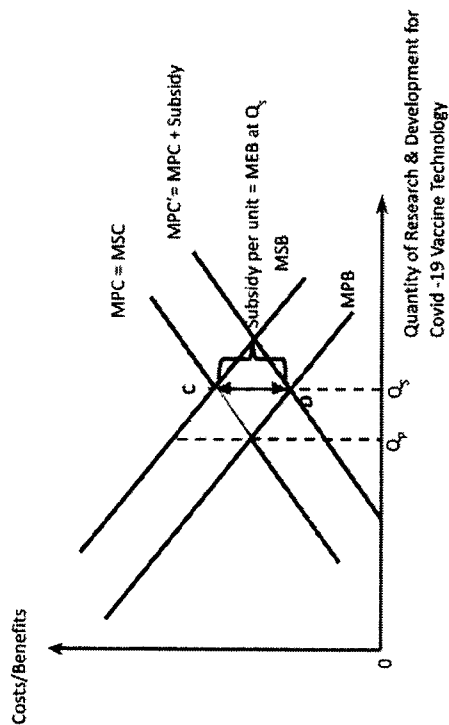
- Legislation to increase competition through enforcement of Competition Act / Anti-trust laws
- Nationalisation

These policies to correct these 2 types of market aim to achieve allocative efficiency by increasing production of R&D and covid-19 vaccines. Through increasing production, more resources would be allocated to the production of these 2 goods.

Body

To correct the market failure caused by the presence of positive externalities in the market of R&D for Covid-19 technology

1) Provision of subsidies or grants to pharmaceutical firms



To correct the under-production and therefore under-allocation of resources to R&D for Covid-19 vaccine technology, the government provides a per unit subsidy or grant that is equal to the marginal external benefits at Q_s which is the social optimal output where $MSB = MSC$.

This will shift the MPC curve by CD to the MPC' curve, where $MPC' = MPC + Subsidy/grant$. With the subsidy/grant, the producers' cost of production would fall from PC to MPC'. The pharmaceutical companies now produce Q_s amount of R&D where $MPB = MPC'$. This production level coincides with the socially optimal level of output, i.e. Q_s .

The deadweight loss of ABC is eliminated. As a result, resources are efficiently allocated and society's welfare is maximised.

Advantages of Subsidies/Grant

Subsidy/grant might help smaller pharmaceutical firms to have an opportunity to innovate and hence increase the level of production of R&D for Covid-19 vaccine technology. With greater number of smaller pharmaceutical firms entering the R&D market to compete with

the gigantic pharmaceutical firms, there might be greater level of R&D and better-quality innovation.

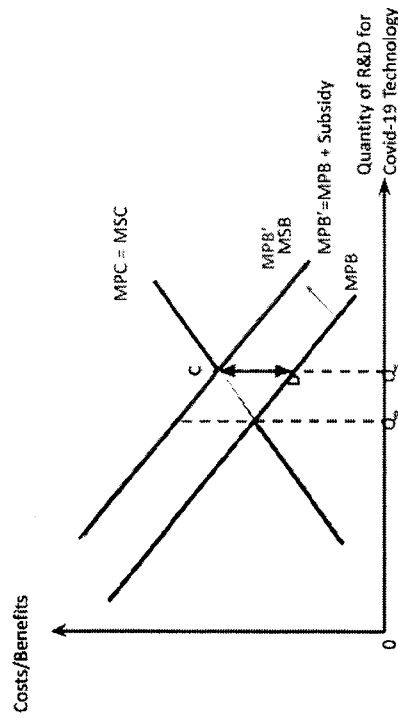
Disadvantages of Subsidies/Grant

Although such policy might help to achieve the social optimum level of R&D for Covid-19 vaccines technology, it is difficult to estimate the amount of subsidy to be provided. This is because it is difficult to accurately measure the marginal external benefits. If subsidy is overestimated, there would be over-allocation of scarce resources to the production of R&D, creating another DWL.

There is always an opportunity cost to the provision of subsidies. Subsidies may also take a toll on the government budget as the subsidy given to pharmaceutical companies could be channelled to other uses, e.g. the development of infrastructure.

2) Issue patents to pharmaceutical firms

Besides subsidies/grants, government could also issue patents to pharmaceutical firms who had innovated and invented the Covid-19 technology.



Patent grants inventors the exclusive rights over their innovations or invention. The patent holder to exclude others from commercially exploiting their invention for a limited period. As a result, it aims to encourage R&D for the benefit of society by awarding the inventors, in this case the pharmaceutical companies, an opportunity to derive fair returns from their investments.

Due to the exclusive rights that allow the pharmaceutical companies to reap additional revenue from R&D, the pharmaceutical firms would find it more beneficial to engage in more R&D for Covid-19 technology. As a result, with reference to the diagram above, MPB of engaging in R&D would increase from MPB to MPB'. The pharmaceutical companies with patents granted would produce Q_s amount of R&D where $MPB = MPC'$. This production level coincides with the socially optimal level of output, i.e. Q_s .

The deadweight loss of ABC is eliminated. As a result, resources are efficiently allocated and society's welfare is maximised as the underproduction of R&D is reduced.

Disadvantages of Patent

The main drawback of patents is their negative impact on the level of competition in the markets. As patents are an exclusive right that creates a temporary monopoly, the patent holder, i.e. the pharmaceutical company, can set a market price higher than the competitive price and limit the production. In other words, patents can breed market dominance and create another form of market failure in the Covid-19 vaccine industry.

Furthermore, patent protection may also hamper further innovation, especially when it limits access to essential basic/fundamental knowledge in emerging technological areas. If Covid-19 vaccine technology is a new essential knowledge that is fundamental in creating other breakthrough in medical fields for e.g. creating other flu variant vaccines, it might further hamper further R&D and hence innovation by other firms in the whole industry.

Advantages of Patent

Nevertheless, patents might create a positive impact on competition as small pharmaceutical companies, granted with patent, might be able to assert their right in front of larger ones. Furthermore, patent may incentivise entrepreneurs or new pharmaceutical companies to obtain funds from venture capitalists. This promotes market entry and increase the level of competition in the market of R&D for Covid-19 vaccine technology.

To correct the market failure caused by market dominance among the pharmaceutical companies that control the global supply of Covid-19 vaccines

1) Legislation to increase competition through enforcement of Competition Act / Anti-trust laws

To reduce the market dominance among the pharmaceutical companies that control the global supply of Covid-19 vaccines, governments could enforce anti-trust laws or legislation that increase competition among the firms.

These laws are designed to prevent the formation of monopolies and to curb possible collusive behaviour of the small number of pharmaceutical companies in the industry. Hence, these laws would limit price-fixing practices and territorial arrangements between pharmaceutical firms. Mergers or acquisition that lead to pharmaceutical companies gaining substantial market power can also be prevented.

In essence, the enforcement of anti-trust law could help prevent any single large firm from exercising monopoly power by restricting the global supply of Covid-19 vaccines and hiking up the price of the vaccines above marginal cost. Thus, such laws would be able to reduce underproduction of Covid-19 vaccines and hence achieve allocative efficiency.

Advantages of legislation to increase competition

One benefit of using legislation is the government possess the legal authority to ensure compliance. Once an effective date is set by the government, the law takes effects immediately.

Limitations of legislation to increase competition

Anti-trust laws may prevent the formation of monopolies and thus the existing smaller firms are unable to achieve substantial economies of scale. Hence, instead of enjoying lower average costs (LRAC) and passing on the cost-savings to consumers through lower prices, these pharmaceutical firms may compromise on consumer welfare by selling at higher prices for their Covid-19 vaccines due to their higher average cost arising from producing on a smaller scale.

2) Nationalisation

To reduce the market failure caused by the market dominance among the pharmaceutical firms producing the Covid-19 vaccines, the government can take control of this Covid-19 vaccine industry that was previously owned by private firms. This policy is known as nationalisation.

