Suggested Responses to 2023 VJC H2 Economics Preliminary Examination

Paper 1 — Case Studies

CSQ1: The evolving demand for commodities

(a)	Using a relevant elasticity concept, explain the relationship between the price of lithium-ion batteries and demand for sodium-ion batteries.	[2]
	Lithium-ion batteries and sodium-ion batteries are substitutes as they are both used as energy storages for electronic devices such as electric vehicles. [1]	
	This means that their XED value is positive and when the price of lithium-ion battery rises, it will cause a rise in demand for sodium-ion battery. Hence, price of lithium-ion batteries and demand for sodium-ion batteries have a positive relationship. [1]	
(b)	Explain how the trend of lithium prices in Figure 1 would have impacted the total revenue of lithium-ion battery producers.	[4]
	According to Figure 1, lithium prices have fallen over the years. Since lithium is a factor input for lithium-ion batteries, this will lead to a fall in marginal cost of production for lithium-ion batteries. [1]	
	The fall in MCOP will lead to a rise in supply for lithium-ion batteries, creating a surplus at the initial price level and put a downward pressure on its price. [1]	
	The demand for lithium-ion battery is likely to be price inelastic, since there are not many close substitutes in terms of energy density. [1]	
	Thus, the rise in SS leading to a fall in price will lead to a less than proportionate rise in quantity demanded, causing a fall in total revenue earned by lithium-ion producers. [1]	
(c)	Explain whether the invention of sodium-ion batteries would increase the profit level of battery maker CATL.	[4]
	With the invention of sodium-ion batteries, a new alternative to existing batteries such as lithium-ion batteries, demand for CATL's products will likely rise due to consumers switching to this new product. [1]	
	The rise in DD and MR will lead to CATL producing at higher output levels and charging a higher price, causing a rise in total revenue earned. [1]	
	However, CATL would have also incurred higher fixed costs when they conducted their research and development on the invention of sodium-ion batteries such as building labs and obtaining specialised equipment. [1]	
	This rise in fixed cost would lead to a rise in total cost incurred by CATL. [1]	
	Whether the profit level of CATL will rise depends on whether the rise in total costs from R&D outweighs the rise in total revenue from sales of the battery. [1] <i>OR</i> Since the energy density of sodium-ion batteries is not as good as lithium-ion batteries, the rise in demand may be marginal, causing a fall in total profits for CATL as the rise in total cost likely outweighs the rise in total revenue. [1]	

	Max 4 marks out of 5 possible marks	
(d)	Explain why it may be worthwhile for multinationals to make moves into Indonesia (Extract 2) when Indonesia banned exports of nickel ore. The benefit of multinationals to make moves into Indonesia with the nickel ore export ban is the cost savings from sourcing their nickel ore elsewhere which might be more expensive. The cost of doing so is the costs of setting up the processing facilities in Indonesia e.g., construction costs. [1]	[2]
	It may be worthwhile for multinationals to make moves into Indonesia if the benefit outweighs the cost of doing so. [1]	
(e)	With reference to the data, discuss whether Indonesia's mineral exports ban is likely to improve the living standards of its citizens. Introduction Indonesia's mineral exports ban will incentivise multinationals to move into the country and set up processing facilities. This policy will have both positive and negative impact on the living standards of Indonesians, which comprise both material and non-material aspects. Body Side 1: Positive impact on Indonesians' SOL The mineral exports ban may improve living standards of its citizens through stimulation of economic growth. The mineral exports ban will encourage multinational corporations to invest in Indonesia and set up their processing facilities in the country to secure the supply of these minerals such as nickel ore. For instance, German chemical company BASF and French mining and metallurgy company Eramet have already announced their plans to build mineral processing facilities in Indonesia (Ext 2). The inflow of foreign direct investments will lead to a rise in investment expenditure (I) and a rise in aggregate demand (AD) of Indonesia's economy.	[8]
	When AD increases, causing AD to exceed output, firms will experience an unplanned fall in inventories and increase production by hiring more FOPs including labour. In	

2023 H2 Economics VJC Economics Department return, households receive more factor income from firms and spend more on domestic goods. This results in a rise in induced consumption (Cd) and thus AD and firms again experience an unplanned fall in their inventories. Firms would once more increase their production by hiring more FOPs including labour. Receiving more factor income from firms, households will again spend more on domestic goods. Assuming the economy is operating with spare capacity, the initial increase in AD will eventually trigger multiple rises in real GDP from Y to Y' due to the multiplier effect. The economy achieves actual economic growth. With the rise in national income, assuming national income increases more significantly than population, real GDP per capita increases. This implies a rise in citizens' purchasing power to consume more goods and services, leading to an improvement in their material standard of living.

Possible to bring in PG and sustained EG too (must link to sustained improvement in material standard of living).

Side 2: Negative impact on Indonesians' SOL

In the long run, Indonesians may also suffer lower non-material SOL if the country is successful in moving up the value chain. When multinationals move into Indonesia due to the mineral exports ban, there will now be both mineral mining activities and mineral processing activities in the country. If the processing activities also involve high energy consumption that are "dirty" or engage in illegal toxic waste dumping activities, there may be increased pollution and poorer air quality, potentially leading to health implications among residents living near these sites. This reduces quality of life and hence non-material SOL. Historically, the nickel mining industry in Indonesia has a dirty track record with opaque rules and regulations (Ext 3). If there is now increased mining activity, or if the mineral processing industry is regulated by the same government body that is lax and uncommitted to environmental protection, Indonesians will likely suffer lower non-material SOL from a more polluted environment.

AND/OR

(but note that the entire response must cover both material and non-material SOL)

While the ban incentivises some multinationals to invest in Indonesia, it also caused some unhappiness among some countries. According to Extract 2, the European Commission is seeking to eliminate this "unlawful export restrictions". In the interim, some European countries might retaliate by imposing import tariffs on Indonesian's exports, affecting their export revenue (X). This will lead to a fall in Indonesia's AD, causing their AD to be lower than output. Firms will experience an unplanned rise in inventories and decrease production by hiring less FOPs including labour. As a result, Indonesia may suffer a recession. With lowered purchasing power, households will consume less goods and services, leading to a fall in their material SOL.

Conclusion

In conclusion, Indonesia's mineral exports ban is likely to improve the living standards of its citizens.

Indonesia is currently a developing country that relies on exporting primary products such as minerals (Ext 2) for economic growth. With a large population, its real GDP per capita is not high, reflecting relatively low material SOL by its citizens. This could translate to unsatisfactory level of essential goods and services such as clean water,

food and healthcare services consumed. Thus, moving up the value chain and enjoying economic growth that boosts the material SOL should be the priority of the government. Even though there might be increased pollution level due to increased mining and processing activities, overall, SOL will likely improve.

While the invention of sodium-ion batteries, which do not require nickel (Ext 1), might limit the economic growth driven by the nickel industry in Indonesia, this impact is likely marginal since they are not considered close substitutes due to the difference in energy density. Thus, economic growth and material SOL of Indonesia's citizens should increase significantly.

Alternative point to consider: minerals is an opportunity "potentially even more valuable than its vast palm oil industry" (Ext. 3), signifying a likely large influx of FDIs and hence economic growth with the mineral exports ban. This would suggest a very significant improvement in material SOL.

Mark Scheme

	Descriptors	Marks
L2	Well-developed answers that explain the positive and negative impacts of Indonesia's mineral export ban on the standard of living of its citizens. Both material and non-material aspects of SOL considered.	4-6
L1	One-sided answers that only focus on the positive OR negative impact of Indonesia's mineral export ban on the standard of living of its citizens. OR	1-3
	Undeveloped/Underdeveloped answers that do not draw links to macroeconomic impacts using AD-AS analysis.	
E	Reaches a conclusion on whether indonesia's mineral exports ban is likely to improve the living standards of its citizens	1-2
	, of the need to reduce greenbours get emissions, discuss	whathar
In view market changii	r of the need to reduce greenhouse gas emissions, discuss based or non-market-based instruments will be more effeng ng consumption patterns to improve societal welfare.	whether ctive in

Explain how market-based instrument works to improve societal welfare

A market based-instrument that the government can implement is to subsidise production of products with lithium-ion batteries installed (Ext 4). One example would be EVs. A subsidy to firms will reduce their marginal cost of production, increasing their willingness and ability to produce. This will increase market supply, leading to a surplus at initial price level and downward pressure on price. Price of EVs fall.

Consumers would switch away from combustion engine vehicles to relatively cheaper EVs, reducing carbon emissions on the roads.

Self-interested consumers will base their driving decisions on their MPB and MPC and disregard the external costs. They will drive Q units where marginal private benefit (MPB) = marginal private cost (MPC). However, the socially optimal output and price is at Q^{*} and P^{*}, where marginal social benefit (MSB) = marginal social cost (MSC) and society's welfare is maximised.

With the switch to EVs, marginal external cost (MEC) falls since there would be less carbon emissions, reducing the gap between MPC and MSC. Consumers will choose to drive at Q' where MPC=MPB, while the new social optimal where MSC'=MSB would be Q*'. For Q*' to Q' units, MSB is still lower than MSC', leading to welfare loss of Area N since consumption of those units adds more to total social cost than total social benefit. That said, welfare loss is reduced from Area XYZ to Area N, so the change in consumption patterns towards EVs will improve societal welfare.

Note: If the lithium batteries are charged with fossil-fuel free electricity, MEC may even fall to 0, resulting in MPC=MSC.



Other possible measures include:

- Preferential tax treatment to firms with lithium-ion batteries installed in their products.
- Subsidies for R&D leading to lower price of lithium batteries (which will reduce price of EVs / clean energy) OR leading to increased quality of lithium batteries i.e., improved energy capacity which will increase demand for clean products.

Explain how non-market-based instrument works to improve societal welfare

A non-market-based instrument that the government can implement is to have a zeroemission vehicle mandate (Ext 4). In essence, the government can phase out the use of combustion engine vehicles and eventually ban such 'dirty' products. A total ban on the sales of combustion engine vehicles will bring the output level from Q to 0, where consumers will have to switch to more environmentally friendly electric vehicles to continue driving.





At the new output level 0, there is also welfare loss as illustrated by area A as MSC exceeds MSB between 0 and Q*. This is because society losses out on potential welfare that could have been enjoyed from consuming Q* units of such vehicles. If the extent of MEC is large, the mandate will likely improve societal welfare as area B resulting from free market outcomes will be larger than area A.

Other policies such as requirements for utility operators to install a minimum capacity of battery storage are also possible.

