

ANGLO-CHINESE JUNIOR COLLEGE
2022 JC2 PRELIMINARY EXAMINATIONS



ECONOMICS

8823/01

Higher 1

23 August 2022

Paper 1

3 hours

Additional materials: Writing papers and
Cover sheet X 2

READ THESE INSTRUCTIONS FIRST

Write your exam index number and name on all the answers you hand in.

Write in dark blue or black ink pen on both sides of the paper.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid / tape in your answers.

Answer **all** questions.

Begin Question 2 on a **fresh** sheet of writing paper.

At the end of the examination, arrange your answers in order.

Fasten your answers for Question 1 and Question 2 **separately** using the cover sheets provided.

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

This document consists of **7** printed pages (including this page)
Please check that your question paper is complete.

Answer all questions.

Question 1: The Nitrogen Fertilizers Crisis

Extract 1: What is driving the price of nitrogen fertilizers?

The significant increase in price of nitrogen fertilizers over the past year has caused a lot of concern among farmers. Today, two-thirds of the demand for nitrogen fertilizers is driven primarily by the production of crops; of which corn, wheat, and soybeans constitute about 36% of that total demand. As large producers of corn, soybeans, and wheat, the United States (US) is a large consumer of these fertilizers.

To produce nitrogen fertilizers, production plants are needed to convert the raw chemical materials into forms farmers can use. As these production plants typically require three to five years to build, the long-run impact is that when a surge in demand for nitrogen fertilizers occurs, the response time to fulfil this will lag.

Countries that import fertilisers are also exporters of the raw materials needed to produce these fertilisers. Hence, this means that prices of fertilizers are more volatile as it is subjected to both the cost of factor inputs as well as the production costs of the country producing it. Increased transport costs from higher fuel costs and trucking rates have caused the global price of nitrogen fertilizers to increase. Trade disruptions have also played a big role in the availability of nitrogen fertilizers. For example, the US has restricted imports of selected factor inputs including potash, from Belarus. Potash is an essential raw material used to produce nitrogen fertilisers, of which Belarus contributes to about 20% of the global production of potash.

In response to the rise in nitrogen fertilizers prices, some farmers have started switching to growing more soybeans, which require less of such fertilizers compared to other crops, or switch to using their land for livestock farming instead.

Source: Institute of Agriculture and Natural Resources, 8 February 2022

Table 1: Agriculture sector employment and soybean production in United States (US)

Year	Employees in Agriculture sector (in millions)	Soybean production (in 1000 bushels)
2018	2.25	4,428,150
2019	2.26	3,551,908
2020	2.31	4,216,302
2021	2.01	4,435,232

Sources: Our World in Data and USDA's Economic Research Service, 28 July 2022

Extract 2: USDA announces plans to support its investment in American-made fertilizers

The US Department of Agriculture (USDA) has announced that it will make available \$250 million through a new grant program to support additional fertilizers production in the country.

Recent supply chain disruptions from the global pandemic and the war between Russia and Ukraine have shown just how important it is to invest in the agricultural supply chain here at home. The planned investment is one example of many initiatives to bring production and jobs back to the US, promote competition, and support American goods and services. Essentially,

the US is working to rebuild the economy towards resilience, security, and sustainability, and this support to provide domestic, sustainable and independent choices for fertilizers supplies is part of that effort. In the long term, USDA is confident that this initiative will be more effective than the use of agricultural price supports in helping farmers.

Source: US Department of Agriculture, 11 March 2022

Extract 3: Pollution caused by nitrogen fertilizers use

During the last 100 years, the amount of man-made nitrogen compounds in water, soil and the air has doubled – an increase driven in large part by the widespread use of nitrogen fertilizers.

Nitrogen and greenhouse gases released from the excessive farms' waste that are laced with these fertilizers has adversely affected land ecosystems as well as freshwater and marine habitats. Though little is known to the public, experts call the flood of nitrogen and greenhouse gases as one of the most severe pollution threats facing humanity today.

Globally, nitrogen fertilizers are commonly added to improve crop production, allowing farmers to grow more food on less land. The use of nitrogen fertilizers is especially important in food-producing countries. This, experts say, will make a transition away from the use of nitrogen fertilizers challenging. However, initiatives to create a more sustainable way of growing food, are plentiful. One such initiative points to organic farming - which involves the use of natural fertilizers derived largely from animal and plant wastes, instead of chemicals.

Source: United Nations Education Programme, 9 November 2020

Extract 4: Boosting food security with smart farming techniques

It is often assumed that the use of nitrogen fertilizers and crop yield presents an inevitable trade-off. A recent study suggests that farmers in many countries can reduce the use of nitrogen fertilizers without sacrificing food production. Many experts believe that investment in smart farming technologies to boost food production without significantly stretching finite resources such as land and water is the surest way to boost food security and reduce nitrogen pollution. In addition to smart farming, some governments are starting to scale back the subsidies on nitrogen fertilisers given to farmers.

Smart farming is an emerging concept that refers to the management of farms using technologies such as robotics, drones and Artificial Intelligence (AI) to increase the quantity and quality of crops. Compared to traditional farming, smart farming allows for more issues to be addressed without the need for farmers to use as much nitrogen fertilizers. For instance, the combination of smart irrigation and remote monitoring allows farmers to use less nitrogen fertilizers and be more productive in attending to their farm's needs such as pest infestations and deteriorating soil conditions. These issues were previously solved in traditional farming through generous use of nitrogen fertilizers to maximize crop yield.

However, such profound changes come not only with opportunities but also big challenges. High costs to adopt technology for individual farms and limited knowledge and skills can be significant challenges for such farms. Thus, the access to the latest technology may remain restricted to big and industrialized farms only. Digitalization of agriculture might also influence the employment opportunities and job profiles of farmers and farming-related professionals even further.

Sources: Our World in Data and Proceedings of the National Academy of Sciences, 9 September 2021 and 13 June 2017

Questions

- (a) Extract 1 mentioned that some farmers have switched to livestock farming in response to the increase in global price of nitrogen fertilizers.

Using a production possibility curve, explain why an opportunity cost may be incurred when additional land is used to produce livestock over food crops, and comment briefly on whether all food-producing countries should make the decision to switch. [6]

- (b) Explain how a change in soybean production might affect employment in the agriculture sector in the US. Assess whether or not Table 1 supports this relationship. [5]

- (c) Explain why the statement in Extract 1, "Trade disruptions have also played a big role in the availability of fertilizers." is a normative one. [2]

- (d) With reference to the case materials provided, discuss whether demand or supply factors have a greater impact on the price of nitrogen fertilizers in the US. [8]

- (e) Around the world, many countries have passed laws to provide agricultural price supports.

Using an appropriate diagram, explain how a policy of minimum price can improve farmers' revenue. [6]

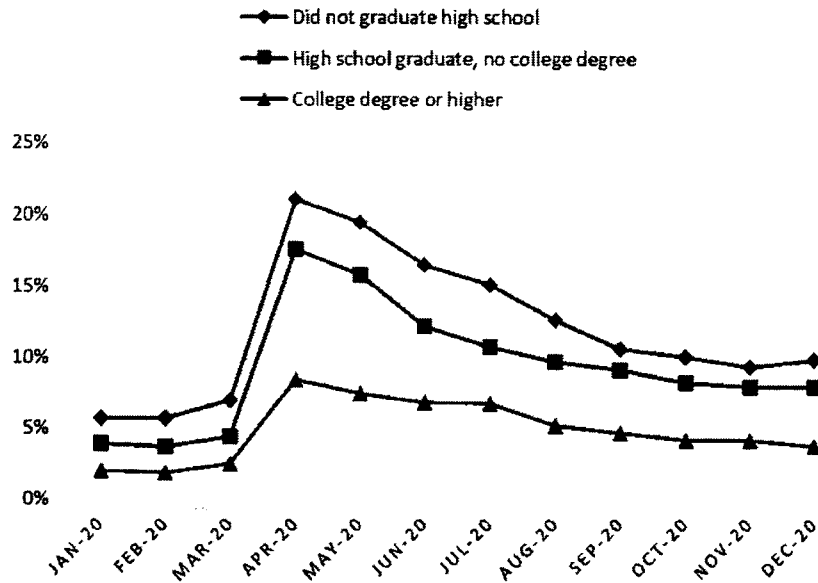
- (f) (i) Explain how the use of nitrogen fertilizers (Extract 3) can lead to market failure. [6]

- (ii) Using relevant case materials and/or own knowledge, discuss whether the reduction of subsidies for nitrogen fertilizers or the use of smart farming technologies is more appropriate to address the market failure in f(i). [12]

[Total: 45]

Question 2: The Unequal Impacts of COVID-19

Figure 1: US Unemployment rates for persons above 25 years old, for different educational attainment



Source: U.S. Bureau of Labour Statistics

Extract 6: The pandemic hurts US low-wage workers the most

The recession associated with the COVID-19 pandemic announced itself in March 2020 with head-spinning job losses in the US: 22 million lost jobs within two months, a shock that is hard to overcome. Overall, the US experienced a contraction of real GDP growth by 3.4% in 2020.