Having the Covid-19 vaccine industries under public ownership may result in greater efficiency than if they were under private ownership because the government-run company is no longer driven by the profit-maximisation goal. As a result, the nationalised firm would be able to set price based on social factors and the price of the Covid-19 vaccine might now be closer to the marginal cost. When this happens, there would be greater production of Covid-19 vaccines that promotes allocative efficiency.

Advantages of nationalisation

Government-run monopolies are advantageous because they usually do not have a profit-maximising objective.

Hence, the government can decide whether or not to supply Covid-19 vaccine to households on grounds that are not related to cost or profit. In other words, all consumers, regardless of lower or higher income, would be able to receive Covid-19 vaccine at an equitable price.

Disadvantages of nationalisation

Nationalised industries/firms are often inefficient due to a lack of competition and profit-maximising motive. Thus, the firm has less incentive to be cost efficient and the bureaucratic structure can lead to managerial diseconomies of scale.

Opportunity cost is incurred as money spent could be used in other areas e.g. education, which may be beneficial in the long run to the economic growth of the country and generate income for the country.

Conclusion

In conclusion, to correct the 2 types of market failures caused by positive externalities in production of R&D for vaccine technology and market dominance in the Covid-19 industry,

	<ul style="list-style-type: none"> • Descriptive rather than analytical 	
E3	Judgement based on sound economic analysis.	4 – 5
E2	Makes an attempt to explain judgment, with limited support and analysis.	2 - 3
E1	For an unexplained judgment, or one that is not supported by analysis.	1

subsidies and patents can be implemented to spur greater production of R&D for vaccine technology while anti-trust laws and nationalisation could be implemented to increase production of Covid-19 vaccines.

While these policies might help to achieve allocative efficiency in two different markets, these policies are not without disadvantages.

Evaluate the policy to correct the market failure cause by positive externalities

In the market of R&D for vaccine technology, while the issue of patents can encourage firms to engage in more R&D and innovation, the governments need to take note that patents might prevent competition. As a result, patents might create another market failure which is market dominance in another industry which is the Covid-19 vaccine industry. This might be highly possible in developed countries such as the UK and USA where large pharmaceutical firms are dominating the industry. Hence, it is recommended that the government in developed countries issues the patent to the appropriate firms and sets an appropriate duration for the patent to expire.

However, in developing countries, where there might be emerging pharmaceutical firms that engage in promising R&D for covid-19 vaccine technology, governments might find it more effective to issue patents to encourage more innovation and thereby increase the overall level of competition in the global industry.

OR

For subsidies to encourage the R&D for vaccine technology, governments need to collect the right information to estimate the right amount of subsidies that should be given to the appropriate pharmaceutical firms. In this way, governments, especially from developing countries where budgets are tighter, could reduce opportunity costs of spending subsidies for R&D as these countries might have more urgent needs like building infrastructure or spending on healthcare.

Evaluate the policy to correct the market failure cause by market dominance

In the market of covid-19 vaccines, anti-trust laws might be less effective in countries where there might be smaller pharmaceutical companies. Such firms might benefit from growing to enjoy EOS and cost savings may eventually be passed on to consumers. Nationalisation can result in inefficiencies due to complacency and over-reliance on the government, hence it is unlikely to be appropriate as a long term policy.

Mark scheme

L3	For an answer that has <ul style="list-style-type: none"> • Competent explanation and analysis of 2 policies that correct the 2 different market failures with clear economic application 	8 – 10
L2	For an answer that has the following: <ul style="list-style-type: none"> • Some explanation of at least 2 policies that correct the 2 different market failures but inconsistent application of economic concepts • Competent explanation and analysis of one policy only 	5 – 7
L1	For an answer that has the following: <ul style="list-style-type: none"> • Smattering of ideas • Severe conceptual errors 	1 – 4

4 Fiscal policies should enable green and durable economic growth. As part of the Green Plan 2030, Singapore has introduced a carbon tax and is setting aside \$60 million to further support technological adoption in the agr-food sector.
IMF's January 2021 Fiscal Monitor Update

- (a) Using the circular flow of income, explain the effects on national income [10] when a country implements expansionary fiscal policy.
- (b) Discuss the extent to which fiscal policies will be sufficient to achieve [15] 'green and durable economic growth' in Singapore.

(a)	Using the circular flow of income, explain the effects on national income when a country implements expansionary fiscal policy.	[10]
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Question Dissection	
Command word	Explain
Concepts	<ul style="list-style-type: none"> • Circular Flow of Income (Injections, Withdrawals) • National Income (multiplied increase) • Expansionary Fiscal Policy (↑G, ↓Taxes)
Context	Open

Introduction: Key details about the Circular Flow of Income
The circular flow of income illustrates the flow of money as well as goods and services between producers and consumers in an economy. For an open economy, the Circular Flow Model comprises of households, firms, government and the foreign sector.

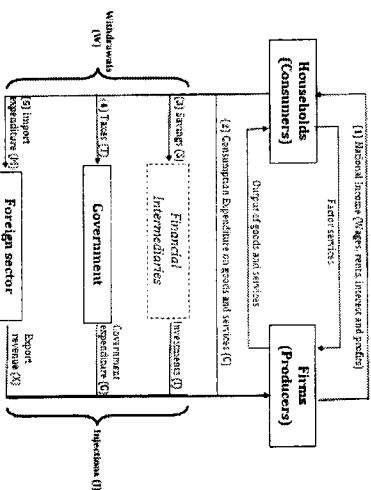


Figure 1: Circular Flow of Income (Open Economy)

As seen in Figure 1, investments by firms (I), government expenditure (G) on goods and services and export revenue (X) from foreigners are **injections (J)** into the circular flow. Savings (S), tax payments (T) to the government and import expenditure (M) to the foreign sector are **withdrawals (W)** from the circular flow of income. An economy is said to be in **equilibrium** only when total injections are equal to total withdrawals.

There are several **assumptions** regarding the circular flow of income. The general price level is constant, the economy is operating at spare capacity, and the marginal propensity to import, save, tax, and consume are constant.

Body: Explain how expansionary fiscal policy affects J=W
Governments often use expansionary fiscal policy to boost an economy by lowering taxes and/or increasing government expenditure.

A lowering of taxes such as direct taxes will result in a fall in T and a decrease in withdrawals in the circular flow of income model. Assuming that the fall in taxes is \$100 million, there would be a fall in withdrawals by \$100 million. Since J>W, the economy is said to be in disequilibrium.

Or
Increasing government expenditure will result in an increase in G and an increase in injections in the circular flow of income model. Assuming that the increase in government expenditure is \$100 million, there would be an increase in injections by \$100 million. Since J>W, the economy is said to be in disequilibrium.

Body: Re-establishing equilibrium in the Circular Flow of Income

The disequilibrium will initiate a process to bring the economy back to a state of equilibrium where J=W.

In order to meet the increase in demand for goods and services, firms would demand more factors of production (FOPs) such as labour and other resources from households. Firms would thus increase factor payment to the owners of these FOPs. Hence, households experience an increase in income by the amount of \$100 million. With increased income, households tend to consume more domestic goods and services, save more, pay more taxes to the government, and purchase more imports. These lead to a rise in withdrawals in the circular flow of income model.

Assuming that the sum of MPS, MPT, MPM is 0.5, households would also purchase more goods and services from firms due to the rise in income of \$100 million. This is due to the rise in induced consumption which refers to consumption induced or generated by changes in income. In turn, this would increase induced consumption by \$50 million. The increased expenditure by households increases the demand for goods and services. To produce more goods, firms would increase their factor payments to the owners of FOPs by the amount of \$50 million. Hence, the households experience another wave of rising income of \$50 million. As before, with increased income, households tend to consume more domestic goods and services, save more, pay more taxes to the government, and purchase more imports. Given that MPS, MPT and MPM are constant, this would increase the withdrawals from the circular flow by the amount of \$25 million. Similarly, the rising income would reduce households' expenditure on goods from firms by the amount of \$25 million. The cycle then repeats multiple rounds.