Conclusion

In conclusion, non-market-based instruments will be more effective in changing consumption patterns to improve societal welfare.

While subsidies on products with lithium-ion batteries can encourage consumers to make the switch to those products, the amount subsidised must be large enough, especially since there is likely still a significant price difference between e.g., EVs and combustion engine vehicles. If the subsidy is not large enough, the policy will likely be less effective than the zero-emission vehicle mandate where quantity unambiguously falls to 0 to discourage consumption of combustion engine vehicle.

That said, the lack of charging infrastructure may limit the use of non-market measures, since the government will find it difficult to monitor and enforce a zero-emission vehicle mandate if the current infrastructure cannot support this switch in consumption pattern.

Level	Descriptors	Marks
L2	Well-developed answers that explain both market-based and non- market-based instruments to change consumption of 'green' or 'dirty' products to improve societal welfare.	4-7
L1	One-sided answer that only explains market-based OR non-market- based instruments to change consumption of 'green' or 'dirty' products to improve societal welfare.	1-3

		Undeveloped/Underdeveloped answers that do not draw links to tackling market failure using diagrams.		
	Е	Reaches a conclusion on whether market-based or non-market- based instruments is more effective to change consumption of 'green' or 'dirty' products to improve societal welfare.	1-3	

CSQ2: Global events and the economy of the United States (US)

(a)	(i) With reference to Figure 2, describe the relationship between carbon emission per capita and GDP per capita.	[2]
	There is a positive relationship between carbon emission per capita and GDP per capita for countries with lower GDP per capita. [1]	
	However, there is a negative relationship between carbon emission per capita and GDP per capita for countries with higher GDP per capita. [1]	
	(ii) Explain <u>one</u> possible reason for the above relationship.	[2]
	For countries with higher GDP per capita, production is likely higher and hence a higher level of carbon emissions per capita is observed. However, governments will be able to generate a higher level of tax revenue too. They can then spend this on policies that will help clean up pollution or help firms to switch to cleaner methods of production. Hence, for countries with higher GDP per capita, carbon emissions per capita will be lower. [2]	
	 Other possible answers: The residents who have a higher income are more willing and able to switch to more green products such as energy saving electrical appliances, leading to lower carbon emissions per capita. On the other hand, residents of lower income countries have less ability to afford new advanced green technology, resulting in more carbon emissions generated per capita. For countries with lower GDP per capita, these are usually the less developed countries. They may have less access to education/ technology, and hence may be more ignorant of cleaner energies/ cleaner methods of production for the households or firms respectively. Governments that have lower GDP per capita generate less tax revenue, hence they may be more focused on actual growth that may generate more carbon emissions. For governments that have higher GDP per capita, they have the fiscal ability to focus more on sustainable growth, such as subsidising clean energy for firms, hence resulting in less carbon emissions per capita. 	
(b)	Using the evidence in Extract 5, explain why the US unemployment rate	[4]
	With the government's massive stimulus package, AD rises, stimulating increase in production and hence derived demand for labour since labour is a factor of production. Demand-deficient unemployment will fall. However, there are still other sources of unemployment present in the US.	
	which explains why unemployment rate may not fall. [2m each]	
	1. Frictional unemployment: According to Extract 5, due to the "more generous unemployment payments, people are less likely to take low-paying fast food and retail jobs". Some people who are actively looking for a new job may be less incentivised to be employed in a low paying job due to the high unemployment benefits, as they may not see much increase in their income even with a job. Hence, they will take a longer time to search for the right job.	
	2. Structural unemployment: According to Extract 5, there is a clear "mismatch in	

	skills" for workers in the services or manufacturing sectors. Those who are unemployed do not possess the relevant skills that are in demand to take up jobs in these sectors. Hence, occupational immobility has resulted in the workers remaining structurally unemployed.	
(c)	Explain how the imposition of a global minimum tax rate will affect the aggregate demand and aggregate supply of a low-tax country like Ireland.	[4]
	With the global corporate minimum tax, low-tax countries like Ireland will have to increase their corporate tax if it was previously lower than the minimum tax. This results in a decrease in the expected rate of return from investment since the post-tax profits that could be earned by the firm will decrease. Marginal benefit of investment may now be lower than marginal cost of investment resulting in some previously profitable investment by the foreign firms becoming unprofitable. Since I is a component of AD, the fall in I results in a fall in AD. [2]	
	Ireland will be unable to attract new FDIs since more countries will be charging the global minimum tax rate. Assuming gross investment is still higher than capital depreciation, there is a slower rise in the capital stock of the country, resulting in a slower rise in productive capacity. AS increases at a slower rate. [2]	
	 Alternative answers for AS effect Assuming that gross investment < capital depreciation, overall fall in capital stock and productive capacity. AS falls. Fall in I may result in a fall in capital stock, assuming that gross investment is lower than capital depreciation. Labour will have less capital to work with resulting in a fall in productivity. Assuming that wages are constant, this results in a rise in UCOP and fall in AS. 	
(d)	Discuss whether US's imposition of tariffs on Chinese goods will benefit US's households and firms.	[8]
	Price	
	s	
	c	
	P2 Sw+Tariff	
	B E F G	
	P1 A Sw	
	D	
	Q1 Q2 Q3 Q4 Q4	
	A tariff will benefit domestic producers as it leads to an increase in producer surplus. A tariff is a tax on imports when they cross national boundaries. A tariff	
	will cause a fall in world supply from Sw to Sw+tariff as foreign producers are	

only willing and able to offer imports at a higher price due to the tariff imposed. Before the tariff was imposed, Q4-Q1 was the quantity of imports, however, after the tariff was imposed, the quantity of imports fell to Q3-Q2. Domestic production increases from Q1 to Q2 and there is a higher market price for the good P2. Producer surplus, which is the difference between the minimum price that producers are willing and able to receive and the actual price that they receive increases from area (A) to area (A+B). Hence the tariff will benefit firms in import competing sectors.

Alternative point on benefit to households: (following explanation for previous point)

- As there is higher domestic production, there is an increase in employment because labour is a derived demand, so demand for labour increases. Households employed in import competing sectors will see an increase in their wages as they gain employment and see an improvement in their purchasing power and hence material standard of living.

However consumers are worse off with a tariff. "If the tariffs remain in place, pressure on US retailers will likely rise, leading to a greater pass-through to consumer prices," the agency added." Due to the increase in prices and lower quantity consumed, consumer surplus, which is the difference between the maximum price that consumers are willing and able to pay and the price that they actually pay falls from area (B+C+D+E+F+G) to area (C+D). Hence consumers are worse off with the tariff.

Alternative points:

- Firms may be worse off as well. The tariffs that US imposed on Chinese goods have met with retaliation. Since China also imposed tariffs on US goods,
- US firms whose demand falls significantly due to the fall in demand from China consumers will be negatively impacted. As demand falls from D to D' and MR to MR', they will produce at Q' and charge at P' where MC=MR', instead of the initial Q and P where MC=MR. They potentially lose the supernormal profits made previously to only making normal profits now.



2023 H2 Economics VJC Economics Department

• Firms that are heavily reliant on imported inputs from China will see an increase in their marginal cost of production. As MC rises to MC_1 and AC rises to AC_1 , they will produce at Q_1 and charge at P_1 where MC_1 =MR, instead of the initial Q_0 and P_0 where MC_0 =MR. The firms will see a fall in profits made.



Conclusion:

Both households and firms in the US will likely be worse off from the tariffs that the US imposes on China.

Retailers selling products from China and firms heavily reliant on FOPs from China will be significantly worse off. From Extract 7, US importers absorbed more than 90% of additional costs resulting from the 20% US tariff on Chinese goods. This will lead to a significant increase in the cost of production for these US firms and likely a fall in their profits. There is also likely a far larger number of such firms as compared to import competing firms.

Additionally, because households will face rising prices across many goods and services, even those employed in import competing sectors may become worse off.

Alternative: Firms may be unable to pass on the cost increase to consumers if the demand for their goods is price elastic, as an increase in price of their goods will lead to a more than proportionate fall in quantity demanded, leading to a fall in revenue.

Moreover, there is also retaliation from China on US exports with most of the China tariffs being borne by the exporting firms (Extract 7). These firms will likely face a significant fall in their demand and hence profits because of the availability of substitutes world-wide. A rise in price of US goods will lead to a more than proportionate fall in quantity demanded since demand is price elastic. Hence only a minority of firms who produce and sell goods domestically will benefit from the tariff.



2023 H2 Economics VJC Economics Department the multiplier effect, assuming spare capacity. Overall, there will be actual growth as real GDP increases from Y1 to Y4 and a fall in cyclical unemployment. Should the transfer payments be targeted at the lower wage workers in healthcare, retail and accommodation (Extract 8), there will be inclusive growth generated since the workers in these low wage jobs will be able to directly experience a rise in disposable income.

In addition, Extract 8 states that there is high unemployment among the rural communities in the US. By providing these unemployed households with transfer payments, the government will be able to increase their consumption which would lead to more inclusive growth. Through the use of transfer payments, the US government will be able to achieve inclusive growth in the US.



Supply side policies can also be used to help the US achieve inclusive growth. In order to mitigate inflation, SSPs should be used to improve productivity and increase the labour force participation rate. In order to improve productivity and counteract the falling productivity growth the US government can subsidise skills retraining for the workers. This will make workers more productive leading to a fall in UCOP assuming that wages are constant. Hence this leads to an increase in AS (downward shift of horizontal AS). Furthermore, encouraging greater participation among women in the workforce through more accessible childcare or more equal hiring opportunities will increase the size of the labour force within the US. This leads to an increase in productive capacity and a rightward shift of vertical AS.

Overall, there is an increase in AS from AS1 to AS2. Assuming that the US economy is operating near Yf as it recovers from the pandemic since there are signs of inflation (Extract 9), firms will pass on the fall in UCOP to households in the form of lower prices leading to a fall in GPL from P1 to P2, reducing inflationary pressures as well as boost actual growth from Y1 to Y2.

If the workers benefiting from the retraining are women, whose labour participation fell during the pandemic, or those from the lower-wage services sectors in healthcare, retail and accommodation, the growth experienced through supply-side policies will be inclusive.