Pandemic-induced job losses hit low-wage workers, who tend to be workers with low educational attainment, much harder than those earning higher wages, which are mostly those with college degrees or higher. A big reason for this is that the physical-distancing practices adopted by consumers and businesses allow for the continuation for higher-wage jobs but displaced many jobs in occupations requiring face-to-face interactions with the public. These include retail clerks and food service workers. According to a survey conducted in the US last April, approximately 60% of high-wage workers could do their jobs effectively from home, compared with only 34% of low-wage workers. Not surprisingly, high-wage occupations in the US have suffered much smaller declines in employment than low-wage categories.

On the bright side, the fact that COVID-19 related treatments were heavily subsidized, and on most occasions completely borne by the government, it means that access to healthcare for COVID-19 was available for all. Furthermore, the increased use of food-delivery services during the pandemic meant that at least for some, there was a viable option to gain a reasonable source of income.

Source: *brookings.edu*, accessed 26 July 2022

Extract 7: Countries most affected by COVID-19 supply chain disruptions

The COVID-19 pandemic has posed significant challenges for supply chains globally. Multiple national lockdowns continue to slow or even temporarily stop the production and flow of raw materials and finished goods, disrupting manufacturing as a result. The lack of raw materials adversely impacted the amount of goods and services that economies could produce. Globally, COVID-19 also caused ports and airports to shut-down or operate far below capacity, resulting in a dramatic increase in costs of transportation and purchase of imported raw materials.

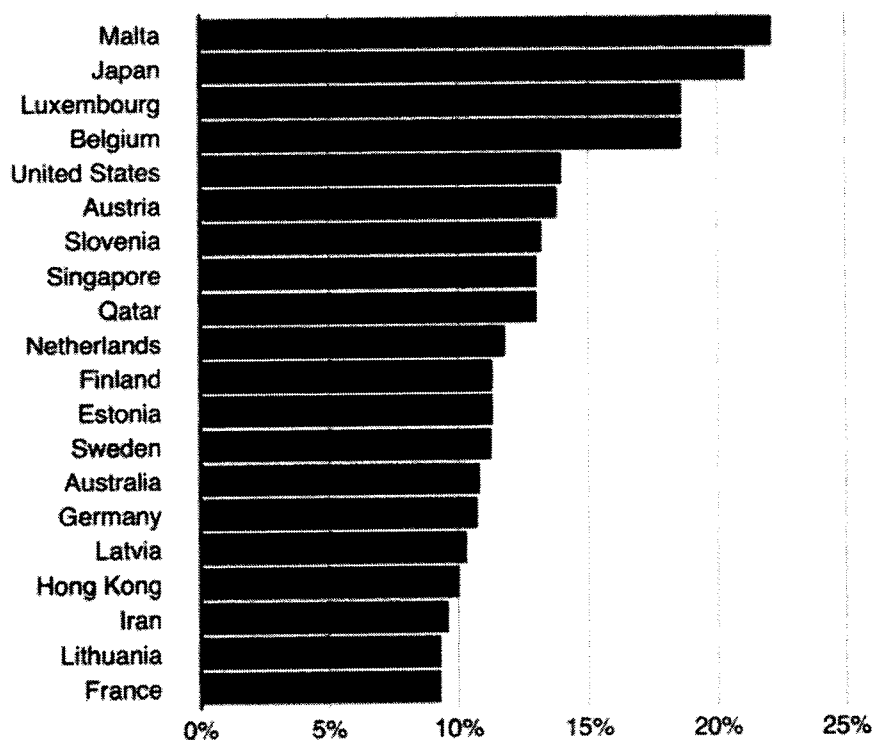
The hardest hit are those countries where the pandemic has been the most severe and where there is heavy reliance on global trade, tourism, and commodity exports. While the magnitude of disruption will vary from region to region, developing countries especially have vulnerabilities that are magnified by external shocks. To make matters worse, a recession induced by supply-chain disruptions have a reinforcing effect where a fall in income dampens household spending, causing a cycle of economic contraction, ultimately resulting in real national incomes falling by a multiplied extent.

Source: The Straits Times, 17 March 2022 and World Bank

Extract 8: Government responses to COVID-19

To mitigate the health and economic fallout of the COVID-19 pandemic, many governments engaged in massive fiscal support programs. The extent of fiscal support is large and consistent across countries, as seen in Figure 2:

Figure 2: COVID-19 fiscal spending as a percentage of GDP



While large-scale expansionary fiscal support has its merits as an immediate response to COVID-19, some critics warn that the increase in spending may not be accompanied by an

increase in the production capability for some economies. Should tight bottlenecks and supply-chain disruptions persist, economies may face rising inflation in the near future.

Beyond policies focusing on the demand side of the economy, governments and firms should also prioritize the supply side of the economy such as ensuring key transportation infrastructures are kept running and well maintained. Sources of raw materials and intermediate goods required for production should also be diversified, and countries should not be overly reliant on any particular trading partner. And in response to labour shortages, countries should increase efforts on adopting automation and technology in their production processes.

However, as the spending needs of governments rise, experts also caution the need for fiscal prudence. Should debts be left unmanaged, governments may have less ability to respond to future shocks or be forced to abandon important infrastructural projects, which could have long term consequences on the economy.

Source: The Federal Reserves and World Economic Forum, January 2022

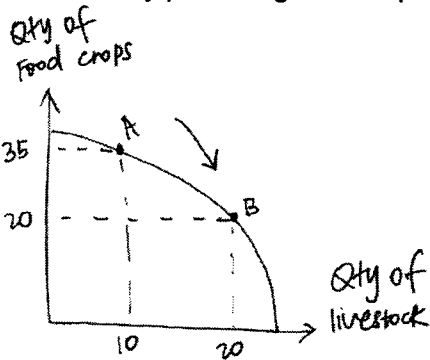
Questions:

- (a) With reference to Figure 1 and Extract 6,
- (i) Compare the change in unemployment rates of workers who did not graduate from high school to workers with a college degree or higher from March to April 2020. [2]
 - (ii) Using supply and demand analysis, account for your observations in (a)(i). [4]
 - (iii) Comment on whether the standard of living for workers with lower education levels is worsened to a greater extent due to COVID-19. [6]
- (b) (i) With reference to Extract 7 and using AD/AS analysis, explain **two** ways a disruption in supply chains resulting from COVID-19 may lead to a recession. [8]
- (ii) Explain **two** reasons why a recession caused by COVID-19 may be more severe for trade-reliant countries. [4]
- (c) Discuss the view that massive fiscal spending in response to COVID-19 may lead to a higher rate of inflation in the near future. [9]
- (d) Discuss whether governments should focus on increasing economic growth or reducing government debt. [12]

[Total: 45]

End of paper

**2022 ACJC Prelims
H1 Econs Prelims Question 1: The Global Nitrogen Fertilizers Crisis
Questions and Suggested Responses**