This would result in a multiplied increase in equilibrium level of national income by \$200 million since the multiplier value, in this instance, would be 2 (i.e., $k = \frac{1}{MPS+MPT+MPM}$).

Conclusion: Summarise key points and state the effect on national income
When withdrawals have risen to match the injections (J=W), the equilibrium will be restored. Therefore, when a country implements expansionary fiscal policy, national income would have increased by a multiplied amount.

<p>2. Carbon Tax to reduce carbon emissions and achieve sustainable economic growth Ev: Limitations of Fiscal Policy/ Insufficiency of Fiscal Policy in Singapore (analysis of why other policies are needed)</p>	<p>Context Singapore</p> <p>Note: Ensure that explanation of fiscal policies is not repetitive from (a). Students are encouraged to focus their answers on supply-side effects and show clear links to ideas of sustainable growth.</p> <p>Essay Outline</p> <p>Introduction Define sustainable economic growth Tool of Analysis: AD/AS Framework</p> <p>Expansionary Fiscal Policy How it works to achieve sustainable economic growth <ul style="list-style-type: none"> Increase in I Increase in AD Supply-side effects Increase in AS Investment in Sustainable R&D </p> <p>Insufficiency of Fiscal Policy <ul style="list-style-type: none"> Small multiplier size Carbon Tax How it works to achieve sustainable economic growth <ul style="list-style-type: none"> Reduce emissions to enhance sustainability, attract FDI Limitations <ul style="list-style-type: none"> Increase COP, Limited options for renewable energy </p> <p>Evaluation Stand + Substantiation + Suggestion/ Recommendation</p>
<p>Introduction 'Green and durable economic growth' refers to sustainable economic growth. Sustainable growth refers to economic growth that is sustained (both actual and potential economic growth) over a period of time, without creating other significant economic problems (such as depletion of resources and environmental problems or large increases in general price levels) for future generations. The policies implemented in Singapore include expansionary fiscal policy, implementing a carbon tax and improving the level of technology, and can be analysed using the AD/AS Framework.</p> <p>Fiscal policies are sufficient to achieve 'green and durable economic growth' Expansionary fiscal policy involves a deliberate decrease in the tax rates and/or an increase in investment expenditure to increase aggregate demand to achieve macroeconomic objectives. Singapore has set aside \$60 million to further support technological adoption in the agri-food sector. Such funding encourages firms to undertake greater investment expenditure, resulting in an increase in national income via the multiplier effect. The initial increase in AD will lead to a rise in output and NY. The rise in output leads to a further rise in factor incomes as more factors of production are employed. This will cause households to increase their consumption. This subsequent rise in induced C will lead to a further rise in AD and hence NY, which leads to further rounds of increases in induced C. Therefore, there is a more than proportionate rise in NY via the multiplier effect. This process stops when the initial increase in AD</p>	

<p>Mark Scheme</p> <p>Knowledge, Application, Understanding and Analysis</p> <p>L3</p> <ul style="list-style-type: none"> Answer is relevant to question requirements: explain how the implementation of expansionary fiscal policy increases Singapore's Government expenditure (G) or decrease Taxes (T) explain how the increase in G or decrease T would result in a multiplied increase equilibrium level of income Answer has sufficient depth: <ul style="list-style-type: none"> rigorous and detailed economic analysis that demonstrate strong understanding of the multiplier process triggered by a rise in national income. relevant and precise use of economic concepts (multiplier value, equilibrium level of national income) relevant and clearly labelled diagrams (i.e., circular flow of income) to support economic analysis 	<p>8 – 10</p>
<p>L2</p> <ul style="list-style-type: none"> Answer is mostly relevant to question requirements (i.e., multiplier process, circular flow of income) Economic concepts are relevant but may contain minor inaccuracies. Economic analysis is accurate but incomplete or lacks precision. Relevant diagrams are used but might not be accurately explained or applied to support economic analysis. 	<p>5 – 7</p>
<p>L1</p> <ul style="list-style-type: none"> Answer is mostly irrelevant to question requirements. Economic concepts are largely irrelevant and/or inaccurate. Unclear and/or inaccurate economic analysis. Lacking in use of diagrams or wrong diagrams are used. (E.g., answer may use ADAS analysis) 	<p>1 – 4</p>

<p>(b) Discuss the extent to which fiscal policies will be sufficient to achieve 'green and durable economic growth' in Singapore.</p>	<p>[15]</p> <p>Question Dissection</p> <p>Command word Discuss the extent</p> <p>Content <ul style="list-style-type: none"> 'Green and durable' – Sustainable economic growth 2 Requirements: 1. Expansionary Fiscal Policy Increase in I through the \$60 million set aside to support technological adoption <ul style="list-style-type: none"> Impact on AD: ↑ Impact on AS: Increase in SRAS and LRAS to achieve sustained and sustainable growth </p>
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<p>(injections) equals the total increase in savings, taxes and spending on imports (withdrawals). Actual growth is achieved.</p> <p>Furthermore, a key policy for Singapore to achieve sustained economic growth has been fiscal policy that focuses on capital accumulation/ capital formation. By encouraging investment in technology- driven research and development (R&D) in the agn-food sector through grants or subsidies, and assuming that such R&D projects turn out to be successful, more output could be produced with the same amount of resources. This results in an increase in productive capacity and an Increase in LRAS and potential growth. If R&D leads to a lower unit cost of production, this can also Increase SRAS.</p> <p>As a result, sustained growth (actual growth accompanied by potential growth), a prerequisite for sustainable growth is achieved. Given that such harnessing of technology can combat the effects of climate change, fiscal policies are largely sufficient to achieve sustained and sustainable growth as environmental problems are not generated for future generation.</p> <p>Limitations of fiscal policies in achieving 'green and durable economic growth'</p> <p>However, fiscal policies are not sufficient given Singapore's high marginal propensity to import (MPM) and high marginal propensity to save (MPS), there is a high marginal propensity to withdraw (MPW) resulting in a small multiplier size k. As a result, fiscal policies to increase AD will be less effective in raising real national income and ensuring actual economic growth in Singapore. Therefore, fiscal policy insufficient to achieve sustainable economic growth, and therefore Singapore will need to implement other policies.</p> <p>Carbon Tax to achieve 'green and durable economic growth'</p> <p>Singapore has also introduced environmental initiatives, such as the introduction of a carbon tax to achieve sustainable economic growth. The carbon price was initially set to \$5/metric ton, applied from 2019 to 2023. Thereafter, it will be increased to between \$10/metric ton and \$15/metric ton by 2030. This will provide a strong price signal and impetus to encourage companies to reduce their emissions by making polluters internalise the negative externalities of production and reduce their carbon footprint in line with national climate goals. As a result of negative externalities, there is overproduction of goods which generate carbon emissions. If a per unit tax = MEC at Qs is implemented, this can allow for the Marginal Private Cost to increase and coincide with the Marginal Social Cost. Then, the socially optimal quantity of production will be achieved, which maximises societal welfare. Additionally, introducing a carbon tax will incentivise emissions-producing companies to switch to more sustainable production methods, further reducing environmental problems in the economy. At the same time, tax revenue collected from large emitters of harmful greenhouse gases can be utilised to support further green initiatives for energy- intensive industries.</p> <p>A cleaner, more sustainable Singapore attracts more investment, increasing AD and LRAS, allowing for actual and potential economic growth. Thus, this initiative towards a low-carbon future will help Singapore achieve sustainable economic growth.</p> <p>Limitations of a Carbon Tax in achieving 'green and durable economic growth'</p> <p>However, the effectiveness of carbon tax is contingent on its rate, which must be high enough to incentivise companies, and the time period given for industries to adapt to the tax. Implementing a carbon tax will add to the cost of</p>	<p>production and the burden will fall on both producers and consumers in the form of lowered profits and higher prices respectively.</p> <p>Furthermore, Singapore has limited options for renewable energy, and the carbon tax may thus not be effective in reducing the amount of carbon emissions significantly if producers are unsuccessful in finding alternative methods of production.</p> <p>Evaluation: Stand + Substantiation/ Recommendation</p> <p>In conclusion, fiscal policies, though effective in changing both AD and AS, are largely insufficient to achieve 'green and durable economic growth' in Singapore, given the characteristics of the economy. The small multiplier size significantly limits the increase in real national income affecting sustained economic growth. Additionally, harnessing of technology does not guarantee a quick addressing of climate change challenges, and thus other policies should be considered to achieve 'green and durable economic growth' in Singapore.</p> <p>One recommendation is thus for Singapore to adopt expansionary fiscal policy accompanied with other reviewed policies to achieve sustainable economic growth. While the future increase in carbon tax brings Singapore closer to global recommendations for advanced economies, given Singapore's open economy, it is also important that the carbon tax framework safeguards the export competitiveness of trade-exposed industries. Beyond the carbon tax, the government should also offer subsidies to ensure viable sources of renewable energy are available for producers to tap on. Given current economic conditions of rising oil prices and geopolitical tensions between Ukraine and Russia, the accessibility of greener sources of energy becomes all the more important in ensuring low costs of production and achieving sustainable economic growth.</p> <p>With the structural changes brought about by technological adoption, particularly in the agn-food sector, the Singapore government should also ensure continued efforts to retrain and upskill workers. The current policies of SkillsFuture and Adapt and Grow should continue to be supported in order for human capital to grow. This should also be complemented with efforts to persuade workers who may be reluctant to reskill, and employers to leverage on the relevant government policies implemented. Not only would reskilling reduce the risk of structural unemployment, it would also increase the productivity and quality of labour, increasing productive capacity and fueling potential economic growth.</p>
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Mark Scheme		
L3	<p>Knowledge/ Application/ Understanding and Analysis</p> <ul style="list-style-type: none"> • Answer is relevant to question requirements: o Shows in-depth knowledge of how expansionary fiscal policies can have both demand and supply-side effects. • Answer has sufficient depth: <ul style="list-style-type: none"> o rigorous and detailed economic analysis that demonstrates strong understanding of the AD/AS framework and considers the effects on environmental sustainability. o relevant and precise use of economic concepts (sustained and sustainable economic growth, components of AD, factors affecting SRAS and LRAS, etc) 	