Conclusion

The better policy to achieve inclusive growth in the US largely depends on the time frame. As the US is recovering from the pandemic, they experience inflationary pressures. Fiscal policy is better since the rising cost of living due to the higher inflation will have an immediate impact on the purchasing power of households. Moreover, since the US central bank has raised interest rates (Ext 9), households will see a greater fall in consumption as they will be less able to borrow for consumption. Although the increase in transfer payments might exacerbate the high inflation which is ongoing in the US economy, the use of transfer payments is still appropriate since inflation is regressive in nature as the poor spend a larger proportion of their income on necessities and cannot switch to cheaper alternatives amidst rising prices. Hence there is a need for a policy that has a direct impact on increasing the disposable income of the lower income households. With transfer payments, the poor will experience a greater rise in material SOL.

Supply side policies are better in the long run as it can solve both demand pull and cost push inflation, which are the main challenges that the US is facing when trying to recover from the pandemic. It is also important to ensure that structural bottlenecks in the form of a poor female labour participation rate (Ext 8) is addressed in the long run so that there can be inclusive economic growth from the advanced technologies that the US has developed during the Covid pandemic (Ext 8).

Mark Scheme

L2	Analytical explanation of both fiscal and supply side policy and how it leads to inclusive growth. There is acknowledgement of the issues that the US economy faces as it recovers from the pandemic.	4-7
L1	Explanation of policies are descriptive Policy choices are invalid (e.g. expansionary MP)	1-3
E	For a response which comes to a stand which policy is better considering the context of the US economy and the challenges that it faces as it recovers from the pandemic.	1-3

Paper 2 — Essays

Question 1

Due to a severe chicken shortage in Malaysia, the Malaysian government is implementing a ban on chicken exports to other countries including Singapore from 1 June 2022. The Malaysian government currently also caps the retail price of chicken at RM8.90 per kg as it is a widely consumed source of protein in Malaysia.

Adapted from The Straits Times, May 2022

- (a) Explain the impact of Malaysia's chicken export ban on the welfare of consumers of fresh chicken and sellers of other meats such as beef in Singapore. [10]
- (b) Discuss whether the Malaysian government should continue with the price cap or use another policy to ensure that prices of essential food items remain affordable. [15]
- (a) Requirement 1: Explain the impact of Malaysia's chicken export ban (↓S) on consumer surplus in Singapore.
 Bequirement 2: Explain the impact of Malaysia's chicken export ban on producer surplus of

Requirement 2: Explain the impact of Malaysia's chicken export ban on producer surplus of the sellers of other meats such as beef $(\uparrow D)$ in Singapore.

Introduction:

Consumer surplus for each unit of good refers to the difference between the maximum price that consumers are willing and able to pay for the unit of good (given by the demand curve) and the market price that they actually pay. It is a measure of consumer welfare. Producer surplus for each unit of good is the difference between the minimum price producers are willing and able to supply the unit of good for (given by the supply curve) and the price they actually receive. It is a measure of producer welfare. This essay will examine the impact of Malaysia's chicken export ban on consumer surplus of consumers of fresh chicken in Singapore as well as its impact on producer surplus of sellers of other meats in Singapore.

Malaysia's ban on fresh chicken exports decreases the welfare of consumers in Singapore.

Malaysia's ban on fresh chicken exports to other countries including Singapore is a foreign government policy which will lead to Singapore producers being less able to supply fresh chicken at every price level, resulting in a fall in supply of fresh chicken in Singapore. Supply curve shifts to the left from S₁ to S₂ in Fig 1. At the initial price P₁, quantity demanded (0Q₁) is greater than quantity supplied (0Q_s), leading to a shortage of Q_sQ₁ in the market. This leads to an upward pressure on price as frustrated consumers bid up prices to obtain fresh chicken. As price rises, quantity supplied increases as it becomes more profitable to produce chicken while quantity demanded falls as consumers becomes less able and willing to purchase chicken. These occur until a new equilibrium is attained at E₂, where quantity demanded equals quantity supplied. Equilibrium price has increased from P₁ to P₂ and equilibrium quantity has decreased from Q₁ to Q₂ in Singapore. Initially, consumer surplus is represented by Area AE₁P₁. After the export ban, the new consumer surplus is represented by Area AE₂P₂. Hence, there is a loss of consumer surplus of Area P₂E₂E₁P₁. The consumer surplus falls because consumers pay a higher price, P₂, but consume only a smaller quantity at Q₂. Hence, Malaysia's export ban decreases consumer welfare of consumers in Singapore.



Malaysia's ban on fresh chicken exports increases the welfare of producers of other meats such as beef in Singapore. As explained above, Malaysia's ban on fresh chicken exports results in a rise in the equilibrium price of chicken in Singapore. As chicken and other meats such as beef are both sources of protein in our diet, they are substitutes, i.e., the cross elasticity of demand (XED) of beef with respect to the price of chicken is positive (XED>0). A rise in the price of chicken in Singapore will cause a fall in guantity demanded of chicken. There will be an increase in the ability and willingness to purchase other meat substitutes at every price level as consumers switch to other relatively cheaper substitute meats such as beef. The demand for beef will thus increase. Demand curve will shift to the right from D_1 to D_2 in Fig 2. At the initial price P_1 , quantity demanded $(0Q_d)$ is greater than quantity supplied $(0Q_1)$, leading to a shortage of Q_1Q_d in the market. This leads to an upward pressure on price as frustrated consumers bid up prices. As price rises, quantity supplied increases as it becomes more profitable while quantity demanded falls as consumers becomes less able and willing to purchase beef. These occur until a new equilibrium is attained at E₂, where quantity demanded equals quantity supplied. Equilibrium price has increased from P_1 to P_2 and equilibrium quantity has increased from Q_1 to Q_2 in Singapore. Initially, producer surplus for sellers of other meats such as beef is represented by Area P₁E₁X. After the export ban, the new producer surplus is represented by Area P₂E₂X. Hence, there is a gain in producer surplus of Area $P_2E_2E_1P_1$. The producer surplus increases because producers receive a higher price, P_2 , and sell a greater quantity at Q₂. Thus, Malaysia's export ban increases producer welfare of sellers of other meats such as beef in Singapore.



2023 H2 Economics VJC Economics Department

Mark Scheme

Level	Descriptors	Marks
L3	• Developed explanation of how Malaysia's export ban affects the consumer	8 - 10
	welfare for fresh chicken consumers and producer welfare of other meat	
	producers in Singapore, with accurately drawn diagrams.	
	 Explanation must include impact on consumer and producer surplus. 	
L2	 Underdeveloped explanation of how Malaysia's export ban affects the consumer welfare for fresh chicken consumers and producer welfare of other meat producers in Singapore. There are gaps in explanation. OR Developed explanation fulfilling only 1 question requirement 	5 – 7
L1	Demonstration of some knowledge of consumer welfare or/and producer	1 – 4
	welfare.	
	 Serious conceptual errors may be present. 	

(b) Discuss whether the Malaysian government should continue with the price cap or use another policy to ensure that prices of essential food items remain affordable. [15]

Requirement 1: Explain how a price ceiling can ensure that prices of essential food items remain affordable.

Requirement 2: Explain how another policy (e.g., subsidies, vouchers) can ensure that prices of essential food items remain affordable.

Introduction

One of the microeconomic objectives of the government is that of equity, i.e. a distribution of goods and services that is considered to be fair. Thus, the government will want to ensure that the prices of necessities and essential food items such as rice and chicken are affordable, especially to the lower income group. The government can use policies in the form of price ceilings, subsidies or food vouchers to ensure the affordability of such essential food items and thus equity in the distribution of food.

<u>Body</u>

The Malaysian government should continue with the price cap (i.e., price ceiling) to ensure the affordability of essential food items as it will lower their prices.

The Malaysian government currently caps the retail price of chicken at RM8.90 per kg as it is a widely consumed source of protein in Malaysia and is an essential food item. This is a price ceiling. A price ceiling is the maximum permissible price that producers may legally charge for a particular good or service.



Fig 3: Market for essential food items (Price ceiling)

With a price ceiling, the government intervenes in the free market to interfere with the price mechanism. When the government imposes a price ceiling of P_{max} , which is below the market equilibrium price, the market price drops from P_E to P_{max} , as P_{max} is now the highest price that sellers can legally charge. At P_{max} , quantity demanded is Q_D while quantity supplied is Q_s . This then results in a persistent shortage of Q_sQ_o units as the price mechanism cannot work to clear the market. Consequently, an alternative allocation mechanism for essential food items is required – this could be in the form of rationing cards, or via a first-come-first-served basis (i.e., queuing). Thus, a price ceiling ensures the affordability of essential food items as consumers would enjoy a lower than market equilibrium price of P_{max} for essential food items.

[Ev] Price ceiling is not an appropriate policy as it may not ensure the affordability of essential food items to all households. While households enjoy lower prices, the policy may not be able to help all the lower income consumers. The immediate impact of a price ceiling is that quantity demanded will be higher and quantity supplied lower, thereby causing a shortage $(Q_D - Q_S)$. While some of the low-income can buy essential food items at a lower price, the rest are unable to do so due to the shortage. Furthermore, the selected consumers that manage to buy the essential food items at the lower prices may not necessarily be from the lower-income families who could not afford the food at the higher price. There may also be some consumers who are able to pay a higher price but are unable to obtain the food. The shortage may thus also lead to the emergence of a black market where consumers resort to buying essential food items at a price higher than the legal price (i.e., at P_{BM}). Hence, the policy may not improve the affordability of essential food items and should not be continued.

OR

[Ev] Due to the shortage, some mechanisms for rationing of essential food items will naturally develop, which may incur costs for the government and consumers. For example, buyers who are willing and able to arrive early and wait in line can get the food, while those who are unwilling or unable cannot obtain the food items. These long queues are inefficient because they waste buyers' time and can be troublesome to the elderly, disabled or other groups of people who cannot afford to queue for a long time. As such, in view of the shortage, there needs to be a good administrative system to deal with the shortage for price ceiling to be effective and this may incur some

administrative and monitoring costs. If the cost is too large, which is likely given the size of Malaysia, the price cap should not be continued.

OR

[Ev] The price ceiling also results in an overall welfare loss for society, assuming that the initial equilibrium quantity (Q_E) is allocative efficient. With the implementation of the maximum price *below* market price, the quantity sold at Qs is now less than the optimum level at Q_E . The total social benefit of producing and consuming $Q_E - Q_S$ units is greater than the total social cost. There is net gain to society if these units were to be consumed. Since this net gain is not enjoyed by society, this constitutes welfare loss represented by the area uew. Therefore, the maximum price leads to an overall welfare loss for society. If there are other policies that result in smaller welfare loss, the price cap should be changed.