(a)	<p>Extract 1 mentioned that some farmers have switched to livestock farming in response to rising fertilizer prices.</p> <p>Explain, using a production possibility curve diagram, why an opportunity cost may be incurred when additional land is used to produce livestock over food crops, and comment briefly on whether all food-producing countries should make the decision to switch.</p>	[6]						
	<p><u>Question analysis</u></p> <table border="1" data-bbox="368 645 1273 824"> <tr> <td>Command</td> <td>Explain why Using a production possibility diagram</td> </tr> <tr> <td>Concept</td> <td>Opportunity cost Decision-making</td> </tr> <tr> <td>Context</td> <td>Food producing countries</td> </tr> </table> <p><u>Explain why with the use of a PPC diagram</u></p> <ul style="list-style-type: none"> • Opportunity cost is defined as the net benefit of the next best alternative foregone. • Assuming that the country is producing at maximum productive capacity, an opportunity cost is incurred when additional land is used to produce more livestock (i.e., moving from point A to B) because doing so requires the country to shift its resources away from the production of agricultural goods to produce livestock. As a result, the country has to forgo some units of agricultural goods when more units of livestock are produced. <p align="center">Figure 1: PPC of a country producing food crops and livestock</p>  <p><u>Comment briefly [stand + brief justification]</u></p> <ul style="list-style-type: none"> • This switch should not be made by all food-producing countries, due to possible reasons such as the following: <ul style="list-style-type: none"> ○ EITHER - Some countries incur greater costs than benefits in switching. Although farmers may earn higher revenue from producing more livestock, the costs incurred in the form of purchasing new tools or machines could outweigh the benefits gained. This means that switching to livestock may not generate a higher profit. 	Command	Explain why Using a production possibility diagram	Concept	Opportunity cost Decision-making	Context	Food producing countries	
Command	Explain why Using a production possibility diagram							
Concept	Opportunity cost Decision-making							
Context	Food producing countries							

	<ul style="list-style-type: none"> ○ OR - Some countries experience increasing opportunity cost when making this switch. The resources in some countries may be better suited to produce agricultural goods than they are for producing livestock. Hence, for every additional unit of livestock produced, more and more resources have to be shifted away from the production of agricultural goods because these resources are becoming less suitable for the production of livestock. 							
(b)	<p>Explain how a change in soybean production might affect employment in the agriculture sector in the US. Assess whether or not Table 1 supports this relationship.</p>	[5]						
	<p><u>Question analysis</u></p> <table border="1"> <tr> <td>Command</td> <td>Explain how (i.e., cause-effect analysis) To what extent</td> </tr> <tr> <td>Concept / Skill</td> <td>Derived demand Interpretation of data</td> </tr> <tr> <td>Context</td> <td>Table 1</td> </tr> </table> <p><u>Explain how</u></p> <ul style="list-style-type: none"> • An increase in soybean production is likely to increase agriculture employment in the US. • This is because the demand for labour is derived from the demand of soybean (or any reasoning that suggests an input and output relationship). <p><u>Assess whether or not</u></p> <ul style="list-style-type: none"> • 2019 to 2020: Supports • 2018 to 2019 or 2021: Does not support. This could be due to reasons such as <ul style="list-style-type: none"> ○ Soybean farmers switching to producing other crops hence agriculture employment could still rise despite a decrease in soybean production ○ The use of labour-saving machines or technologies in soybean production ○ The reduction in production of other crops such as corn and wheat hence reducing overall agriculture labour demand 	Command	Explain how (i.e., cause-effect analysis) To what extent	Concept / Skill	Derived demand Interpretation of data	Context	Table 1	
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(c)	<p>Explain why the statement in Extract 1, "Trades disputes and disruptions have also played a big role in the availability of fertilizers." is a normative one.</p>	[2]						
	<p><u>Question analysis</u></p> <table border="1"> <tr> <td>Command</td> <td>Explain why</td> </tr> <tr> <td>Concept</td> <td>Normative statement</td> </tr> <tr> <td>Context</td> <td>Extract 1</td> </tr> </table> <p><u>Definition</u> A normative statement refers to a value judgement, point of view or an opinion.</p> <p><u>Reason</u></p>	Command	Explain why	Concept	Normative statement	Context	Extract 1	
Command	Explain why							
Concept	Normative statement							
Context	Extract 1							

	There are no data, statistics or facts to support the statement / The validity of the statement cannot be proven									
(d)	With reference to the case material provided, discuss whether demand or supply factors have a greater impact on the price of nitrogen fertilizers in the US.	[8]								
	<p><u>Question analysis</u></p> <table border="1"> <tr> <td>Command</td> <td>Discuss whether → Answers are to present a two-sided analysis before making an overall well-reasoned judgement Start point: Demand or supply factors End point: Price of nitrogen fertilizers in the US</td> </tr> <tr> <td>Concept</td> <td>Supply and demand factors (including PED and PES)</td> </tr> <tr> <td>Context</td> <td>Case materials provided US</td> </tr> <tr> <td>Answer Outline</td> <td>1. Requirement 1: Explaining the impact of supply factor on price of fertilizers 2. Requirement 2: Explaining the impact of demand factor on price of fertilizers 3. Summative conclusion: Presenting a well-reasoned judgement that addresses the question</td> </tr> </table> <p><u>Requirement 1: Impact of supply factors on price of fertilizers</u></p> <ul style="list-style-type: none"> • Fall in supply of fertilizers could explain why price of fertilizer in the US is high • Based on Extract 1, the US have restricted imports of potash – a factor input of fertilizer. This creates a shortage of potash thus exerting an upward pressure on price of potash. Moreover, the price of transportation has also increased. Consequently, the cost of producing fertilizer would increase. • With that, suppliers are willing and able to sell fewer units of fertilizers. As such, the supply of fertilizer falls. • The fall in supply of fertilizer arising from both domestic and foreign factors would create a large shortage at the original price. The shortage exerts an upward pressure on price. Given the large shortage, a large increase in price is required to sufficiently reduce quantity demanded and increase quantity supply. • Extract 1 also mentioned that the supply of fertilizers is price inelastic due to the amount of time required to build production plants needed to produce nitrogen fertilizers. • As such, the fall in supply of fertilizer coupled with price inelastic supply could explain the large increase in price of fertilizers in the US. <p><u>Requirement 2: Impact of demand factors on price of fertilizers</u></p> <ul style="list-style-type: none"> • Strong demand for fertilizers could explain why price of fertilizers in the US is high. • Based on Extract 1, the US is a major producer of agricultural products such as corn, soybeans, and wheat. Such agricultural products rely heavily on the use of fertilizer in raising crop production. 	Command	Discuss whether → Answers are to present a two-sided analysis before making an overall well-reasoned judgement Start point: Demand or supply factors End point: Price of nitrogen fertilizers in the US	Concept	Supply and demand factors (including PED and PES)	Context	Case materials provided US	Answer Outline	1. Requirement 1: Explaining the impact of supply factor on price of fertilizers 2. Requirement 2: Explaining the impact of demand factor on price of fertilizers 3. Summative conclusion: Presenting a well-reasoned judgement that addresses the question	
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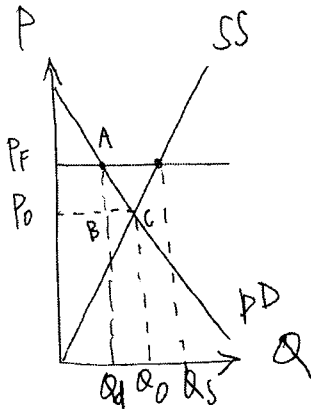
- Higher demand results in higher market equilibrium price. This is because consumers of fertilizers (in this case – farmers) are willing and able to pay a much high price for each unit of fertilizers demanded.
- Moreover, the demand for fertilizer is likely to be price inelastic given that it is a necessity for producing agricultural goods.
- Consequently, the previously mentioned fall in supply would result in a large increase in price. This is because an increase in price would result in a less than proportionate decrease in quantity demanded. Therefore, a large increase in price is required to clear the abovementioned shortage arising from the fall in supply.
- As such, the strong demand for fertilizers coupled with demand that is price inelastic could explain the high price of fertilizer in the US.

Summative conclusion: Provide an overall well-reasoned judgement that addresses the question [Note: Students do not need to write all the points below to gain the full 2 marks for evaluation.]