- 5 Singapore's recovery from the pandemic is still subjected to risks and uncertainties, both domestic and external. With global inflation on the rise due to border restrictions and supply chain disruptions, the Monetary Authority of Singapore moved to tighten its monetary policy by raising slightly the rate of appreciation of the Singapore dollar.
 MAS Monetary Policy Statement Jan 2022
- (a) Explain why Singapore chooses to tighten its monetary policy by [10]
 appreciating its currency rather than by raising interest rates.
- (b) In view of the uncertainties and uneven recovery in Singapore's economy, [15]
 discuss whether the Singapore government should focus primarily on
 achieving price stability over other macroeconomic aims.

Suggested Answers

(a) Explain why Singapore chooses to tighten its monetary policy by appreciating its currency rather than by raising interest rates.	[10]
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Approach: Student should briefly explain the context for tightening MP and why it is more appropriate for Singapore to use appreciation of exchange rate instead of raising interest rates. Students should consider the characteristics of Singapore's economy and the given context in the preamble.

Reasons for using exchange rates rather than interest rates

Nature of the economy
 Use of interest rates has limited impact on AD
 Use of exchange rates has significant impact on AD
 Root cause of inflation ... typically imported inflation
 Decision to adopt free capital mobility to facilitate trade/ resulting in Singapore being an interest rate taker

Introduction:

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.

The Singapore government may choose to tighten its monetary policy through appreciating exchange rates rather than interest rates in order to achieve macroeconomic goals, notably that of price stability. The control of the exchange rate is preferred to by the Monetary Authority of Singapore (MAS) due to the nature of the Singapore economy as well as to retain Singapore's position as the regional and international financial hub.

Body

1. Nature of the Singapore economy

	relevant and clearly labelled diagrams to support economic analysis	
L2	<ul style="list-style-type: none"> Answer is mostly relevant to question requirements (i.e., AD/AS analysis, sustained and sustainable economic growth) Economic concepts are relevant but may contain minor inaccuracies. Economic analysis is accurate but incomplete or lacks precision. Relevant diagrams are used but might not be accurately explained or applied to support economic analysis. 	5 - 7
L1	<ul style="list-style-type: none"> Descriptive answers lacking in tools of analysis/ Answer is mostly irrelevant to question requirements. Economic concepts are largely irrelevant and/or contain inaccuracies. Unclear and/or inaccurate economic analysis. 	1 - 4
Evaluation		
E3	<ul style="list-style-type: none"> Critically evaluates the extent to which fiscal policies will be sufficient to achieve sustainable economic growth by considering the characteristics of Singapore Evaluation offers clear and sound substantiation as well as a recommendation which can be applied by the Singapore government. 	4 - 5
E2	<ul style="list-style-type: none"> Evaluates how sufficient fiscal policy is in achieving sustainable growth in Singapore with substantiation supported by sound economic analysis. Evaluation may not have taken into consideration the feasibility or effectiveness of policies when implemented in the Singapore context. 	2 - 3
E1	<ul style="list-style-type: none"> Takes a stand on the importance of fiscal policy but the substantiation is weakly supported by sound economic analysis. 	1

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 targets consumption and investment expenditure.

In 2021, Singapore's consumption expenditure (C) and investment expenditure (I) in % of GDP is 30% and 23% respectively. In contrast, Singapore's export revenue and import expenditure in % of GDP is 180% and 153% respectively. Therefore, monetary policy leads to a more significant impact on its economy when exchange rates are used.

- a) Limited impact on AD when increasing interest rates which target C and I

Increasing *i/r* may have limited effects on the level of economic activities in Singapore. Investments may depend on factors other than *i/r*. For instance, FDI inflows may not be significantly affected by a rise in *i/r* as these MNCs usually do not need to borrow from domestic financial institutions. In addition, long-term nature of FDI makes growth potential of the economy and political stability, among others, more relevant than short-term fluctuations of *i/r*. Hence, changes in *i/r* do not have much effect on FDI.

The main bulk of consumption expenditure (C) tend to be independent of *i/r*. These include the consumption of transport, food, medical advice, education, utilities, etc. Changes in *i/r* affect mostly the purchase of big-ticket items such as durables like cars and furniture. As such, the consumption of 'durables' is unlikely to form the bulk of the expenditure of a typical household. Hence, an increase in *i/r* will also be unlikely to exert a significant impact on level of C.

Therefore the fall in C and I may not be significant enough to reduce AD and dampen demand-pull inflation.

- b) Significant impact when appreciating exchange rates which target exports and imports

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. To appreciate the Singapore dollar, MAS can buy the domestic currency using foreign currency and increase its demand in the foreign exchange market. By appreciating the currency, price of exports in foreign currency increases while price of imports in domestic currency falls. Assume Marshall-Lerner condition holds, where $PED_x + PED_m > 1$, net exports falls leading to a fall in AD, dampening demand pull inflation.

2. Root cause of inflation – typically imported inflation

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 inflation. As such, the exchange rate policy, not interest rate policy, can be used effectively to target imported inflation.