The government should use another policy such as providing a production subsidy to producers of essential food items to make them more affordable as it will lower the market equilibrium price.

Subsidies are payments made by the government to producers to encourage the production of goods and services, which in this case would be essential food items such as chicken. Subsidies provided to producers of chicken will help to alleviate the rising cost of factor inputs like chicken feed by lowering marginal cost of production and incentivise an increase in supply.

With lower marginal cost of production, it is more profitable for producers to supply essential food items at every price level. The producers would thus be more willing and able to supply food, increasing its supply. This will shift the supply curve to the right from SS_1 to SS_2 resulting in a surplus at the original price P_1 . This puts downward pressure on prices as producers seek to rid themselves of the surplus. As price falls, consumers increase their quantity demanded while producers decrease their quantity supplied as depicted by a movement along the demand and supply curves. Ultimately, a new equilibrium is reached at y, where quantity demanded equates quantity supplied. Price therefore falls from P_1 to P_2 .



Fig 4 (Subsidies)

Thus, subsidies will help to ensure the affordability of essential food items as it results in a lower equilibrium price.

2023 H2 Economics VJC Economics Department [Ev] As demand for essential food items is likely to be price inelastic due to a high degree of necessity since these items are likely to be staples like rice or food that is widely consumed in Malaysia like chicken, when the market is subsidised, the increase in supply will likely result in a significant fall in price, greatly improving affordability of the food items. Depending on the price cap set, subsidies may be able to improve affordability by a larger extent, rendering it a better policy. *OR*

[Ev] As explained previously, the subsidy increases supply from SS₁ to SS₂ resulting in production increasing from Q₁ to Q₂. Assuming Q₁ is the allocative efficient level of output, from society's viewpoint, too much resources are now being channelled to the production of essential food items, albeit with the intention of improving equity. For each of the additional Q₁ – Q₂ units, the additional social benefit is less than the additional social cost. These additional units that are produced incur welfare loss to society, resulting in a welfare loss of area exy. Given that subsidies give rise to an overproduction/consumption problem, this welfare loss may be less of an issue in terms of ensuring that low-income households have access to essential food items compared to a price cap which gives rise to a shortage causing some households to be unable to obtain the essential food items. Thus, subsidies may be a better policy. *OR*

[Ev] The subsidy can be costly; a large amount of subsidy represented by Area P_3xyP_2 may be needed to lower the price. This will incur a large opportunity cost for the government as this fund can be channelled to its next best use e.g., improving the healthcare sector, given Malaysia's aging population. Also, the subsidy may put a strain on Malaysia's budget. Given that Malaysia is suffering from a budget deficit, the fiscal sustainability of implementing a subsidy may be a problem. The Malaysian government may want to continue with the price cap as it is a less costly policy.

Alternative policy:

In order to increase the affordability of essential food items, the Malaysian government can also provide food vouchers to targeted segments of households, especially the lower income group, so that more people can purchase these food items.

The government can give food vouchers to lower income households to help them better afford essential food items. With these vouchers, the ability to consume for the lower income households would increase as they can exchange their vouchers for food. This is shown by a rise in demand from D_1 to D_2 . Affordability is ensured because even if consumers cannot pay P_0 , the initial market price for food, they can still consume by using the vouchers.



2023 H2 Economics VJC Economics Department [Ev] Due to the distribution of food vouchers, there is a welfare loss incurred by society. Assuming that the initial equilibrium output, Q_0 is allocative efficient, there is an overconsumption of Q_0Q_1 units of food. The total social benefit of consuming these additional units of food, represented by Area $Q_0E_0AQ_1$, is smaller than the total social cost represented by Area $Q_0E_0E_1Q_1$. This results in a welfare loss of area E_0E_1A . Given that vouchers give rise to an overconsumption problem, this welfare loss may be less of an issue in terms of ensuring that low-income households have access to essential food items compared to a price cap which gives rise to a shortage causing some households to be unable to obtain the essential food items. Thus, vouchers may be a better policy. *OR*

[Ev] This measure can be targeted specifically at the low-income group and be cost-effective as it need not be a broad-based measure which affects the whole of society. Whether it is sustainable will depend on the budget of the government as well as the proportion of the population that is eligible for the vouchers. The Malaysian economy is still recovering from the COVID pandemic in 2022, where many lost their jobs due to the slowdown in economic activities. Thus, costs involved in giving vouchers may still be significant. Given that Malaysia is suffering from a budget deficit, the fiscal sustainability of giving vouchers may still be a problem. The Malaysian government may want to continue with the price cap as it is a less costly policy.

Conclusion

In considering policies to ensure the affordability of essential food items, the Malaysian government needs to consider the nature of the economy, its sustainability and any unintended negative consequences of the policies. In conclusion, the Malaysia government should use another policy instead of the price cap.

Although a price ceiling reduces the prices of essential food items, it results in a shortage and thus only benefits the group of consumers who were able to purchase the items. Some of the low-income households may not be able to purchase these essential food items, thus equity may not have improved. Moreover, enforcement and monitoring may be difficult in Malaysia as it is a large country to police and a large amount of manpower resources is needed to enforce the price ceiling. Thus, sellers may disregard the price ceiling and sell above the price ceiling. For example, this was observed in Malaysia where the shortage of chicken in 2022 has led to sellers selling above the price ceiling, rendering the policy ineffective in ensuring that prices remain affordable.

On the other hand, while the implementation cost of a subsidy may be large, it is more appropriate as the prices of essential food items will be lowered for everyone in the country and it does not create a problem of shortage, thus ensuring the affordability of essential food items for all and enhancing equity since the low-income will be able to obtain these items at lower prices. Hence, the Malaysian government should not continue with the price ceiling and instead use a more effective policy such as a subsidy to ensure that prices of essential food items remain affordable to the low income.

To enhance the fiscal sustainability of subsidies and to reduce the degree of overconsumption and welfare loss, means-tested subsidies (e.g., a special discount card can be distributed to low-income households which will entitle them to pay subsidised prices for essential food items) can be targeted at low-income households. This will help enhance fiscal sustainability in light of Malaysia suffering from a budget deficit situation with rising public debt.

Mark Scheme

Level	Descriptors	Marks
L3	• Well-developed answer that explains how price ceiling and at least	8 - 10
	another policy ensure the affordability of essential food items	
	• Use of accurate tool(s) of analysis and diagram(s) to support the	
	explanation	
	 Context of essential food items in Malaysia is considered 	
L2	• Underdeveloped explanation of price ceiling and another policy. Answer	5 – 7
	lacks accurate economic analysis, depth and/or coherence.	
	OR	
	 Developed explanation of only one policy (i.e., only 1 requirement is met) 	
L1	Answer contains serious conceptual errors	1 – 4
	• Listing of policies without economic explanations. Mere assertions of how	
	government policies can ensure the affordability of essential food items	
	Evaluation	
E3	For an answer that provides supported evaluative statements and arrives at	5
	an analytically well-reasoned and synthesised judgement with reference to	
	context (e.g., essential food items, Malaysia).	
E2	Attempts to substantiate judgement, but evaluative comments may be limited	3 – 4
	in scope, or not fully elaborated upon.	
E1	For an answer that gives an unsupported justification.	1 – 2

Question 2

While acquisitions and process innovation can propel firms towards market dominance in the pharmaceutical industry, government intervention through measures such as price regulations is essential to ensure the benefits reach all segments of society.

- (a) Explain how acquisitions and process innovation enable firms to obtain market dominance. [10]
- (b) Discuss how government intervention in the pharmaceutical industry could lead to improved outcomes for society and consider whether such intervention will be successful. [15]

<u> Part (a)</u>

Requirement 1: Explain how acquisitions enable firms to obtain market dominance.

Requirement 2: Explain how process innovation enables firms to obtain market dominance.

Introduction:

Market dominance refers to a firm having significant market share. Such dominance arises from firms increasing its market share and preventing it from being eroded via high barriers to entry. Firms operating in industries with higher barriers to entry would enjoy a higher degree of market dominance. High market dominance usually occurs in monopoly and oligopoly.

Body:

Acquisitions enable firms to obtain market dominance. An acquisition is when one firm takes over another firm and completely establishes itself as the new owner. For example, an incumbent firm may put in a takeover bid for a new entrant easily because of the former's strong financial capability. If the two firms are at the same level of the value chain in the same industry, it will be a case of horizontal integration. Such acquisition increases the incumbent firm's market dominance as it now controls a larger market share. This is also a fast and sure way for the firm to grow over time as it eliminates market competition.

With reference to the diagram below, before the acquisition, the demand curve and marginal revenue (MR) curve for the incumbent firm would resemble DD and MR respectively. The firm would then set its output at 0Q based on the profit-maximising condition of marginal cost (MC)=MR, and charge a corresponding price of 0P, which is the highest price consumers are willing and able to pay for 0Qunits. Assuming similar costs, with the acquisition, the incumbent firm now has a demand curve which resembles DD' and hence an MR curve which resembles MR' as it faces a higher level of demand from having a larger combined customer base and demand for its good is less price elastic as there are now fewer competitors in the industry. The profit-maximising firm now finds that MR exceeds MC at 0Q and adjusts its output to 0Q' where MR'=MC. Hence the firm has a greater price-setting ability shown by the rise in price to 0P' and a rise in output to 0Q'. As output of the firm increases, enabling it to have a larger market share, the firm gains market dominance in the industry.



Process innovation that is protected by patents may drive out rivals and hence enable firms to obtain market dominance. Through R&D, firms look for more efficient methods of production to keep costs low. For example, firms could adopt automation or make use of robots to increase productivity and reduce the manpower needed. The incumbent firm therefore enjoys lower marginal and unit cost of production.

Before the process innovation, the firm would set its output at 0Q based on the profit-maximising condition of $MC_0=MR$, and charge a corresponding price of P. After the process innovation, the firm now operates with lower marginal cost of production from MC_0 to MC_1 . Average cost will also fall from AC_0 to AC_1 . When the MC is lowered, the profit-maximising firm now finds that MR exceeds MC and adjusts its output to 0Q' where MR cuts MC_1 . The firm will charge a lower price (P to P') to sell 0Q' units and is thus more price competitive. The fall in AC also allows the firm to charge lower prices if needed. Rival firms, which may be smaller and have lesser ability to engage in process innovation, may not be able to match the lower price. They may thus be driven out of business due to loss of customers who may switch to a more competitive substitute. This is especially so if the firm that implements the process innovation has the first-mover advantage in the adoption of the process innovation and further protects it by patents. Patents give the patent owner the exclusive right to produce the good using the new process. This ensures that other rivals would not be able to copy the innovation and hence will not have the price advantage enjoyed by the firm. As rivals leave the industry, the incumbent firm will now enjoy greater market share and thus process innovation enables firms to obtain market dominance.