- Based on the above analysis, it is likely that supply factors have a greater impact on the price of fertilizers in the US.
- This is because the US agricultural sector have been one of its engines of economic growth thus the high domestic demand for fertilizer is perpetual and would not have resulted in any significant increase in price i.e., price have been and would continue to remain high.
- However, the fall in supply of fertilizers as described in Extract 3 is unprecedented – at least in recent history. As such, the fall in supply exacerbates any shortage that could have persisted due to high demand. Moreover, the fall in supply is also severe as it stems from multiple causes that are also evolving. As such, the shortage is not only likely to be large, but it could also be growing. Consequently, a sharp increase in price is required to sufficiently reduce quantity demanded and an increase in quantity supplied.
- That said, Extract 2 also mentioned that USDA has plans to increase domestic production of fertilizers in the country. This will help to increase the supply of fertilizers in the long run, reducing the significance of supply factors in affecting the price of fertilizers in the US.

Marking scheme

Level	Descriptor	Marks
L2	For an answer that <ul style="list-style-type: none"> • Presents a rigorous analysis of both supply and demand factors with few / no conceptual mistakes. • Supports the analysis with good use of case evidence 	4 – 6
L1	For an answer that misses any of the L2 requirements.	1 – 3
E2	<ul style="list-style-type: none"> • For an answer with an overall judgement that addresses the question • Apart from presenting the judgement, the use of criteria or reasons is used to explain why the judgement is made 	2
E1	<ul style="list-style-type: none"> • For attempts made at evaluating by using simple evaluative statements • An overall judgement is not presented 	1

(e)	<p>Around the world, many countries have passed laws to provide agricultural price supports. [6]</p> <p>Using an appropriate diagram, explain how a policy of minimum price can improve farmers' revenue.</p>							
	<p>Question analysis</p> <table border="1" data-bbox="368 456 1281 629"> <tr> <td>Command</td> <td>Explain how (i.e., cause-effect analysis) Using an appropriate diagram</td> </tr> <tr> <td>Concept</td> <td>Minimum price (start point) Farmers' revenue (end point)</td> </tr> <tr> <td>Context</td> <td>Agriculture sector</td> </tr> </table> <p>Conceptual explanation / definition of the policy</p> <ul style="list-style-type: none"> A policy of minimum price refers to the government imposing a price floor that the sellers can legally sell their good at. The government deems the original equilibrium price P_0 to be too low and sets the minimum price at P_F which is above P_0. <p>Correctly drawn diagram that is referred to in explanation</p> <p style="text-align: center;">Figure 2: Price floor on an agricultural product market</p>  <p>Explain how the policy helps to increase farmers' revenue</p> <ul style="list-style-type: none"> EITHER - Using PED explanation <ul style="list-style-type: none"> As food is a necessity, the value of its price elasticity of demand is less than one / its demand is price inelastic. Hence, an increase in price from P_0 to P_F will lead to a less than proportionate decrease in quantity demanded, ceteris paribus. Given that total revenue is a product of price and quantity, the gain in revenue (area $P_F P_0 B A$) from the higher price outweighs the loss in revenue (area $B C Q_d Q_0$) from the lower quantity, bringing about an overall increase in the farmers' revenue. OR - Assuming that the government steps in to buy up the surplus <ul style="list-style-type: none"> At P_F, a surplus of $(Q_s - Q_d)$ arises. Total revenue is a product of price and quantity. If the government steps in to buy up this surplus, there would be an increase in the farmers' revenue due to the higher price P_1 and higher quantity Q_s as compared to before. 	Command	Explain how (i.e., cause-effect analysis) Using an appropriate diagram	Concept	Minimum price (start point) Farmers' revenue (end point)	Context	Agriculture sector	
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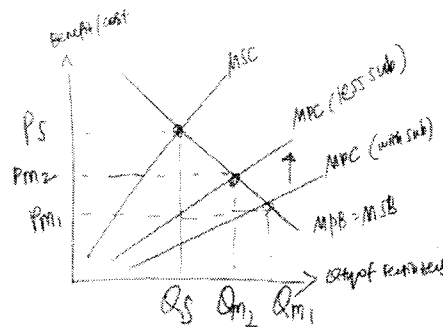
(f)	(i)	Explain how the use of nitrogen fertilizers (Extract 3) may lead to market failure.	[6]									
<p>Question analysis</p> <table border="1" data-bbox="352 344 1265 618"> <tr> <td data-bbox="352 344 555 510">Command</td> <td data-bbox="555 344 1265 510">Explain how (i.e., cause-effect analysis) <i>[Note: A diagram is not required but students are encouraged to draw a diagram if drawing and referring to it helps to enhance the clarity and / or comprehensiveness of the answer.]</i></td> </tr> <tr> <td data-bbox="352 510 555 577">Concept</td> <td data-bbox="555 510 1265 577">Market failure Negative externalities in consumption</td> </tr> <tr> <td data-bbox="352 577 555 618">Context</td> <td data-bbox="555 577 1265 618">Extract 3</td> </tr> </table> <p>Explain how market equilibrium output is determined</p> <ul data-bbox="352 685 1286 958" style="list-style-type: none"> • Farmers seek to maximise their profits. • As mentioned in Extract 3, the use of nitrogen fertilizers is required for food / crops production. • In the absence of government intervention, farmers would consume nitrogen fertilizers (Q_p) where the marginal private benefit (MPB) equals to the marginal private cost (MPC) of doing so. The MPB includes the additional crop revenue gained while the MPC includes the additional cost of consuming an additional unit of nitrogen fertilizers. <p>Explain the presence of negative externalities in consumption</p> <ul data-bbox="352 1014 1286 1294" style="list-style-type: none"> • When consuming nitrogen fertilizers, farmers do not take into account the negative externalities generated that in turn affect third parties who are not involved in the consumption and who do not receive compensation. • An example of the negative externalities is healthcare costs incurred by residents staying near the farm and end up suffering respiratory illnesses caused by breathing in polluted air (Extract 3). • This implies there is a positive marginal external cost ($MEC > 0$). <p>Explain how the socially optimal output is determined</p> <ul data-bbox="352 1350 1286 1525" style="list-style-type: none"> • Given that $MSC = MPC + MEC$, $MSC > MPC$. • Assuming that there are no positive externalities, $MSB = MPB$. • The quantity of nitrogen fertilizers that maximises social welfare (Q_s) should be where the marginal social benefit (MSB) equals to the marginal social cost (MSC) of doing so i.e., $MSB = MSC$. <p>Explain the deadweight loss / welfare loss incurred by the society</p> <ul data-bbox="352 1581 1286 1861" style="list-style-type: none"> • Given that farmers seek to maximise their profits and not social welfare, the quantity of nitrogen fertilizers consumed at Q_p is more than Q_s. • Between Q_p to Q_s, $MSC > MSB$, implying a net loss to social welfare from consuming these quantities of nitrogen fertilizers. This suggests that social welfare can be improved by reducing the consumption from Q_p to Q_s. • Hence, at Q_p, there is overconsumption and over-allocation of resources, reflecting market failure in the nitrogen fertilizers market. <p>Marking scheme</p> <table border="1" data-bbox="352 1917 1265 1960"> <thead> <tr> <th data-bbox="352 1917 459 1960">Level</th> <th data-bbox="459 1917 1145 1960">Descriptor</th> <th data-bbox="1145 1917 1265 1960">Marks</th> </tr> </thead> </table>				Command	Explain how (i.e., cause-effect analysis) <i>[Note: A diagram is not required but students are encouraged to draw a diagram if drawing and referring to it helps to enhance the clarity and / or comprehensiveness of the answer.]</i>	Concept	Market failure Negative externalities in consumption	Context	Extract 3	Level	Descriptor	Marks
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Context	Extract 3											
Level	Descriptor	Marks										