Hence, to prevent such cost push inflation, Singapore adopt a modest and gradual appreciation stance for its Singapore dollar. For example, should there be a global oil shock that increases the price of oil, MAS would adopt a tighter monetary policy stance where the Singapore dollar appreciates. As Singapore dollar becomes relatively stronger than other countries' currencies, price of imported resources would be lower which would lower cost of production of final goods and services in Singapore. This would help to reduce the fall in AS

curve and hence dampen the increase in GPI_L , thus reducing the onset of imported price push inflation.

3. Decision to adopt free capital mobility to retain Singapore's position as the regional and international financial hub

Singapore adopts free capital mobility which facilitates trade but makes controlling interest rates difficult. Singapore being an open economy, does not have restrictions to short-term capital movements. It is very open to short-term-capital flows i.e. hot money.

Suppose that there is a cut in Singapore's interest rate which results in a relatively lower interest rate as compared to the world's interest rate, there would be an outflow of hot money or short-term capital outflow from Singapore. This is because short-term investors prefer to save their funds in other countries that offer higher interest rates.

The outflow of hot money would reduce the supply of loanable funds in Singapore, leading to a fall in interest rate which negates the original cut in interest rate. Similarly, any initial attempt to raise the interest rates in Singapore would end up being negated or offset by the inflow of hot money as the increase in the supply of loanable funds reduces the interest rate back.

It is not possible to prevent the above as Singapore, being a small economy lacks the ability to control changes to its money supply as the volumes of 'hot money' flows would be too large relative to its domestic money supply. As such, it would be better for interest rates in Singapore to follow US interest rates to avoid excessive hot money flows in and out of the economy. Therefore, Singapore is an 'interest rate taker'.

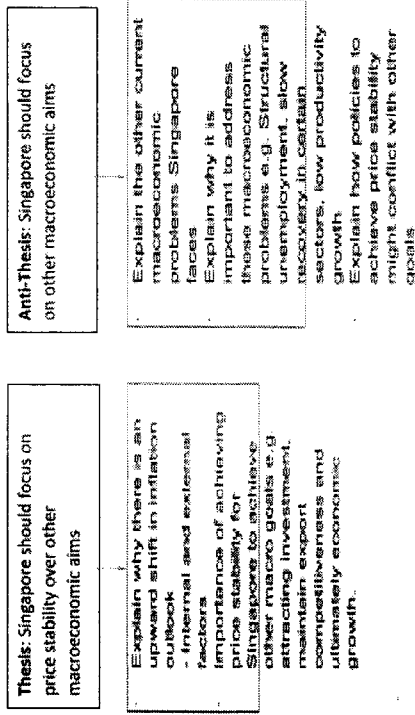
Hence, Singapore chooses to appreciate exchange rate over increasing interest rates as its monetary tool for price stability because it is an interest rate taker, and also because the exchange rate policy yields a bigger impact on its economy.

Level	Knowledge, Application, Understanding and Analysis	Marks
L3	Answer provides clear and developed explanation on why Singapore does not increase interest rate as its monetary policy and why Singapore choose to appreciate exchange rate as its monetary policy. Answers should relate to a more significant impact on Singapore's price stability when exchange rates are used. Reasons should take into consideration the nature of the Singapore economy and that Singapore is an interest rate taker/adopts free capital mobility.	8 – 10
L2	Answer provides explanation on why Singapore does not choose interest rate as its main monetary tool or why Singapore choose exchange rate as its main monetary tool. OR Answer provides undeveloped explanation on why Singapore does not choose interest rate as its main monetary tool and why Singapore choose exchange rate as its main monetary tool.	5 - 7
L1	Answer provides some knowledge of why Singapore does not choose interest rate as its main monetary tool or and why Singapore choose exchange rate as its main monetary tool.	1 – 4

(b) In view of the uncertainties and uneven recovery in Singapore's economy, discuss whether the Singapore government should focus primarily on achieving price stability over other macroeconomic aims.	[15]
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Approach:

Students should define the uncertainties facing Singapore, with focus on both domestic and external factors and their impact on its macroeconomic aims. They should also provide a balanced argument on whether Singapore should focus primarily on price stability in such uncertainties.



Introduction

Due to the covid pandemic and global supply chain disruptions, Singapore, a small and open economy continued to face uncertainties to its recovery. While global demand has risen, there is still significant supply chain disruptions.

Thesis: Singapore should focus on price stability over other macroeconomic aims

With the easing of safe management measures and border restrictions, Singapore's real GDP has risen in 2021. Global economic prospects also improve leading to a rise in Singapore's exports, particularly from the manufacturing sector. However there are signs of both demand-pull and cost-push inflation.

Explain why there is an upward shift in inflation outlook

Note to students: You are expected to analyse these factors in prose but there is no need to include all these factors.

External Factors	Effect
Supply chain disruptions increase in energy and food prices	Macroeconomic aim affected Imported inflation

Global economy recovery foreign income increases	Increase in import prices for FOP unit COP fall in SRAS	Increase in demand for goods and services including Singapore's exports Increase in X	Demand-pull inflation
Domestic economy recovers real income increases	Consumption increases also		
Internal Factor	Effect	Macroeconomic aim affected	
Border restrictions resulting in immobility of labour/ productivity issues/ tightening foreign manpower tighten labour market higher wages	Unit labour cost increase fall in SRAS Sunrise/ growth industries will have to grapple with talent shortages and rising costs.	Cost-push inflation	

With an upward shift in Singapore's inflation outlook, it is important for Singapore to primarily focus on achieving price stability.

Importance of achieving price stability for Singapore

Benefits of price stability [Achieve other macro objectives]

Inflation is defined as a sustained increase in the general price level of goods and services. The benefits of achieving price stability allow the Singapore government to achieve other macro-objectives and raise standard of living.

Firstly, price stability brings about a sustained economic growth. A low and stable inflation provides more certainty for households in making decisions on consumption and firms when making investment decisions. Real income is less likely to fall since wage growth is likely to outpace the low inflation, ensuring purchasing power increases or is at least maintained. Consumers are thus more certain about future prices and their purchasing power, encouraging increase in consumer expenditure (C).

With stable prices, firms are more certain about the expected returns to investment. They are less likely to face sudden increases in cost of production or a fall in revenue thus increasing investment expenditure (I).

The increase in C and I (including FDI) will lead to an increase in AD. National income will increase by a multiplier effect, leading to actual growth. Given that labour is a derived demand, there will be a decrease in demand deficient unemployment.

The increase in I on capital goods also increases the productive capacity of the economy leading to a rise in LRAS, thus achieving potential economic growth. This will in turn dampen demand-pull inflation when the economy continues to experience actual growth.

Price stability also allow Singapore to ensure export competitiveness. When inflation rates are relatively lower than other countries, Singapore's exports will be relatively more competitive. Assuming $PEDX > 1$, export revenue rises. On the other hand, as domestic goods are relatively cheaper, this may reduce the demand for imports, lowering import expenditure. Net exports will rise leading to an increase in AD, helping Singapore's balance of trade to improve. As net exports is a component of AD, this also leads to a rise in AD and real

national income. This is particularly important for Singapore who is very dependent on external trade.

Thus, Singapore should focus on price stability primarily especially in view of rising inflation outlook.

Anti-thesis: Singapore should also focus on other macroeconomic aims eg structural unemployment, inclusive economic growth and lifting the services and transport industries

Explain other current macroeconomic problems Singapore faces

Note to students: You are expected to analyse these factors in prose but there is no need to include all these factors.