2023 H2 Economics VJC Economics Department

Mark Scheme

Level / Marks	Descriptors
L3	Analytical and diagrammatic explanations of how acquisitions and
8 - 10	process innovation enable firms to obtain market dominance.
L2	Under-developed explanation of how acquisitions and process innovation
5 - 7	enable firms to obtain market dominance.
	OR
	Developed explanation of how acquisitions OR process innovation enable firms to obtain market dominance.
L1	Relevant knowledge of how acquisitions and / or process innovation
1 - 4	enable firms to obtain market dominance. Answer may show conceptual errors.

Part (b)

Discuss how government intervention in the pharmaceutical industry could lead to improved outcomes for society and consider whether such intervention will be successful. [15]

Requirement 1: Explain how government intervention in the form of e.g., price regulations, like MC-pricing, in the pharmaceutical industry could lead to improved outcomes for society.

Requirement 2: Explain how government intervention e.g., in the form of deregulation in the pharmaceutical industry could lead to improved outcomes for society.

Introduction:

Governments pursue the microeconomic objectives of maximising society's welfare and pursuing equity in distribution of goods and services. The pharmaceutical industry exists as an oligopoly, with dominant firms making decisions in line with the oligopolistic market structure. Some of these decisions may have negative impacts on efficiency of resource allocation, rate of innovation and equity in distribution of pharmaceutical products, and are thus undesirable for society. Hence government intervention, in the form of price regulation and deregulation, is required to improve the outcomes for society.

<u>Body</u>

Price regulation in the form of MC-pricing in the pharmaceutical industry could improve allocative efficiency and reduce inequity, resulting in improved outcomes for society.

Allocative efficiency is attained when firms produce the combination of goods or services that is most preferred by consumers. Profit-maximsing firms with market dominance tend to restrict output and produce far less than the allocative efficient output, where P=MC, assuming no externalities.

When a firm seeks to maximise profits, it will produce the level of output at which MC = MR. When MR exceeds MC, a rational firm would produce an additional unit of output since doing so will cause total revenue (TR) to rise by more than total cost (TC), thereby increasing total profits. It will not produce beyond Qm because then, MR will be less than MC, and producing the additional unit would cause TR to rise by less than TC thus decreasing total profits. The highest total profit is attained at output level Qm, where MR=MC. In the diagram below, the firm would restrict production to output Q_M and charge price P_M .



However, the socially optimum level of output is at Q* where total welfare of society is maximised and allocative efficiency is attained. This is because at the level of output Q*, P=MC, thus the value that society place on the last unit of good (price reflects the benefits to society) exactly equals the

2023 H2 Economics VJC Economics Department cost of resources used to produce that unit of good. Society's welfare cannot be further increased by changing the level of output. Market dominance thus results in an underproduction of the good from society's viewpoint. The underproduction of Q_MQ^* units results in welfare loss. This is because if those units were produced, society would have enjoyed a net benefit gain because P>MC for those units, which means the marginal social benefit (MSB) > marginal social cost (MSC). By not producing those units, firms with market dominance have created a welfare loss for society represented by area abc as the total social benefit from Q_mQ^* units (area Q_mabQ^*) > total social cost (area Q_mcbQ^*). Market dominance thus leads to allocative inefficiency.

To achieve the socially optimum level of production, the government can regulate the firm by using MC pricing, i.e., compel the firm to charge P* and produce Q* the socially optimum output where MC cuts D. Hence government regulation will eliminate the welfare loss shown by area abc.

A firm with significant market power can also increase its price with very limited loss in sales since there are no or few substitutes that consumers can turn to. This means that distribution of output may also not be equitable, especially for essential goods like pharmaceutical drugs. Households with lower incomes may not be able to afford these goods when they are ill. With MC pricing, there will also be a fall in price of the drugs from Pm to P*, thus leading to improved equity in distribution of pharmaceuticals. Assuming the firms can still make at least normal profits, MC pricing can be used to prevent abuse of market dominance and ensure more households can consume the drugs.

[Ev] However, such a pricing regulation may cause the firm to make a lower profit of $(0P^* - 0d) \times 0Q^*$ instead of $(0Pm - 0c) \times 0Qm$. With reduced profit, pharmaceutical firms will have little incentive to improve on the quality of the drugs or lower its cost of production via product and process innovation. This can lead to a lack of dynamic efficiency for society.

As pharmaceutical drugs is a necessity, the implication for inequity in distribution of the good is serious. By reducing the impacts of market dominance via MC-pricing, equity may be significantly improved, though the potential benefit of increased R&D is sacrificed. But this problem can be reduced if the government has joint collaboration with the private firms and co-funds R&D.

Deregulation of the pharmaceutical industry could improve efficiency and reduce inequity, and hence lead to improved outcomes for society. Governments can adopt deregulation to 'open up' markets by reducing the barriers to entry, such as by giving out more licenses for new firms to enter the market. The aim is to increase the number of firms in the pharmaceutical industry and introduce more competition.

The increased competition in the pharmaceutical industry is beneficial to the society since it improves allocative efficiency. With more entrants entering the industry, incumbent firms suffer a fall in the demand for their products as alternative pharmaceutical drugs by their competitors are made available to the consumers. At the same time, their demand also become more price elastic as the number of substitutes increases. These changes are illustrated by a leftward shift of the demand curve from DD₁ to DD₂ in the diagram below.



As explained earlier, the socially optimal level of output is Q_1^* where P=MC. Initially, the society suffers an area of welfare loss of area abc due to the high market dominance of incumbent firms. With the changes in DD due to increased competition, the new profit maximizing level will be Q_2 where MC = MR₂. The society suffers a smaller welfare loss of area xyz due to the incumbent firms' reduced market dominance. The improvement in allocative efficiency is illustrated by reduced welfare loss from area abc to area xyz.

With lower demand (DD₂), the highest price that the firm can charge for Q_2 units has also fallen. This fall in price from P_1 to P_2 leads to improved equity in the distribution of pharmaceuticals since more consumers would be able to pay the lower price.

Deregulation could thus lead to improved outcomes for society since allocative efficiency and equity is improved.

Note: Increased competition may also incentive firms to conduct more research and development, so as to obtain new patents and maintain their market share. This can improve dynamic efficiency.

[Ev] Given the very high barriers to entry in the pharmaceutical industry e.g., high start-up cost as there is need to build labs and obtain specialised equipment, patents preventing new entrants from accessing information the incumbents have, deregulation may not be successful in increasing the level of competition. Even if the government now gives out more licences, other barriers to entry remain high, making it difficult for new entrants to join the pharmaceutical industry and increase the level of competition there.

Governments could apply anti-trust laws to curb anti-competitive practices, to prevent excessive market power being held by dominant firms. Such regulation can include prohibitions of anti-competitive agreements and practices by firms (so that the firms would compete instead of collude), abuse of a firm's dominant position or prevention of mergers and acquisitions that substantially lessen market competition. The objective of this regulation is to ensure that firms battle on a level playing field and compete through greater efficiency, lower pricing, and improved products so that there would be improved outcomes for society. Firms that do not comply with the laws can then be penalised. An example of this is the heavy penalty of \$64 million imposed by the US government in 2022 on Vyera Pharmaceuticals for increasing the price of a lifesaving drug by 4,000% and initiated a scheme to block the entry of generic drug competition in the industry. Such penalty disincentivises firms from engaging in anti-competitive agreements as firms may risk their supernormal profit being reduced if caught.

[EV] In using penalties like fines, governments are applying the knowledge of cognitive bias (loss aversion) to nudge the firms against anti-competitive practices. In this case, loss aversion on the firms' part increases the effectiveness of the fines as a deterrence since firms would want to avoid

the loss from paying a fine. The effectiveness of this measure depends on the size of the penalty relative to the firm's total annual turnover. This size in turn depends on the nature, duration and seriousness of the law infringement.

Conclusion:

Government's use of deregulation in the pharmaceutical industry is likely to be more successful than the use of MC-pricing in achieving improved outcomes for society.

The price and output behaviour of firms do not just depend on the current level of competition but also whether there is real threat of competition. As the pharmaceutical industry tends to have a low degree of contestability (as explained earlier), governments could improve the ease of entry and exit more significantly or improve the technology asymmetry between incumbents and potential entrants by reducing the length of the patents. When faced with the threat of potential entry of rivals, incumbents may act in a competitive manner and may voluntarily lower their prices of drugs and increase their output. This lowering of prices is to reduce the profit incentive for potential entrants, thus deterring entry of new firms and allowing the incumbent to preserve its market dominance into the long run. Thus, even if deregulation may not necessarily lead to an influx of new firms, the threat of competition would enable deregulation to be successful in achieving improved outcomes for society.

Given that the pharmaceutical industry produces goods which are necessities, such as lifesaving pharmaceutical drugs, the government should intervene to reduce market dominance to achieve lower prices in order to increase consumption of the good and improve equity. However, the use of price regulation like MC-pricing is likely to be less successful as it results in firms having less incentive to engage in quality improvements in their drugs or coming up with new drugs. Besides, a reduced amount of profits will also mean that firms' ability to plough the profits back to do R&D, which is typically very costly, is limited. Given that dynamic efficiency in the pharmaceutical industry is important as research plays a critical role in coming up with drugs that meet the changing needs of society, governments should allow the firms to continue so as to take advantage of the dynamic efficiency that might arise from the industry.

Alternative Ev for anti-trust laws:

Assuming that the government has the budget for the cost of policing the industry, the use of antitrust laws is likely to be more successful because firms are compelled to limit their anti-competitive behaviours or risk facing penalties meted out by government.

Level / Marks	Descriptors
L3 8 - 10	Analytical and well-balanced analysis of at least 2 distinct methods of government intervention in the pharmaceutical industry that help to achieve improved outcomes for society. Explanation is supported by use of examples and diagrammatic illustration.
L2 5 - 7	Under-developed or analysis of only 1 method of government intervention that has some gaps in explanation (cursory explanation) and lack examples or diagrams to illustrate.
L1 1 - 4	Some attempt to answer the question without application of a relevant economic model or answers contain conceptual errors.