		<p>L2</p> <ul style="list-style-type: none"> • For an answer that: <ul style="list-style-type: none"> ◦ Accurately identifies the source of market failure to as negative externalities generated from the consumption of nitrogen fertilizers. ◦ Rigorously explains how the externalities causes the market failure with few / no conceptual mistakes • Provides appropriate examples of the MPC, MPB and MEC using the context and case evidence provided 	4 – 6									
		<p>L1</p> <p>For an answer that misses most / all the L2 requirements mentioned above</p>	1 – 3									
	(ii)	<p>Extract 4 mentioned several ways to reduce nitrogen pollution.</p> <p>Discuss whether a reduction in fertilizers subsidies or increasing the use of smart farming technologies is more appropriate to address the market failure in (f)(i).</p>		[12]								
		<p><u>Question analysis</u></p> <table border="1" data-bbox="368 999 1278 1536"> <tr> <td data-bbox="368 999 571 1104">Command</td> <td data-bbox="571 999 1278 1104">Discuss whether → Answers are to present a two-sided analysis before making an overall well-reasoned judgement</td> </tr> <tr> <td data-bbox="368 1104 571 1137">Concept</td> <td data-bbox="571 1104 1278 1137">Marginal analysis,</td> </tr> <tr> <td data-bbox="368 1137 571 1171">Context</td> <td data-bbox="571 1137 1278 1171">Addressing market failure</td> </tr> <tr> <td data-bbox="368 1171 571 1536">Answer Outline</td> <td data-bbox="571 1171 1278 1536"> <ol style="list-style-type: none"> 1. Requirement 1: Explaining how reducing fertilizer subsidies addresses market failure in (f)(i) 2. EV 1: Explaining one limitation of the above policy 3. Requirement 2: Explaining how increasing the use of smart farming technologies addresses market failure in (f)(i) 4. EV 2: Explaining one limitation of the above policy 5. Summative conclusion: Addressing the question by presenting an overall judgement on which policy is more appropriate and explaining why </td> </tr> </table> <p><u>Introduction:</u> Unpack the context</p> <ul style="list-style-type: none"> • As analysed in part f(i), negative externalities generated from the consumption of nitrogen fertilizers has resulted in market failure. • Hence, policies to tackle this market failure would seek to reduce the amount of nitrogen fertilizers used from Q_m to Q_s. <p><u>Requirement 1:</u> Reducing subsidies is an appropriate policy in addressing the market failure caused by the overconsumption of nitrogen fertilizers</p> <ul style="list-style-type: none"> • Governments can reduce the subsidies given to absorb part of the cost incurred by farmers when using nitrogen fertilizers (Extract 4). • With the removal of subsidies, producers of fertilizers will incur a higher cost of production which will be passed onto farmers in the form of 			Command	Discuss whether → Answers are to present a two-sided analysis before making an overall well-reasoned judgement	Concept	Marginal analysis,	Context	Addressing market failure	Answer Outline	<ol style="list-style-type: none"> 1. Requirement 1: Explaining how reducing fertilizer subsidies addresses market failure in (f)(i) 2. EV 1: Explaining one limitation of the above policy 3. Requirement 2: Explaining how increasing the use of smart farming technologies addresses market failure in (f)(i) 4. EV 2: Explaining one limitation of the above policy 5. Summative conclusion: Addressing the question by presenting an overall judgement on which policy is more appropriate and explaining why
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higher fertilizer prices. From the farmers' perspective, this increases the MPC of using nitrogen fertilizers.

- This would shift the MPC curve up/leftward from MPC (with sub) to MPC (less sub).
- With the increase in MPC, Q_{m1} is no longer the profit maximising quantity for farmers since $MPB < MPC$ (less sub) at Q_{m1} .
- Farmers, still seeking to maximise their own profit, will now consume less nitrogen fertilizers at Q_{m2} where $MPB = MPC$ (less sub).
- The reduction in subsidies thus helps to reduce the extent of overconsumption of nitrogen fertilizers given that $Q_{m2} < Q_{m1}$.

Figure 3: Reduction in nitrogen fertilizer subsidies



EV 1: Explain one limitation of the above policy [Note: Two examples have been provided below. Students do not need to write both.]

- However, even though the removal of subsidies helps to reduce the extent of allocative inefficiency, it has not solved market failure as $Q_{p'} > Q_s$. This is because the removal of subsidies does not force farmers to internalize the external cost incurred from the consumption of fertilizers.
- The reduction in subsidies could also lead to farmers passing on the higher costs to consumers in the form of higher food prices. This would increase cost of living, reducing purchasing power for all households with lower-income families being affected most.

Requirement 2: Increasing the use of smart farming technologies is an alternative policy that can be used to address the market failure caused by the overconsumption of nitrogen fertilizers

- Extract 4 mentioned that the use of smart farming technologies can help farmers to address crop issues faced without having to use as much nitrogen fertilizers.
- This means that the **demand of nitrogen fertilizers will decrease**, bringing about a decrease in market equilibrium output level / **MPB decreases** due to the allowance for more alternatives to be used.
- The market failure caused by the overconsumption of nitrogen fertilizers can be addressed if the **decrease in market equilibrium output level coincides with Q_s** .

EV 2: Explain one limitation of the above policy [Note: Two examples have been provided below. Students do not need to write both.]

- However, Extract 4 has pointed out that the adoption of smart farming technologies involves high costs so the policy requires huge

government funding. As not every country has the ability and technical support needed to facilitate the use of smart farming technologies, this policy may not be appropriate for all countries.

- Furthermore, Extract 4 also mentioned that the use of smart farming technologies may lead to changes in the employment opportunities available. Since the use of technologies is the emphasis, there will likely be an increase in the demand for high-skilled labour while that of low-skilled labour decreases. Structural unemployment may result in countries where the low-skilled workers are unable to take up jobs in other sectors or in farms that are using smart farming technologies.

Summative conclusion: Provide an overall well-reasoned judgement that addresses the question [Note: Two examples have been provided below. Students do not need to write both.]

- **Use of time period as evaluation criterion** - In light of the above analysis, reducing nitrogen fertilizer subsidies is more appropriate in addressing the market failure caused by the overconsumption of nitrogen fertilizers. This is because the reduction in subsidies has an immediate impact on the MPC and hence quantity of nitrogen fertilizers consumed. In contrast, the adoption of smart farming technologies takes time as governments may need to source for funding or they may need time to educate the farmers in using these technologies, thus making this policy more appropriate in the long run.
- **Use of stage of economic development as evaluation criterion** - The relative appropriateness of the two policies also depends on whether we are examining developing or developed countries. The increase in use of smart farming technologies may be less feasible in developing countries due to the lack of supportive information and communication technology infrastructure. Furthermore, governments in developing countries may find it harder to reallocate funds intended for economic development to the increasing the use of smart farming technologies. Hence, the reduction in subsidies would be a more appropriate policy for developing countries while the use of smart farming technologies would be more appropriate for developed countries.

Marking scheme

Level	Descriptor	Marks
L3	For an answer that <ul style="list-style-type: none"> • Presents a rigorous analysis of how the two policies are able to achieve the socially optimal level of output, hence addressing the market failure in (f)(i) with few / no conceptual mistakes • Supports the analysis with good use of case evidence 	7 – 9
L2	For an answer that misses any of the L3 requirements	4 – 6
L1	For an answer that: <ul style="list-style-type: none"> • Describes the policies without relevant economic analysis • Has major and/or recurrent conceptual mistakes 	1 – 3

		E2	<p>For an evaluation that:</p> <ul style="list-style-type: none"> • Discusses the downsides / limitations of each policy, as well as, • Provides a clear and justified judgement of which policy is more appropriate 	2-3
		E1	<p>For an evaluation that:</p> <ul style="list-style-type: none"> • Lacks an overall judgement of which policy is more appropriate • Attempts to evaluate using simple evaluative statements 	1
		[Total: 45]		

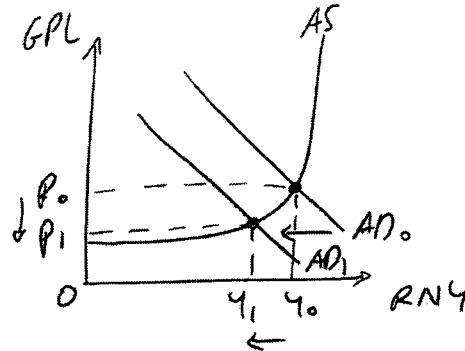
Question 2: The unequal impacts of COVID-19**SUGGESTED RESPONSE**