External Factors	Effect	Macroeconomic aim affected	
Recurrence of Covid restrictions in certain sectors	Border hampers recovery in certain sectors	Uneven growth. Slow recovery in industries such as transport, services and accommodation (particularly tourism-related)	Economic growth/ demand-deficient unemployment (especially in certain sectors)
Internal Factor	Effect	Macroeconomic aim affected	
Restructuring automation accelerated by the pandemic	Digitalisation/ Further in sunrise industries	Faster decline of sunset industries and rapid growth in sunrise industries	Structural unemployment
Covid inequality	pandemic Income inequality	Mismatch of skills between unemployed and jobs available	Inclusive economic growth
		Widening income gap between those with relevant skills and those whose skills are less mobile and unable to move across sectors [not necessarily low-skilled workers] and other vulnerable groups	

Explain why it is important to address these macroeconomic problems

From the above analysis, Singapore is also facing slow growth and unemployment in certain industries, structural unemployment and widening income gap.

Some industries such as tourism experienced persistent setbacks due to the pandemic significantly affecting its demand. The fall in revenue has significantly affected firms' profits. Some firms need to downsize or retrench workers, resulting in demand-deficient unemployment in these sectors. Prolonged unemployment in such sectors might result in loss of skills and lower the employability of these workers. This will impact the productive capacity in the economy as quality of labour falls. There could also be rising resentment if the government do not stimulate demand or focus on relief support for such sectors.

There is also worsening of structural unemployment due to the faster rate of automation and digitalization. It is necessary to ensure that the unemployed are adequately cushioned from fall in income in the short run, perhaps through transfer payments and to provide opportunities and subsidies to undergo training. This is to ensure they are equipped with the relevant skills for the jobs available in the economy. There is also a rising need to match potential employees to the sectors facing labour shortages by providing internship opportunities and subsidising training fees.

If the above issues are not addressed, income inequality will be widened, making it even harder to achieve inclusive economic growth. Therefore, it is necessary that supply side policies can be used together to enhance quality of labour and allow greater labour mobility to solve structural unemployment. In the long run, it will also help achieve a more sustainable economic growth that is non-inflationary.

Explain how policies to achieve price stability might conflict with other goals

When the government appreciates its exchange rates to achieve price stability, it might cause even slower recovery for the badly hit sectors such as tourism. It might also lead to higher import expenditure, worsening balance of trade and economic growth. It is thus necessary to calibrate the appropriate extent of appreciation.

Evaluative Judgment:

In conclusion, as a small and open economy, heavily reliant on exports and imports, the need for Singapore to achieve export price competitiveness over time is paramount to achieving the other macroeconomic aims. From the preamble, MAS had assessed that a shift in its policy stance was necessary to ensure price stability in light of accumulating external and domestic cost pressures, even as the strength of the economic recovery remained uncertain. Tightening exchange rate policy would aid in slowing down the rate of inflation in the short run.

Therefore, my judgment is that while price stability can remain as top priority, the Singapore government should adopt supply side policies in the long run to tackle structural unemployment as well as other structural issues such as tight labour market and low productivity growth. This would address potential internal sources of cost-push inflation directly and ensure a more sustainable economic growth that is non-inflationary. Policies such as the progressive wage system which aims to help the lower-skilled workers to acquire higher-level skills and higher income should be extended to more sectors. While these policies take a long time to show effect, it would help Singapore move closer to achieving inclusive economic growth.

Level	Knowledge, Application/Understanding and Analysis	Marks
L3	For a well-developed answer that: <ul style="list-style-type: none"> Provides thorough discussion of why Singapore should primarily focus on price stability and why it should not neglect other current problems that may worsen if unattended. Provides a good analysis of a range of existing problems facing Singapore, strong application of economic concepts e.g. use of AD/AS analysis. 	8-10
L2	<ul style="list-style-type: none"> A well-developed answer of why Singapore should primarily focus on price stability <u>OR</u> why they should not neglect other current problems that may worsen if unattended. For an underdeveloped answer that explains why Singapore should primarily focus on price stability <u>AND</u> why they should also address other existing problems Application of economic concepts e.g. use of AD/AS analysis and an attempt to apply to the given context 	5-7

L1	For an undeveloped answer that has limited/no application of relevant economic concepts, and/or contains conceptual errors and reference of the given context	1-4
Evaluation		
E3	For a well-reasoned attempt at substantiating the final recommendation with a clear criterion for weighing the priorities of price stability over other macroeconomic goals	4-5
E2	For a limited attempt at substantiating the final recommendation	2-3
E1	For unsubstantiated evaluation comments	1

6 During times of recession, some governments boost their economy through trade while others protect their economy to improve domestic employment and income.

- (a) Explain two protectionist measures that a government can undertake to [10] achieve higher standards of living.
- (b) Discuss the problems that a government has to consider when [15] implementing protectionist policies to achieve higher standards of living.

(a) Question Analysis

Command Word	Explain
Protectionist measures, standards of living	
Context	nil

Schematic Plan

Introduction: Using ADAS framework	
<ul style="list-style-type: none"> - Reasons for Protectionism to address both macroeconomic and microeconomic problems that the economy is currently facing - Standard of living refers to the well-being of an average person in the economy - Standard of living includes the material and non-material aspects of welfare 	
Requirement 1: Tariffs	Requirement 2: Import Quotas (or others)
<ul style="list-style-type: none"> - Effects on SOL: <ul style="list-style-type: none"> ___ Increase price of imports ___ Decrease in quantity of imports ___ Increase in AD results in increase in NY via multiplier ___ Increase in material SOL 	<ul style="list-style-type: none"> - Effects on SOL: <ul style="list-style-type: none"> ___ stated limits on the physical quantity of imports ___ Decrease in quantity of imports ___ Increase in AD results in increase in NY via multiplier ___ increase in material SOL
Conclusion	

Suggested Answer:

Introduction:

- refers to the well-being of an average person in the economy.
- Includes the material (quantitative) and non-material (qualitative) aspects of welfare.
- Material SOL measures the quantity of final goods and services that is available to an average person in the country in a given time period.
- Real GDP per capita or real GNP per capita is often used as a proxy measure of the material standard of living in a country over time.

State some reasons for Protectionism

- To correct a Balance of Trade Deficit.
- To promote economic growth and reduce unemployment.
- To defend against unfair trade practices.
- The infant industry argument.

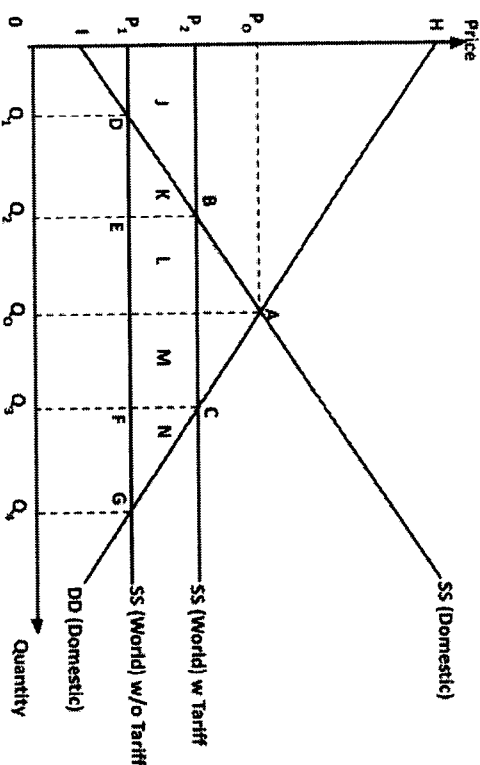
State some Protectionist measures

- Tariffs.
- Non-tariff Measures
 - Import Quotas.
 - Import Licences.
 - Export Subsidies.

- Foreign Exchange Controls.

Development: Tariffs

- Tariffs, also known as custom duties are taxes imposed on imports of goods by the government.
- The imposition of tariffs will result in an increase in prices of imported goods.
- This will encourage domestic consumers to switch to consuming domestically produced goods instead of imported goods.
- Tariffs imposed can be either a specific tariff or an ad-valorem tariff.