Mark Scheme

E3	For an answer that demonstrates contextual analysis (e.g., demonstrates understanding of the pharmaceutical industry) and is able to weigh the extent of success in achieving improved outcomes for society.		
5			
E2	For an answer that makes some attempt to support the evaluation or		
3 - 4	conclusion.		
E1 1 - 2	Superficial evaluative statement(s) without supporting analysis and elaboration.		

Question 3

Consumers need good quality information when making decisions about which products to buy. However, information failure can exist in reality, where consumers are not fully aware of the costs or benefits of a product.

(a) Explain how consumers make rational decisions and why information failure could result in an undesirable outcome. [10]

(b) Discuss whether public education is the best policy governments can adopt when markets fail due to information failure. [15]

Part (a)

Requirement 1: Explain how consumers make rational decisions. **Requirement 2**: Explain why information failure could result in an undesirable outcome.

Consumers make rational decisions to maximise their net total benefit when consuming a good.

They hence weigh the costs and benefits of consuming the good and apply the marginalist principle. When consumers consume a good, they weigh the marginal private cost (MPC) and marginal private benefit (MPB) of consuming it. The marginal private benefits include the satisfaction gained from consuming one additional unit of the good. This is subject to the law of diminishing marginal utility which results in a downward sloping MPB. The marginal private cost is the monetary cost of the good, which is also equal to the price. The consumer will weigh his/her marginal private benefit against the marginal private cost.

At Q1 (Fig. 1), the marginal private benefit is MB1 and MPC is P and marginal private benefit outweighs the marginal private cost. Consuming one more unit adds more to total private benefit than total private cost, increasing net total private benefit to the consumer. Hence, the consumer would increase consumption. At Q2, the marginal private benefit is MB2 and MPC is P, and marginal private cost is greater than the marginal private benefit. Consuming one less unit reduces total private cost more than total private benefit, increasing net total private benefit to the consumer. Hence, the consumer. Hence, the consumer will decrease his consumption of the good. Therefore, in making a rational decision, the consumer will consume up till Q^* , where marginal private benefit = marginal private cost.

In doing so, he makes a rational decision and maximises his consumer surplus (Area ABP).



Fig 1: Consumer decision making

Information failure may occur when consumers underestimate the private benefits of consuming a certain good. For example, going for regular health screening confers long-term benefits to one's own health and well-being. Health screenings enable early detection of illnesses which prompt early treatment, lifestyle and diet changes. However, due to imperfect information, consumers may be ignorant about these long-term gains and under-estimate the true benefits that health screening provides. The under-estimation of benefits by the consumer causes the perceived marginal private benefit to be lower than the true MPB of health screening (Fig. 2). Consumers would base their consumption decision on their perceived MPB. Demand thus reflects perceived MPB. Assuming no externalities, true MPB = marginal social benefit (MSB) and MPC = marginal social cost (MSC).

Left to market forces, consumption will be at Q where demand = supply. But the socially optimal output is at Q^{*}, where MSC = MSB and society's welfare is maximised. Since the free market outcome is at Q, there is an underconsumption of health screening of Q^{*} - Q units. For Q to Q^{*} units, MSB is greater than MSC. This means that there is additional gain to society's welfare that can be reaped if consumers go for regular health screenings. At the output level Q, a deadweight loss of area ABC is incurred by society, as the total social benefit from consuming Q to Q^{*} (ABQ^{*}Q) is greater than the total social cost (CBQ^{*}Q). This results in allocative inefficiency which is an undesirable outcome.



* Students may also explain the case of overconsumption due to information failure (e.g., cigarettes), asymmetric information (supplier induced demand, adverse selection or moral hazard). * Students may also provide an explanation from the perspective of an individual.

L3	 There is an analytical explanation of how consumers make rational decisions and how information failure can lead to an undesirable outcome. There is an accurate example used to illustrate information failure. Diagrams are well referenced in explanations. 	8 – 10
L2	 There is an underdeveloped explanation of how consumers make rational decisions and how information failure can lead to an undesirable outcome. OR There is an analytical explanation of how consumers make rational decisions or how information failure can lead to an undesirable outcome. 	5 – 7
L1	 Both the explanation of how consumers make rational decisions and how information failure can lead to an undesirable outcome are descriptive and/or contain major conceptual errors. 	1 - 4

Part (b)

Discuss whether public education is the best policy governments can adopt when markets fail due to information failure. [15]

Requirement 1: Explain how public education can be used when markets fail due to information failure.

Requirement 2: Explain how another policy can be used when markets fail due to information failure.

Public education entails providing information to address the problem of imperfect information.



To solve the problem of consumers' ignorance due to imperfect information, the government can provide information to educate consumers on the true marginal private benefits of consuming these goods. In the case of health screenings, governments carry out national campaigns to encourage health checks. Governments can place posters and advertisements in clinics to inform the public about prevalence of various chronic diseases and the role regular check-ups play in preventing them. This reduces the extent of information failure in the market and encourages consumers to consume more of the good as they improve their individual decision-making. As perceived MPB increases to true MPB, consumers' willingness to go for check-ups increases as demand will now be based on true MPB.

The new market equilibrium quantity where DD'=SS matches the socially optimal quantity to be consumed at Q*, resolving the allocative inefficiency problem.

[EV] However, some consumers may continue to be unreceptive to the campaigns. For example, consumers might not go for these screenings even if there are many posters and advertisements around. This is because they might hold on to preconceived fears about health screenings or follow the habits of family members or friends instead of the message of the campaign.

To improve the efficacy of campaigns, governments can leverage on cognitive biases. Saliency bias refers to the tendency for people to focus on information that is more prominent and ignore other less prominent but equally relevant pieces of information. For example, instead of using brochures, governments can send information through push notifications on apps like Healthier SG. This would make the information more visible and more likely to be acted upon.

That said, the financing of campaigns and these measures may also strain the government budget. This could mean that the government may have to raise taxes, which in turn can have other impacts on firms, households and efficiency in other markets.

Governments can also provide subsidies to encourage consumption to solve the underconsumption due to information failure.



Price / Benefits / Costs

For example, the government could pay healthcare providers a per unit subsidy. This would decrease their marginal cost of production and shift the MPC from MPC to MPCsubsidy. The fall in MPC increases the profitability of production, and firms increase supply of the good. The increase in supply will result in a surplus at initial price level, leading to a downward pressure on price. This reduces price from P to Psub. Even though consumers face imperfect information, they would increase their consumption because prices are now lower. Hence, the subsidy results in a rise in quantity consumed from Q to Q* (where DD=SS'), correcting the market failure.

[EV] However, as above, the financing of subsidies strains the government budget. For example, in the case of Singapore, health screenings are heavily subsidised. The government further leverages salience bias to highlight these low prices "Just \$5 or less". To finance these subsidies, this could mean that the government may face a budget deficit or must divert spending from other critical areas such as infrastructure. This may also not solve the root cause of the problem, as some consumers may still have preconceived fears about health screenings and may not increase their consumption even though prices are very low.

Lastly, the government can also choose to use regulation to correct the market failure. For example, the government can lay out guidelines for family doctors and clinics that mandate health screenings for high-risk patients that are already showing symptoms of certain chronic diseases. Likewise, social workers who spot these symptoms in elderly beneficiaries can be required to report these cases to medical professionals to enforce mandatory screening. This would increase demand based on perceived MPB to be closer to true MPB and alleviate the market failure as consumption increases closer to Q^{*}.

Conclusion

In conclusion, public education is the best policy to use when markets fail due to information failure. This is because it targets the root cause of the problem, by helping to correct misconceptions and highlighting the true benefits of consumption to households. Though regulation can mandate consumption, campaigns and subsidies take a softer approach that does not infringe on consumer sovereignty. Other forms of information failure such as asymmetric information will require other policies to resolve. This is because asymmetric information stems from the complexity of the product or service. Hence it is not something that can be alleviated through a simple educational campaign.

Even though campaigns target the root cause of the problem, it might take a long time before consumers are convinced by campaigns, hence, policy outcomes are not guaranteed within a short time. Therefore, it is more advisable for a government to adopt a combination of public education and subsidies, especially in the short run, because consumers may respond more readily to price signals than to public messages. By implementing both campaigns and subsidies early, we can encourage more consumption of health screenings pre-emptively.

Mark Scheme

L3	 A well-developed answer on at least 2 policies governments can use to address information failure, one of which must be public education. Diagrams are accurate, well-labelled and referenced in explanations. 	8 – 10
L2	 An under-developed answer on policies a government can use to address imperfect information failure. OR 	5 – 7
	 A thorough explanation of only one policy a government can use to address information failure. 	
L1	• The explanation of how public education or how another policy a government can use to address imperfect information failure is either absent or contains major conceptual errors.	1 - 4
E3	• Evaluative statements made are well-explained and cover both question requirements. A final summative conclusion encompassing both question requirements is made.	5
E2	• Evaluative statements made are well explained and cover both question requirements.	3 – 4
E1	 An attempt to make evaluate statement/s that is not sufficiently well justified. 	1 – 2

Question 4

In 2022, it was reported that the Russia-Ukraine conflict resulted in supply chain disruptions; concurrently, the easing of COVID-19 restrictions led to recovery in domestic demand in some regional economies around Singapore.

- (a) Explain the impact of these developments on the overall price level of goods and services across the Singapore economy. [10]
- (b) Discuss the most appropriate policy measures that the Singapore government should take to manage this change in overall price level. [15]

<u> Part (a)</u>

- **Requirement 1:** Explain the impact of the supply chain disruptions arising from the Russia-Ukraine conflict on Singapore's GPL (cost-push inflation).
- **Requirement 2:** Explain the impact of the easing of COVID-19 restrictions on Singapore's GPL (demand-pull inflation).

Introduction

Inflation refers to a sustained rise in a country's general price level (GPL). A country such as Singapore could experience demand-pull inflation due to a rise in the country's aggregate demand (AD), and/or cost-push inflation due to a rise in unit cost of production, which decreases aggregate supply (AS). This essay will explain how the supply chain disruptions arising from the Russia-Ukraine conflict and the easing of COVID-19 restrictions leading to recovery in domestic demand in regional economies around Singapore led to an overall rise in the GPL in Singapore.

Body

The supply chain disruptions arising from the Russia-Ukraine conflict led to a rise in GPL in Singapore. The Russia-Ukraine war led to supply chain disruptions, as prices of several commodities such as oil and gas increased. For example, due to the war, oil fields could have been destroyed, leading to a fall in supply of oil and hence a rise in its price. Given that Singapore lacks natural resources and imports these commodities, which are key factor inputs in many production processes in the country, the rise in prices of the commodities would increase unit cost of production (UCOP). The increase in UCOP leads to a fall in AS, illustrated by an upward shift of the horizontal portion of the AS curve from AS_1 to AS_2 (Figure 1), as profit-motivated producers are only willing to produce the same output level if they receive higher prices. This would cause GPL to rise from P_1 to P_2 as firms pass the higher unit costs on to consumers as higher prices.