(a)	<p>With reference to Figure 1 and Extract 1:</p> <p>(i) Compare the change in unemployment rates of workers who did not graduate from high school to workers with a college degree or higher from March to April 2020. [2]</p> <table border="1" data-bbox="368 555 1369 707"> <tr> <td>Command Word</td> <td>“Compare” requires similarity and difference</td> </tr> <tr> <td>Context</td> <td>(i) workers who did not graduate from high school (ii) workers with college degree or higher</td> </tr> <tr> <td>Content</td> <td>NA (skill-based data response)</td> </tr> </table> <p>Unemployment rate increased for all, regardless of educational attainment. Unemployment rate increased to a greater extent for workers who did not graduate from high school than for workers with a college degree or higher.</p> <p>Mark scheme: [1] Similarity [1] Difference</p>	Command Word	“Compare” requires similarity and difference	Context	(i) workers who did not graduate from high school (ii) workers with college degree or higher	Content	NA (skill-based data response)
Command Word	“Compare” requires similarity and difference						
Context	(i) workers who did not graduate from high school (ii) workers with college degree or higher						
Content	NA (skill-based data response)						
(ii)	<p>Using supply and demand analysis, account for your observations in (a)(i). [4]</p> <table border="1" data-bbox="368 1144 1369 1547"> <tr> <td>Command Word</td> <td>“Account” means “explain why”. Non-discursive, no need for balance perspective of evaluation.</td> </tr> <tr> <td>Context</td> <td>From previous question, (ai)</td> </tr> <tr> <td>Content</td> <td>“DDSS analysis” Start point: Factors that shift D / S End point: changes in unemployment, seen from the surplus at original wage.</td> </tr> </table> <p>[2] Account for similarity: Covid-19 caused RNY to fall / recession, which implies firms require fewer FOP (including labour) → demand for labour regardless of education (any idea of “everyone” / “overall” is acceptable) falls → surplus of workers → rise in unemployment for all</p> <p>[2] Account for difference: Due to the lack of skills or ability to work from home OR due to a greater fall in face-</p>	Command Word	“Account” means “explain why”. Non-discursive, no need for balance perspective of evaluation.	Context	From previous question, (ai)	Content	“DDSS analysis” Start point: Factors that shift D / S End point: changes in unemployment, seen from the surplus at original wage.
Command Word	“Account” means “explain why”. Non-discursive, no need for balance perspective of evaluation.						
Context	From previous question, (ai)						
Content	“DDSS analysis” Start point: Factors that shift D / S End point: changes in unemployment, seen from the surplus at original wage.						

	<p>to-face interaction businesses → demand for workers with lower educational attainment fell by a larger extent → surplus of workers larger → greater unemployment.</p> <p><i>Breakdown of [2] mark:</i> [1]: explain reason and state demand to fall (for all / by a greater extent for low-ed) [1]: link to surplus of workers</p>								
(iii)	<p>Comment on whether the standard of living for workers with lower education levels is worsened to a greater extent due to COVID-19. [6]</p> <table border="1"> <tr> <td>Command Word</td> <td> <p>“Comment... whether...”</p> <p>Requires an explanation why the assertion might be true, and a possible reason and explanation why it might not be true.</p> </td> </tr> <tr> <td>Context</td> <td>“Lower educated workers”</td> </tr> <tr> <td>Content</td> <td> <p>“SOL”, includes both material and non-material</p> <p>Start point: COVID-19 End point: M and NM SOL</p> </td> </tr> <tr> <td>Answer outline</td> <td> <p>1. True, Covid-19 → worsen MSOL more for lower educated workers</p> <p>2. True, Covid-19 → worsen NMSOL more for lower educated workers</p> <p>3. Not necessarily true, Covid-19 → worsen M or NM SOL equally for all, or more for educated workers</p> </td> </tr> </table> <p>“Explain” harmed to greater extent</p> <ul style="list-style-type: none"> • MSOL (either of the following) <ul style="list-style-type: none"> ○ <i>Given that the unemployment rate rose more for workers with lower education levels, these workers experienced a greater fall in average household income. As a result, their access to quantity and quality of consumer goods and services, and therefore material standard of living, is likely to fall to a greater extent,</i> ○ <i>A greater fall in the demand for workers with low education levels would cause their wages to be bid down to a greater extent. This implies a greater fall in real average household income for these workers. As a result, their access to quantity and quality of consumer goods and services, and therefore material standard of living, is likely to fall to a greater extent.</i> • NMSOL <ul style="list-style-type: none"> ○ <i>Given that workers of low educational attainment are likely to experience a fall of household income by a greater extent, they would also suffer a greater loss of access to essential goods and services</i> 	Command Word	<p>“Comment... whether...”</p> <p>Requires an explanation why the assertion might be true, and a possible reason and explanation why it might not be true.</p>	Context	“Lower educated workers”	Content	<p>“SOL”, includes both material and non-material</p> <p>Start point: COVID-19 End point: M and NM SOL</p>	Answer outline	<p>1. True, Covid-19 → worsen MSOL more for lower educated workers</p> <p>2. True, Covid-19 → worsen NMSOL more for lower educated workers</p> <p>3. Not necessarily true, Covid-19 → worsen M or NM SOL equally for all, or more for educated workers</p>
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		<p><i>such as healthcare and education. This could lead to a lower life expectancy and literacy rate for these workers. (Note: this point is for healthcare in general, while the "comment" point is healthcare needs specifically for Covid-19)</i></p> <p>"Comment" harmed, but not to a greater extent (any of the following)</p> <ul style="list-style-type: none"> Given the large subsidies given to healthcare for Covid-19 treatments, access to healthcare due to COVID-19 are equal for both the highly and lowly educated workers. Workers with lower education who were working as food-delivery riders saw an increase in demand and wages. As a result of Covid-19, household income for these workers rose instead, increasing their access to more and better quality goods and services. <p>Mark scheme: [4] "Explain" harmed to greater extent (2 marks for MSOL, and 2 marks for NMSOL) [2] "Comment" harmed, but not to a greater extent</p>								
(b)	(i)	<p>With reference to Extract 7 and using AD/AS analysis, explain two ways a disruption in supply chains resulting from COVID-19 may lead to a recession. [8]</p> <table border="1"> <tr> <td>Command Word</td> <td>"Explain" Non-discursive, no need for balance perspective of evaluation. "...two ways..." Two different reasons and explanations for the effect to take place</td> </tr> <tr> <td>Context</td> <td>International / not specified</td> </tr> <tr> <td>Content</td> <td>"ADAS" and "recession" Start point: Factors that shift AD / AS ("two ways") End point: Recession, seen by a fall in RNY</td> </tr> <tr> <td>Answer outline</td> <td>R1. First way → ADAS model → RNY falls R2. Second way → ADAS model → RNY falls</td> </tr> </table> <p>Requirement 1: The supply chain disruption resulting from Covid-19 could have caused a recession by reducing the aggregate demand of countries. COVID-19 forced many firms to stop operations. This implies that firms producing goods for exports would struggle to procure intermediate goods used as factors of</p>	Command Word	"Explain" Non-discursive, no need for balance perspective of evaluation. "...two ways..." Two different reasons and explanations for the effect to take place	Context	International / not specified	Content	"ADAS" and "recession" Start point: Factors that shift AD / AS ("two ways") End point: Recession, seen by a fall in RNY	Answer outline	R1. First way → ADAS model → RNY falls R2. Second way → ADAS model → RNY falls
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Answer outline	R1. First way → ADAS model → RNY falls R2. Second way → ADAS model → RNY falls									

production, reducing their ability to produce exported goods. Also, these firms could be forced to cease production due to COVID-19. This implies there would be fewer goods available for exports. Also, the closure of ports made it difficult to transport exports to other countries. Together, this caused the quantity of exports to fall significantly. Assuming no change in the price of exports, export revenue of many countries falls, leading to a fall in aggregate demand (from AD₀ to AD₁), ceteris paribus.

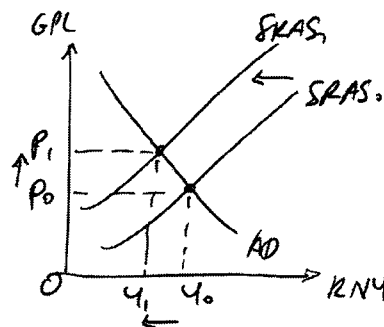


Assuming the economy is operating below the full employment output, a fall in AD leads to an accumulation of inventory stocks, signaling to firms to reduce their output. This causes a fall in real national income (RNY). Furthermore, the fall in RNY translates to a fall in household incomes and hence purchasing power, causing consumption spending to fall. This results in AD and RNY falling again. This process continues until RNY falls by a multiplied amount equal to the original fall in export revenue $\times 1/(1-MPC)$. The fall in RNY implies negative actual economic growth, and reflects a recession.