- From the diagram above, assuming that the government introduced a specific tariff of $P_1 - P_2$ imposed on imported rice, this will lead to a fall in supply of imported rice and the world supply curve shift from $SS(\text{World})$ w/o Tariff to $SS(\text{World})$ w Tariff, the amount of the tariff on each unit of rice imported.

- With tariffs imposed, the new market price for rice will be OP_1 .

- At OP_1 , total quantity consumed of the good is OQ_1 which consist of domestic production OQ_2 and imports Q_2Q_3 .

- Hence, there is a fall in quantity of imports from Q_1Q_4 to Q_2Q_3 .

- Assuming that demand for imports is price elastic, as a result of higher prices due to the tariffs, the fall in the quantity of imports would be more than proportionate.

- As consumers purchase less imports and switch to purchasing domestic goods, there is a fall in M and creates parabolas, a rise in $(X-M)$. Can also explain an increase in domestic consumption (C_d)

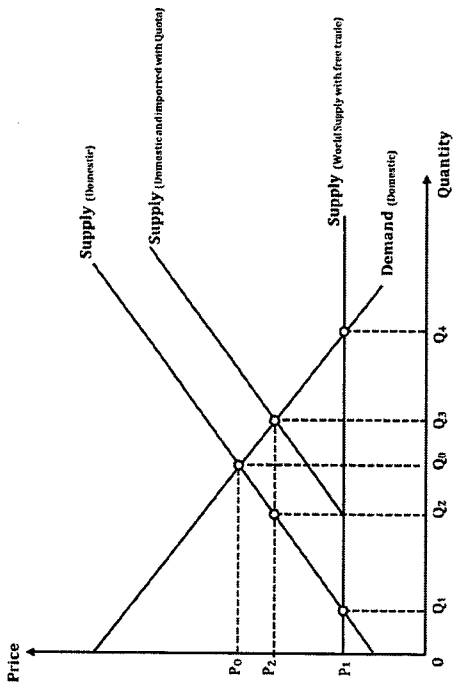
Quota

Import quotas are stated limits on the physical quantity or amount of specific goods that can be imported into a country.

- A country can introduce an import quota on imports to protect their local producers.

- In order to be effective, the limit to imports are to be set at a level lower than the imported quantity under free trade conditions.

Figure 2: Effects of a Quota on the Market



- As shown in the diagram above, because of the import quota, the total supply (both domestic and foreign) of the good in the country would decrease.
- This results in a higher price, a lower quantity imported (from Q_1Q_4 to Q_2Q_3), and a higher quantity produced domestically (from $0Q_1$ to $0Q_2$).
- Hence, as consumers purchase less imports and switch to purchasing domestic goods, there is a fall in M and $ceteris paribus$, a rise in $(X-M)$ (see conclusion).

Import Licences

- Import Licences are licences or permits granted by the government for goods to be imported.
- The purpose of this is to control the quantity or type of goods imported.
- Hence, this restriction shielded the domestic producers and ensured that there was a sufficiently high demand for the locally production.

Export Subsidies

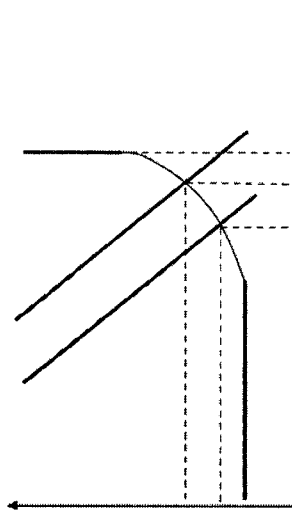
- Export Subsidies are payments made by government to firms to encourage exports of goods and services to abroad.
- By doing this, the country's exports will be relatively cheaper and more price competitive in foreign markets.
- This reduces the cost of production in the domestic firms.
- In so doing, domestic producers have a cost advantage over foreign producers in export markets.
- Hence, this will increase the value of exports and increase AD.

Foreign Exchange Controls

- This involves government control over the purchase and sale of foreign currencies. International trade is carried out in terms of foreign currencies.
- To import goods, payments must be made in foreign currency.
- The control over the purchase of foreign currency will effectively limit the total value and quantity of imports in the country.
- Hence, there will be a fall in imports and a rise in $(X-M)$.

Conclusion (Multiplier Process):

- As a result of the increase in $(X-M)$, AD will increase leading to a rise in output and NY.
- The rise in output leads to a further rise in factor incomes as more factors of production are employed.
- This will cause households to increase their consumption.
- This subsequent rise in induced C will lead to a further rise in AD and hence NY, which leads to further rounds of increases in induced C.
- Therefore, there is a more than proportionate rise in NY via the multiplier effect.
- This process stops when the initial increase in AD (injections) equals the total increase in savings, taxes and spending on imports (withdrawals).
- From the diagram below, an increase in AD from AD_1 to AD_2 results in an increase in real national income from Y_1 to Y_2 .



AD₁
 General
 Price
 Level
 Real National Income
 0
 AS
 Y₁

- P₁
 - P₂
 - AD₂
 - Y₂
 - Y₁
- (GPI)
- Hence, the demand for labour increases, increasing employment.
 - This will increase the material standard of living as Real GDP per capita increases, assuming that population size is unchanged.
 - As income increases, crime and financial anxiety of residents will decrease, and as a result, non-material SOL increases.
 - Hence protectionist policies can help to increase SOL.

Mark Scheme:

Level	Knowledge, Understanding, Application and Analysis
L3 (8 - 10)	Clear analytic explanation of 2 protectionist measures with examples showing how material SOL increases.
L2 (5 - 7)	Undeveloped explanation of 2 protectionist measures with poor or no examples showing how material SOL increases.
L1 (1 - 4)	Unable to identify theory or done without explanation Descriptive answers lacking in tools of analysis.

(b) Question Analysis

Command Word	Discuss
Concepts	Problems derived because of protectionist policies
Context	Nil

Schematic Plan

Introduction:

- Using ADAS framework
 - State such problems could be related to the limitations of protectionist policies or unintended consequences such as trade-offs with the achievement of other economic goals.

(Note: not all the arguments suggested here are necessary; within the given time constraint, a balanced analytical answer will suffice.)

Trade-offs or side effects

Tariffs results in higher prices of goods and services
It also results in higher cost of imported factors of production.
Resulting in higher GPL which may lower purchasing power and material SOL

Ineffective or does not address the root cause
Inelastic demand for imports.

Raising price of imports via tariffs might not reduce imports significantly as country is reliant on imports.

Cause of trade deficit may be structural in nature e.g., due to loss of export competitiveness.
The use of protectionist measures will not address the root cause of the problem.

Retaliation with Trade Partners or Beggar-Tiny-Neighbour

Trade partners may lodge a complaint to WTO or retaliate to raise their own trade barriers.
This may divert trade to other countries i.e., the affected trade partners may trade less with the country.
In Beggar-Tiny-Neighbour, trade partners may suffer from slower growth as a result of the Protectionist Measures
This results in a fall in imports by the trade partners
This may result in a fall in the country's exports.
Resultant fall in AD leads to a fall in NY via multiplier.

Evaluation

- Summative conclusion to which problem is the more significant and give reasons to support this claim

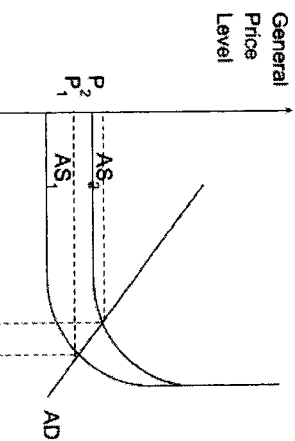
Suggested Answer:

Introduction: State such problems are unintended consequences

- Government may raise trade barriers to reduce imports thereby increasing AD.
- However, such measures may result in problems related to the limitations of protectionist policies or unintended consequences such as trade-offs with the achievement of other economic goals.