At the same time, the easing of COVID-19 restrictions leading to recovery in domestic demand in regional economies around Singapore also led to a rise in GPL in Singapore. The easing of COVID-19 restrictions led to recovery in domestic demand in regional economies around Singapore, which led to a rise in the AD of these economies and hence their real national income. The rise in purchasing power of Singapore's regional trade partners would increase their demand for Singapore's goods and services and hence an increase in our export revenue (X). Assuming import expenditure is unchanged, the rise in X leads to a rise in AD.

Assume the economy was initially in equilibrium near Y_f , where AD_1 cuts AS_2 . The rise in AD due to the rise in X causes a rightward shift of the AD curve from AD_1 to AD_2 (Figure 1). The rise in AD leads to an unplanned fall in inventories and firms will respond by increasing production. When firms increase output and operate closer to full employment level of output (Y_f), they will be forced to use less suitable factor inputs, leading to less efficient factor combinations which causes a rise in the unit cost of production. Firms will only produce extra output if it can be sold at higher prices, leading to a rise in GPL from P_2 to P_3 .



Figure 1: Rise in GPL in Singapore

Overall, due to the developments above, GPL rises from P1 to P3 in Singapore.

Mark Scheme

Level	Descriptor	Marks
L3	Detailed and analytic explanation of how each development leads to a rise in GPL in Singapore. Answer covers both developments in the preamble.	8 – 10
L2	Underdeveloped explanation of how each development leads to a rise in GPL in Singapore.	5 – 7
L1	Shows some knowledge of inflation (e.g. definition), but little explanation.	1 – 4

(b) Discuss the most appropriate policy measures that the Singapore government should take to manage this change in overall price level. [15]

Part (b)

- **Requirement 1:** Explain one policy measure that the Singapore government should take to manage inflation.
- **Requirement 2:** Explain another policy measure that the Singapore government should take to manage inflation.

Note: Within your response, both cost-push and demand-pull inflation must be tackled.

Introduction

As explained in part (a), the above developments would lead to an overall rise in GPL in Singapore. The Singapore government can make use of various policies to manage inflation, such as exchange rate centered monetary policy, as well as supply-side policies.

Body

To manage inflation, an exchange rate centered monetary policy can be used, as an appreciation of the Singapore Dollar (SGD) can address both cost-push and demand-pull inflationary pressures.

When the SGD appreciates, imports become cheaper in SGD. This would mean that imported inputs would become cheaper in SGD, leading to an overall fall in the unit cost of production (UCOP) in the economy. Firms will respond by increasing quantity supplied at each price level.



Figure 2: Exchange rate MP addressing inflation

This results in a rise in AS which is illustrated by a downward shift in the horizontal portion of the AS curve from AS₁ to AS₂. With excess AS, firms will have to cut prices to stimulate spending and so reduce the excess supply. Holding AD at AD₁, the GPL falls from P₁ to P₂, as illustrated in Figure

2 (*i.e. moving from point A to B*). This allows the government to manage the cost-push inflation arising from the supply chain disruptions.

The appreciation of the SGD also manage demand-pull inflationary pressures as Singapore's exports would become more expensive in foreign currency. Hence, foreigners will decrease their demand for Singapore's goods and services, and export revenue falls. At the same time, as imports become cheaper in SGD, quantity demanded for imports by Singaporeans will increase. If demand for imports is price elastic, quantity demanded rises more than proportionately to the fall in price and import expenditure (M) rises. The fall in (X-M) would cause AD to fall from AD₁ to AD₂. In response to the fall in inventories, firms will lower output and hire fewer factor inputs. When output is reduced, the resulting rise in unemployment means that firms are better able to get the resources that they need, resulting in more efficient factor combinations and falling unit cost of production. As such, firms are willing to sell the lower output at lower prices. Holding AS constant at AS₂, GPL falls from P₂ to P₃ (*i.e. moving from point B to C*), allowing the government to manage demand-pull inflation.

[Ev] Since there is 'recovery in domestic demand in some regional economies around Singapore', the economic outlook is likely to be quite positive. Hence, even with an appreciation of the SGD causing Singapore's exports to become more expensive in foreign currency, foreigners may still be purchasing Singapore's exports, so this policy may not be effective in curbing demand-pull inflationary pressures.

Another policy that the government can use to manage the overall rise in GPL in Singapore is to encourage skills training among workers in Singapore. The Singapore government can provide grants or subsidies to workers, increasing their ability to undergo training. With relevant training, workers' productivity levels may increase, allowing them to produce more output per unit labour. Assuming wages increases more slowly than productivity, UCOP will fall, and firms will be more willing and able to produce. Aggregate supply (AS) increases, which will offset some of the rise in UCOP arising from the supply chain disruptions, leading to a fall in GPL as explained above. With reference to Figure 3, assuming AD was at AD₀, the supply side policy will result in GPL will falling from P₀ to P₁, allowing the government to manage cost-push inflation.

The increase in labour productivity also increases productive capacity of the economy. AS increases from AS_0 to AS_1 , with vertical portion of AS shifting out and the maximum possible output increasing from Yf to Yf' shown in Figure 3. The increase in Yf allows the economy to alleviate any demand-pull inflationary pressures as spare capacity in Singapore is increased. This means that when there is a rise in AD near full employment output level, for example from AD_0 to AD_1 , GPL will rise to a smaller extent from P_0 to P_3 instead of P_2 , which allows the government to manage demand-pull inflationary measures.



Figure 3: Impact of skills upgrading on alleviating inflation

[Ev] A limitation of this policy is that it can take a long time for workers to pick up the skills to improve on their labour productivity, and hence the effectiveness of the policy would only be seen in the longer term. Additionally, workers might also be reluctant to go for skills upgrading, which would reduce the effectiveness of the policy to lower GPL to mitigate the rise in GPL explained in (a).

[Alternative Ev] Given that the root cause of the rise in UCOP is that of imported inputs becoming more expensive, this policy may not target this root cause and may not be appropriate.

The Singapore government can also provide funding for firms to engage in R&D. Firms can do R&D to improve on their production processes to increase efficiency and productivity, increasing the output per unit input, allowing them to hire less workers or use less factors of production to produce the same output. Hence, UCOP falls, which increases AS causing a fall in GPL to manage cost-push inflation, as explained above.

Conclusion

Overall, exchange rate centered monetary policy is the most appropriate policy to manage the overall rise in GPL in Singapore, at least in the short term.

The policy of currency appreciation is likely to be effective for Singapore to manage inflation in the short term because it can address both the root causes of the rise in GPL. Given that Singapore is a small and open economy where X as a % of GDP is very high and that the economy is also highly reliant on imported inputs, an appreciation of SGD will significantly affect AD and AS, leading to a significant fall in GPL to offset inflationary pressures. The impact of this exchange rate centered monetary policy is also likely to take effect quickly, allowing Singapore's GPL to fall, addressing the inflation problem more immediately.

However, it is unlikely for the policy of exchange rate appreciation to be appropriate in the longer term since it could also result in negative actual growth, especially if the exchange rate is allowed to appreciate very significantly. In the longer term, supply-side policies would be the more appropriate policy as it can address both types of inflation without the unintended consequence of negative actual growth.

Level	Descriptor	Marks
L3	Detailed and analytic explanation of at least 2 different policies that the Singapore government can take to manage demand-pull and cost-push inflation. Diagrams used are appropriate and accurate.	8 – 10
L2	Underdeveloped explanation with gaps in explanation of at least 2 different policies that the Singapore government can take to manage inflation. OR	5 – 7
	Well elaborated but one-sided explanation of only 1 policy that the Singapore government can take to manage inflation.	
L1	Answer is largely irrelevant and/or erroneous and merely states a few valid points with little or no explanation.	1 – 4
	Evaluation	
E3	Well-reasoned judgement that builds on analysis to make a judgement on which is the most appropriate policy measure that the Singapore government should take to manage inflationary pressures. There is consideration of the Singapore context, with reference to some characteristics of the economy.	5
E2	A conclusion that addresses the question, though explanation of judgement may not be complete.	3 – 4
E1	Superficial evaluative statement(s) without supporting analysis and elaboration.	1 – 2

Mark Scheme

Question 5

Trade deficit in the US increased 27.0% in 2021 to an all-time high. The economy grew 5.7% in 2021, thanks to the pandemic relief provided by the government. Imports of goods hit an all-time high of \$1.8 trillion, driven by imports of industrial supplies and materials. There was also a sharp rebound in exports.

Source: CNBC, 8 Feb 2022

- (a) Explain why some governments may be concerned about a widening trade deficit and why other governments may not be concerned about a widening trade deficit. [10]
- (b) Discuss the extent to which a conflict between macroeconomic objectives will influence a government's policy choice to reduce a trade deficit. [15]

Part (a)

Requirement 1: Explain one reason why some governments will be concerned with a widening trade deficit.

Requirement 2: Explain one reason why some governments may not be concerned with a widening trade deficit.

Introduction

Balance of trade (BOT) is Export Revenue (X) – Import Expenditure (M). A trade deficit means that the import expenditure is greater than the export revenue, resulting in a negative balance. There are negative consequences of a widening trade deficit that governments will be concerned about. However, this may not be the case for all governments.

<u>Body</u>

A widening trade deficit, indicating a worsening of BOT, can result in negative actual growth and an increase in demand-deficient unemployment. The fall in (X-M) will result in a fall in AD, since AD = C + I + G + (X-M). Assume the economy is operating with spare capacity. When AD decreases from AD_1 to AD_2 , firms experience an unplanned rise in inventories and will cut back on production and hire less factors of production, including labour. The fall in factor income results in the fall in real national income from Y_1 to Y_2 . As households earn less income, induced consumption on domestically produced goods and services falls, and thus there will be a further decrease in AD from AD_2 to AD_3 . There will be a further unplanned rise in inventories and firms cut back on production once more, resulting in a further fall in factor income and real national income via the multiplier effect. Meanwhile, households will withdraw less in the form of lowered savings, lowered taxes paid and lowered spending on imported goods and services. The multiplier process continues until change in withdrawals = change in injections. Hence, the fall in AD as a result of a widening trade deficit triggers a multiplied fall in real national income from Y₁ to Y₄, resulting in negative actual growth.