Requirement 2:

The supply chain disruption resulting from Covid-19 could have also caused a recession by reducing the SRAS of countries.

The supply disruption due to Covid-19 caused the supply of many factors of production to fall, inducing a shortage at their original prices. As a result, firms have to compete for scarce resources, bidding up factor payments in the process. This increases the cost of production for firms, reducing and shifting the shortage run aggregate supply to the left (SRAS₀ to SRAS₁).

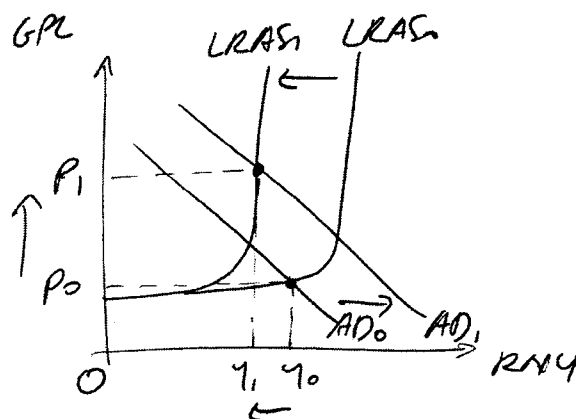


		<p>Assuming the economy is below full employment output, there would be a shortage of goods and services in the economy at the original general price levels, causing firms to increase their price of final goods and service to eliminate the shortage. As price rises, real household income falls, inducing a fall in consumption spending. This causes the AD to fall, seen by movement along the AD curve. The new equilibrium is one where GPL has risen and RNY has fallen. The fall in RNY implies negative actual economic growth, and reflects a recession.</p> <table border="1" data-bbox="368 636 1329 1160"> <thead> <tr> <th data-bbox="368 636 580 674">Level</th> <th data-bbox="580 636 1329 674">Descriptor</th> </tr> </thead> <tbody> <tr> <td data-bbox="368 674 580 1084">L2</td> <td data-bbox="580 674 1329 1084"> <p>Breadth: Answer explains how any two of the following causes a recession</p> <ul style="list-style-type: none"> • A fall in X and therefore AD (do not accept C, I or G fall as reasons for a fall in AD since these are not mentioned in Extract 2) • Rise in COP and therefore fall in SRAS • Fall in quantity / quality of FOP and therefore a fall in LRAS <p>Depth: Answer explains how a recession is caused with rigorous use of ADAS analysis.</p> </td> </tr> <tr> <td data-bbox="368 1084 580 1160">L1</td> <td data-bbox="580 1084 1329 1160">Lacking any of the L2 requirements</td> </tr> </tbody> </table> <p><i>Note for "depth" of R1/R2</i></p> <ul style="list-style-type: none"> • <i>Explain how supply chain disruptions lead to any of the following:</i> <ul style="list-style-type: none"> ○ <i>A fall in X and therefore AD (do not accept I or G fall as reasons for a fall in AD since these are not mentioned in Extract 2)</i> ○ <i>Rise in COP and therefore fall in SRAS</i> ○ <i>Fall in quantity / quality of FOP and therefore a fall in LRAS</i> • <i>Explain the fall in RNY as a result of the above</i> <ul style="list-style-type: none"> ○ <i>Diagram (not a must, but good to have)</i> ○ <i>Intuition why RNY falls</i> ○ <i>Multiplier (not a must, but good to have)</i> 	Level	Descriptor	L2	<p>Breadth: Answer explains how any two of the following causes a recession</p> <ul style="list-style-type: none"> • A fall in X and therefore AD (do not accept C, I or G fall as reasons for a fall in AD since these are not mentioned in Extract 2) • Rise in COP and therefore fall in SRAS • Fall in quantity / quality of FOP and therefore a fall in LRAS <p>Depth: Answer explains how a recession is caused with rigorous use of ADAS analysis.</p>	L1	Lacking any of the L2 requirements
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L1	Lacking any of the L2 requirements							
(ii)		<p>Explain two reasons why a recession caused by COVID-19 may be more severe for trade-reliant countries. [4]</p> <table border="1" data-bbox="368 1697 1367 1917"> <tr> <td data-bbox="368 1697 667 1917">Command Word</td> <td data-bbox="667 1697 1367 1917"> <p>"Explain"</p> <p>Non-discursive, no need for balance perspective of evaluation.</p> <p>"...two reasons..."</p> </td> </tr> </table>	Command Word	<p>"Explain"</p> <p>Non-discursive, no need for balance perspective of evaluation.</p> <p>"...two reasons..."</p>				
Command Word	<p>"Explain"</p> <p>Non-discursive, no need for balance perspective of evaluation.</p> <p>"...two reasons..."</p>							

		Two different reasons and explanations for the effect to take place
	Context	"Trade-reliant countries" (compared to non-trade reliant countries)
	Content	Start point: Reasons ("two reasons") End point: More severe recession, seen by a larger fall in RNY for trade-reliant countries <i>Inferred: use ADAS analysis, since the end point is RNY. The reasons could be the extent of factors that shift AD/AS and/or in the interaction from old to new equilibrium.</i>
	Answer outline	1: First reason (trait specific to trade-reliant countries) → ADAS model → RNY falls larger 2. Second reason (trait specific to trade-reliant countries) → ADAS model → RNY falls larger
	<p>Explain any two reasons, such as:</p> <ul style="list-style-type: none"> • One reason could be the importance of export revenue in the country's AD. Countries heavily reliant on tourism or commodity exports will have export revenue that makes up a large component of their AD will likely see a larger fall in AD. Hence, RNY will fall to a larger extent. • Reliance on imported factors of production: countries that are more dependent on imported factors of production will experience a higher increase in costs of production. This suggests a larger fall in SRAS and leads to a larger fall in RNY. <p>Mark Scheme: [1]: Identify a reason [1]: Explain how RNY falls for a larger extent for trade-reliant countries [1]: Identify a second reason [1]: Explain how RNY falls for a larger extent for trade-reliant countries</p>	
(c)	Discuss the view that massive fiscal spending in response to COVID-19 may lead to a higher rate of inflation in the near future. [9]	
	Command Word	"Discuss" requires balance in perspective (whether or not Covid-19 would lead to higher rate of inflation in the near future) and evaluation
	Context	Near future, International
	Content	"Massive fiscals spending" and "higher rate of inflation"

	<p>Start point: "massive fiscal spending" End point "higher rate of inflation", seen by GPL increasing at a greater rate</p> <p><i>Inferred: use ADAS analysis since the end point is GPL</i></p>
Answer outline	<ol style="list-style-type: none"> 1. R1: "massive fiscal spending" → may lead to GPL increasing at a greater rate 2. EVR1: comment on the extent or likelihood of R1 3. R2: "massive fiscal spending" → may not lead to GPL increase at a greater rate 4. EVR2: comment on the extent or likelihood of R2 5. EV conclusion: overall, is it likelihood for inflation rate to increase or not

Requirement 1:
Massive fiscal spending in response to COVID-19 could possibly lead to higher rate of inflation in the near future.
 In response to COVID-19, many governments spent large amounts on healthcare services, implying a significant rise in government expenditure (G), which is a direct component of aggregate demand (AD). Some governments spent on transfer payments, especially to support low-income families, or those who have lost their jobs due to the recession. This causes household income to rise, increasing their consumption spending (C). **Assuming the rise in C and G outweighs the adverse impacts on AD due to COVID-19, the AD for many economies would increase.** However, COVID-19 resulted in many firms, including those producing intermediate goods used as factors of production, to cease or scale down their operations. This implies a fall in the quantity of factors of production available. Some of these firms that were forced to cease operations also eventually exited the market, implying there were even fewer intermediate goods available in the near future. Furthermore, many foreign workers returned to their countries of origin during COVID-19, reducing the size of the labour force, especially for countries with a large portion of foreign workers. In the near future, these workers may not return overseas so work so soon. **Together, these events suggests that the productive capacity many economies fell due to COVID-19, causing a leftward shift in the long-run aggregate supply (LRAS) curve. (Also accept "LRAS increase by a lesser extent")**



Coupled with an increase in AD, this suggests that many economies would be operating near or at their full employment output, on the vertical part of the AS curve. As AD increases, inventory stocks fall, signaling to firms to produce more. To do so, firms require more factors of production. However, factors of production are extremely scarce, as firms therefore have to **compete fiercely** to procure resources. This bids up factors payments (e.g. wage, cost of resources) **significantly**, resulting in a large increase in the cost of production. Assuming firms pass on these higher costs to consumers, the **general price level will rise significantly** in the near future, implying a **higher** rate of inflation.