Trade-offs or Side Effects

The imposition of tariffs will result in an increase in prices of imported goods. Tariffs are imposed on **imports of raw materials or unfinished goods** that would protect the firms and workers in these industries. However, one problem is that this would lead to imported cost push inflation and raise the unit cost of production leading to a fall in SRAS and increase in general price level. This is especially so if the raw materials are essential for other industries e.g., protection of steel industry in USA resulted in higher cost of production for the automobile industry. As prices of goods and services such as cars increases, purchasing power and material SOL decreases.



However, even though such measures such as training are more appropriate in tackling the domestic issues that the country is facing, these usually takes time and may worsen the situation in the short run. The country may therefore face severe unemployment and lower material SOL in the short run.

Retaliation with Trade Partners or Beggar-Thy-Neighbour Problem

As a result of the protectionist measures imposed by the country, its trading partners may retaliate or lodge a complaint to WTO. This will then reduce trade with the country and divert trade to other countries. In the event that the trade partners retaliate and impose tariffs or protectionist measures against the country's exports, it may result in a fall in the country's export volume and export revenue and eventually decrease the real national income. The country's material SOL thus decreases.

Each country may also restrict trade with the other country, reducing the exports. Thus, the country may not enjoy trade and the residents may suffer from less variety of imports from its trade partners because of trade restrictions. E.g., China imposed severely high tariffs on the wine imports in 2021 because of the trade dispute with Australia.

There may be a fall in purchasing power in countries where the protectionist measures are imposed on, as tariffs reduces imports from their trading partners. These countries will experience a fall in exports, a fall in X-M, a fall in AD and a fall in RNY via the multiplier process.

This results in a fall in a fall in purchasing power and a subsequent fall in imports, and if imports are luxury goods with $YED > 1$, then a fall in income will lead to a more than proportionate fall in Cm and therefore import expenditure M will decrease significantly. Hence the original tariff imposing country will suffer a fall in their exports, X-M, AD and RNY via the multiplier process.

Evaluation:

The extent of such problems depends on the trade relations. The problem could be more severe if the two countries go into an all-out trade war against each other. This may result in further decreases in investments between the two countries or might even restrict trade such that each country decreases imports of goods and services from each other. This will severely decrease the material SOL of each country.

Evaluation:

To conclude, there are many potential problems arising from protectionist policies that a government must consider.

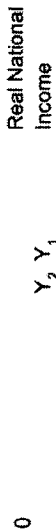
(Note: here are different suggestions on how to explain a reasoned judgment, you do not need to have them all)

Stand 1: Trade-offs are the most significant problem

Criteria: State of economy.
Reason: Economy may be experiencing inflation as well as a trade deficit. In resolving the BOT deficit by imposing protectionist measures, the government should be concerned about rising inflation rate as well if the economy is already experiencing the effects of inflation due to other reasons. Hence the government should be concerned with the harmful effects of import-price-push inflation as this might worsen other macroeconomic objectives at the same time. This may call for other less problematic policies to deal with the trade deficit. For example, contractionary demand management policies might be more helpful to reduce inflation rates and improve export competitiveness in order to improve BOT.

OR

Stand 2: Trade disputes are the most significant problem



From the diagram above, a fall in SRAS from AS₁ to AS₂ would increase the general price level from OP₁ to OP₂. But could also lead to a fall in real output and national income.

Similarly, tariffs on imports of final or finished goods and services would also lead to imported price push inflation. Hence, the increase in GPL or inflation, represents a trade-off because of protectionist measures such as a tariff.

In addition, tariffs protecting the industries that produces products such as coal will increase the production of such products. This will result in an increase in the negative externality in production of such products. As a result, the non-material SOL of residents decreases.

Evaluation:

Such protectionist measures to protect domestic industries may sometimes benefit the country despite the costs incurred. For instance, the protection of infant industries require time and when the industry is well-developed, it may eventually create more jobs.

Ineffective or does not address the Root Cause

From Figure 1 in part (a), we can see that tariffs result in a loss of welfare for the whole society in terms of deadweight loss of Areas K and N. This can be a result of a loss of consumer surplus as some consumers are unable to consume the good after tariffs are imposed. Firms are also shielded from competition by having the tariffs imposed and domestic firms do not have the incentive to improve the product. Consumers also end up having a poorer quality product lacking in innovation.

If government subsidies are provided to protect firms, especially infant industries, and if such industries do not innovate and improve their products, then the government budget used to shield these firms are wasted and could be provided in other areas in the economy.

Protectionist measures could be implemented on essential items or goods and services that has few domestic substitutes of comparable prices and/or quality. This will result in a less than proportionate increase in quantity demanded as the demand is price inelastic. As a result of the higher prices, consumers' total expenditure increases. This will reduce the residents' material SOL as they are able to consumption of goods and services decreases.

Similarly, protectionist measures may be implemented to increase domestic employment by protecting key industries against imports. The higher prices of imports will encourage the consumption of domestic goods and services which will then increase the demand for labour. However, if the reason for the loss of jobs in these industries is due to a loss of export competitiveness, then the implementation of such protectionist measures will not address the root cause of the problem. Because of the structural nature of the loss of export competitiveness, this requires the implementation of supply-side policies, which is more suitable. For example, the economy may be experiencing structural unemployment, which requires the retraining of workers. The loss of export competitiveness may also be due to the fall in labour productivity or older technology. In such cases, supply side policies aimed at increasing productivity and quality through technology would be more effective. Hence protectionist measures may be inappropriate.

Evaluation:

Criteria: Reliance on trade.
Reason: Trade-reliant countries that depend on imports for raw materials and final products may find that implementing protectionist measures will disrupt trade that will counter what they intend to achieve through trade. They might even end up worse off if other countries retaliate.

Therefore, my judgment is that governments might want to consider alternative ways to improve SOL. Protectionist policies pose many problems and often result in more severe unintended consequences. Countries that are trade-reliant should aim to improve their export competitiveness by achieving price stability or increasing the quality of their exports so as to improve export competitiveness. The non-material aspect of SOL is also very important and governments should also consider improving aspects such as working hours, pollution level and access to healthcare.

OR

Stand 3: Problems arising from protectionist measures are not significant issues compared with the state of the economy.

Criteria: State of economy.

Reason: Some countries have a deep recession that requires multiple policy approaches. Using protectionist measures may help to boost its standard of living together with other policy measures such as Fiscal and Monetary policies. During a severe recession e.g. US 2008, there may be trade-offs/limitations/trade disputes but the economic priority is to secure jobs. Hence the US government may prioritise achieving economic growth via increasing AD by imposing protectionist measures.

Therefore, my judgment is that in some situations, protectionist policies should be adopted as a short term measure to improve SOL as they can be effective in saving jobs. However, they should be removed in the long term because of the inefficiencies created. Domestic firms should not be allowed to become complacent as ultimately, domestic consumers will suffer from higher prices, less variety and lower quality of goods and services. This will harm their SOL.

Mark Scheme:

Level	Knowledge, Understanding, Application and Analysis
L3 (8 – 10)	Thorough knowledge of the problems that a government must consider when implementing protectionist measures. Complemented by using appropriate examples and detailed analysis with sound economic framework.
L2 (5 – 7)	Sufficient knowledge of the problems that a government has to consider when implementing protectionist measures. Complemented by using examples and analysis with economic framework.
L1 (1 – 4)	Unable to identify theory or done without explanation. Descriptive answers lacking in tools of analysis.
Evaluation	
E3 (4 – 5)	Provides a sound economic judgement about the significance of the problems that a government has to consider supported by strong reasoning.
E2 (2 – 3)	Some attempt at evaluation or a surmative conclusion. Relevant to the question but does not explain the judgement or based it on relevant analysis.
E1 (1)	Unsupported evaluative statement(s) or judgements. One that lacks explanation.