(Note: *bolded ideas are required for "analytical". Also, must have an idea that the LRAS may not be increased from massive fiscal spending for "analytical".*)

Alternative R1: AD increases, and also SRAS falls due to the supply-chain disruptions, causing a reinforcing increase in GPL. (Note, SRAS fall is not R2 because it is due to a different start point other than massive fiscal spending.)

Requirement 2:

However, the massive fiscal spending may not necessarily result in higher inflation rates in the near future.

- Possible reasons:
 - Covid-19 or other government policies could have caused C, I and X to fall, and overall AD may fall / not increase much despite large increase in G.
 - Economy could be far below the full employment output, given Covid-19 caused a significant recession.
 - Economy could have experienced an increase in LRAS, and why (e.g. if governments spent to maintain the supply-side of the economy).
 - Economy could have a fall in COP and increase in SRAS, and why (e.g. if coupled with another government policy like appreciating the exchange rates).
- Explain how any of the above implies GPL may either fall, or increase only slightly in the near future.

Alternative R2: also accept a second reason why there might be higher inflation in the

near future, but EV would then comment on the possibility of not having a higher inflation.

Evaluative conclusion

In conclusion, whether or not economies experience a higher inflation rate in the near future depends on the size of the fiscal spending, and also what the government spent on. From Figure 2, it is evident that there is a wide range that different governments spent in response to Covid-19. The larger the fiscal spending relative to GDP, the more likely the increase in G would outweigh the fall in C, I and X, implying a rise, or more significant rise, in AD. This increases the likelihood that such countries could experience higher inflations in the near future. However, countries that spent to maintain their productive capacity, either by paying for maintenance / upkeep / infrastructural improvement of their ports and airports, or offering firm subsidies to avoid firm exiting the markets, are less likely to experience higher inflation in the near future because their LRAS is unlikely to fall significantly, if at all. This avoids the fierce competition for factors of production, and avoids a high inflation in the near future.

Level	Descriptor
L2	<p>Breadth: Answer explains how unprecedented levels of fiscal spending may <u>and</u> possibly also may not lead to higher rate of inflation in the near future</p> <p>Depth: Answer explains how a higher rate of inflation may or may not result from an unprecedented level of fiscal spending using rigorous analysis.</p>
L1	Lacking any of the L2 requirements

Evaluation	
E2	For an answer that provides an over judgement that is justified.
E1	For an answer with some evaluative insights, but lacks a clear overall judgement or provides an unjustified judgement.

(d) Discuss whether governments should focus on increasing economic growth or reducing government debt. [12]

Command Word	"Discuss" requires balance in perspective (whether or not Covid-19 would lead to higher rate of inflation in the near future) and evaluation
Context	Not specified

Content	<p>“Economic growth” and “government debt”</p> <p>Start point: Achieving economic growth and reducing government debt End point: Benefits of doing so, in terms of SOL and the macroeconomic objectives</p>
Answer outline	<ol style="list-style-type: none"> 1. R1: “Achieving economic growth” → benefits 2. EVR1: comment on the extent or likelihood of R1 3. R2: “Reducing government debt” → benefits 4. EVR2: comment on the extent or likelihood of R2 5. EV conclusion: overall, which to prioritize

Requirement 1:
Governments should focus on increasing economic growth since doing so could result in higher standards of living.

- Economic growth implies an increasing GDP in an economy, which suggests higher household income.
- **If the increase in household income is greater than the increase in population size and general price levels, there will be an increase real average household income, and thus purchasing power.**
- This suggests households will be better able to enjoy more and better quality consumer goods and services, implying higher material standard of living.
- Additionally, households would also be able to afford more nutritious foods and better healthcare services.
- This could increase the quality of health and life of residents in the country, ultimately increasing their life expectancy, which is an aspect of non-material standard of living.
- This improvement in non-material standard of living may be reflected in a higher HDI, *ceteris paribus*.

Alternatives for requirement 1: the benefits of achieving economic growth

- *Reduce demand-deficient unemployment, and eventually to improve standard of living.*
- *Reduced government debt (through higher revenue from taxes), and linking to further economic performance and/or standard of living.*

EV R1: any comment on the extent or likelihood of Requirement 1

- However, the above analysis is likely to be more significant for less developed countries as households of these countries have a relatively low level of income and ability to consume. Hence, an increase in household income is likely to improve their access to essential goods and services and significantly improve their standards of living. In contrast, developed countries already a relatively high level of household income and access to essential goods and services. While further increase in income would be beneficial, it would be less significant than the benefits enjoyed by poorer countries.

Requirement 2:

Governments should focus on reducing government debt as doing so could allow governments more policy options to address negative economic shocks in the future.

- Government debt refers to money borrowed by the government, often due to a budget deficit. Government debt is also usually in the form of government bonds, which require the governments to repay these debts in the future.
- To reduce government debt, governments could reduce government spending and/or increase government revenue.
- Reducing government debt allows the government greater opportunity to adopt expansionary fiscal policy such as increase government spending and/or reducing taxes to stimulate the economy when needed.
- **This is because a lower government debt reduces the loan repayments in the future, leaving the government with more funds to spend as government expenditure, or allow governments to collect less taxes and still be able to repay their loans.**
- Hence, in response to issues reducing aggregate demand, reducing government debt allows the government to increase G in future. Furthermore, reducing income tax would increase household disposable income and increase C, while reducing corporate tax would increase after-tax returns to investment, increasing I. Together, expansionary fiscal policy may mitigate the fall in AD in future, or even increase AD.
- In turn, governments can reduce the fall in RNY or increase RNY through the use of expansionary fiscal policy.

Alternatives for requirement 2: the benefits of reducing government debt

- *Allows pursuit of long term infrastructural projects, and therefore achieving higher future economic growth and SOL.*
- *Promote investor confidence in the economy, and therefore achieving higher future economic growth and SOL.*
- *Impact on future generations' burden on repaying loans, and therefore achieving higher SOL for future generations.*

EV R2: any comment on the extent or likelihood of Requirement 2

- The benefits of reducing government debt would be especially significant for countries that have a higher debt to GDP ratio. The debt to GDP ratio provides an estimation of the burden the future loan repayments would be, relative to a country's income. Since larger countries with higher GDP are likely to enjoy larger absolute government revenue, these countries are therefore also more able to take on a larger debt without being overly burdened by the loan repayments. But for countries with large debt to GDP ratio, lowering debt would be especially beneficial to allow that government more policy options to address negative economic shocks since loan repayments would take a larger portion of the government's future revenue.

Evaluative conclusion: answer which goals governments should prioritize and why

- In conclusion, whether governments should prioritize economic growth or reducing government debt varies for different countries. Developing countries may consider pursuing economic growth while allowing for an increase in government debt. This

is because developing countries are likely to be far below their full employment output, and pursuing economic growth, by increasing AD through expansionary fiscal policy, is likely to result in a large increase in RNY. With a higher level of income, future government revenue in the form of taxes could also be higher, better enabling the government service future loan repayments.

Level	Descriptor
L3	<p>Breadth: Answer explains the benefits of achieving economic growth and reducing government debt.</p> <p>Depth: Answer explains the benefits of the abovementioned aims in terms of SOL and/or the macroeconomic objectives of the government using rigorous analysis.</p>
L2	Lacking any of the L3 requirements
L1	<p>For an answer that:</p> <ul style="list-style-type: none"> • Is irrelevant (addresses neither R1 or R2) • Contains severe and recurrent conceptual errors • Is descriptive without use of economic concept or analysis

Evaluation	
E2	For an answer that provides an over judgement that is justified.
E1	For an answer with some evaluative insights, but lacks a clear overall judgement or provides an unjustified judgement.