Since demand for labour is a derived demand, the cut back on production will result in a rise in demand-deficient unemployment as well. Assuming that wages are sticky downwards, at the prevailing wage rate, there will be excess supply of labour which gives rise to demand-deficient unemployment.

Hence, governments may be concerned about a widening trade deficit.

A widening trade deficit is also of concern because it will lead to a fall in future standard of living. While a BOT deficit arising from greater levels of consumption of imported consumer goods and services will lead to a higher material standard of living in the short-term, it cannot be sustained in the long term. If spending on imported consumer goods and services is higher than export revenue, the excess spending may need to be paid for by borrowing from foreign lenders. Countries that run BOT deficits are net borrowers. The future generation would then have to cut back on their consumption of imports so that its export earning is enough to repay the country's foreign debts. Thus, living standards fall in the future. Therefore, governments will be concerned about a widening trade deficit.

Alternative answer (but some of the effects are less direct):

There are detrimental effects for governments that are under a managed float exchange rate system. If widening of BOT deficit is persistent, there is pressure on the exchange rate to fall below the lower limit of the desired range since payments for imports exceed what is received from exports. To prevent the currency from depreciating and to maintain the exchange rate within the desired range, the central bank has to intervene by using its foreign reserves to buy back its own currency. Since these foreign reserves are finite, this situation might invite speculation that the central bank is unable to sustain this intervention and the central bank may be forced to allow its currency to depreciate. This causes imported inflation as the price of imported goods are now higher in domestic currency. At the same time, a persistent depreciation of the currency means lower returns when the returns are converted back to FDI's home currency. There is a fall in the expected rate of return on investments in the country. Since the marginal benefit of investments falls, assuming MB = MC initially, MB is now lower than MC. Some previously profitable investment projects now become unprofitable, and firms will cut back on investments. I falls, resulting in negative actual growth due to the multiplied fall in real national income (elaborate on multiplier process with diagram), and negative potential growth assuming capital accumulation rate is less than capital depreciation rate, resulting in a fall in productive capacity of the economy.

However, some governments may not be concerned with a widening trade deficit if the widening trade deficit arises from the import of capital goods, as this helps in potential growth and improve future SOL.



If a country incurs a widening BOT deficit from increasing its import of capital goods, it sacrifices a rise in living standards in the current period since the loans could have been used to buy imported consumer goods. However, the rise in import of capital goods increases the country's capital stock, which will increase its productive capacity from Yf_1 to Yf₂. This is represented by an increase in AS which is illustrated by a rightward shift of the vertical portion of the AS curve from AS₁ to AS₂. Economies which were initially operating near or at full employment level of output enjoy a fall in GPL from P_1 to P_2 as firms are now able to use more efficient combinations of FOP for production and pass on cost savings to consumers. This leads to increase in real GDP from Y_1 to Y_2 i.e., actual growth through the wealth, interest rate and international substitution effect. The increase in productive capacity also alleviates inflationary pressures and allows for sustained growth. The improvement in the price competitiveness of its goods/services in the world market (due to fall in GPL) will also boost the quantity demanded for exports and generate economic growth in the future. The rise in national output also means that consumers' material living standards rises in the long run. Hence, some governments may not be concerned about a widening trade deficit since it can lead to future growth and improve future SOL.

Some governments may not be concerned with a widening trade deficit since it helps to reduce demand-pull inflation. As explained earlier, a fall in AD results in an unplanned rise in inventories, causing firms to cut back on production and hire less factors of production. As firms hire less FOP, assuming the economy was initially at or near full employment, they are better able to get the resources they need and utilise more efficient factor combinations, leading to a fall in unit COP. Firms are then willing and able to sell their products at lower prices, resulting in a fall in GPL. Therefore, some governments may not be concerned with a widening trade deficit, as it helps with alleviating demand-pull inflationary pressures.

Conclusion

Therefore, some governments may be concerned with a widening trade deficit, but others may not.

Mark Scheme

Level	Descriptor	Marks
	For an answer that gives a detailed and analytic explanation of both	
L3	negative and positive consequences of a widening trade deficit. Answer	8 - 10
	is well-supported with diagrammatic reference.	
L2	For an underdeveloped answer that attempts to explain, with gaps, possible consequences of a widening trade deficit. Diagrammatic reference, if relevant, is incomplete.	5 - 7
	An answer that gives a detailed and analytic one-sided explanation i.e.,	
	only negative or positive consequence.	
L1	For an answer that shows some knowledge of possible consequences of widening trade deficit.	1 - 4

(b) Discuss the extent to which a conflict between macroeconomic objectives will influence a government's policy choice to reduce a trade deficit. [15]

Requirement 1: Explain how conflict between macroeconomic objectives affect policy choice to reduce trade deficit.

Requirement 2: Explain how other factor(s) also affect policy choice to reduce trade deficit.

Introduction

Governments aim to achieve low unemployment rate, price stability, sustainable and inclusive economic growth, and a favourable balance of trade position as macroeconomic objectives. In the choice of macroeconomic policies aimed to reduce trade deficit, the government will consider the potential conflicts between macroeconomic objectives that may arise. However, there are other factors that will influence the government's policy choice as well.

<u>Body</u>

Side 1: Conflicts between macroeconomic objectives will influence the choice of policies to reduce trade deficit.

The use of a monetary policy, such as an expansionary exchange rate policy (EMP), to reduce trade deficit may result in both demand-pull and cost-push inflation. When the Central Bank allows the local currency to depreciate against foreign currencies, the price of exports in foreign currency falls. Foreigners will find the domestic goods and services relatively cheaper and this will lead to a rise in demand for exports. Domestic consumers however will switch from buying imports to the relatively cheaper domestically produced goods and services as the price of imported goods in domestic currency increases. Quantity demanded of imports will fall, and M will fall assuming demand for imports is price elastic. (X-M) will rise assuming Marshall-Lerner condition holds, where |PEDx+PEDm| > 1. This reduces the trade deficit.

However, since imported goods become more expensive in domestic currency, the price of imported raw materials will increase, leading to a rise in unit cost of production for firms. This will lead to a fall in AS, represented by an upward shift of the AS curve from AS_0 to AS_1 , thus leading to a rise in GPL from P_0 to P_1 , as firms pass on the rise in unit cost as higher prices.

Furthermore, as (X-M) rises, assuming the economy is operating near full employment, this will lead to demand-pull inflation. As AD rises from AD_0 to AD_1 , there is an unplanned fall in inventories

leading firms to increase production, which requires firms to hire more FOP. However, since the economy is near full employment, firms will have to use FOPs that are less suitable for their production. As such, more inputs are required per additional unit of output, resulting in rising unit COP (upward sloping section of AS). This means that firms will only produce more output at higher prices, leading to an increase in the GPL from P_1 to P_2 .



Therefore, the above conflicts will influence a government's policy choice in trying to reduce a trade deficit, as the government may choose not to implement expansionary exchange-rate centred monetary policy in order to avoid potential inflation.

[Ev] The extent of this conflict will however depend on the state of the economy and nature of economy. For example, the extent of demand-pull inflation will be more significant for economies that are operating near or at Yf. If the economy is operating with spare capacity, there will not be demand-pull inflation with the rise in AD. Furthermore, the extent of cost-push inflation will be more significant for economies reliant on imported inputs, as compared to economies that possesses abundance of natural resources and are more self-reliant on raw materials for production.

Alternative answers:

- Use of contractionary fiscal / monetary policy to reduce AD, RNY falls, consumers' purchasing power falls and consume less, including imported goods. Assuming X constant, (X-M) falls and trade balance improves, hence reducing the trade deficit. However, the fall in (X-M) will result in negative actual growth assuming spare capacity, and a rise in demand-deficient unemployment.
- Use of SSP (R&D on more efficient methods of production) to increase price competitiveness, X increases assuming demand for exports is price elastic and M falls, reducing trade deficit. However, with the use of new technologies, it may lead to structural unemployment.

Side 2: There are other factors that will influence the choice of policies to reduce trade deficit.

Another factor that influences a government's policy choice to reduce a trade deficit will be the root cause of the problem. While the expansionary exchange rate policy can improve the price competitiveness of a country's exports and reduce trade deficit, it may not tackle the root cause of the problem. For example, if the trade deficit arose due to a lack of demand for the country's exports due to non-price factors such as quality issues, the government should instead implement a supply-side policy to improve non-price competitiveness to reduce trade deficit. For example, the government can subsidise firms in engaging in research and development (R&D) to improve the quality of the exports. When quality of exports increase, foreigners will demand more of these exported goods because of a change in taste and preference, resulting in a rise in export revenue. At the same time, due to the improved quality, it becomes a less close substitute to other similar products. Even if price increases, quantity demanded will fall less than proportionately as demand is price inelastic, resulting in an increase in export revenue. This will allow the country to reduce the trade deficit.

OR

For example, the US has been suffering from a persistent and large trade deficit. To reduce this trade deficit, the US can choose to adopt a contractionary fiscal policy (CFP), by increasing taxes. This will cause AD to fall, reducing real national income. With less income, US citizens will consume less as their purchasing power falls, including that of imported goods. Assuming X constant, (X-M) falls and trade balance improves, hence reducing the trade deficit.

However, the use of a CFP may not target the root cause of the problem. The US is facing the large trade deficit mainly due to a loss of comparative advantage to emerging economies because of rapid industrialisation in those economies. A better option for the US is to restructure its economy by pursuing supply-side policies that increase its export competitiveness in the global economy. When X increases, assuming M constant, (X-M) rises and this will improve trade balance, reducing the trade deficit.

Hence, the root cause of the problem is a factor that will influence a government's policy choice when deciding on policy to reduce trade deficit.

Another factor that influences a government's policy choice to reduce a trade deficit will be the size of the domestic economy. If the domestic economy is small, they will likely be very reliant on the exports of goods and services to other countries to increase export revenue by selling to a broader customer base and being able to reap internal economies of scale. To reduce a trade deficit, they cannot choose protectionist measures because this might trigger retaliation from their trade partners, which will cause X to fall. Since the economy will be reliant on X as a driver for growth, a fall in X will result in significant negative growth and demand-deficient unemployment. Hence, size of domestic economy is a factor that will influence a government's policy choice when deciding on policy to reduce trade deficit.

Conclusion

In conclusion, it is to a small extent that a conflict between macroeconomic objectives will influence a government's policy choice to reduce a trade deficit.

A government will make policy choice mainly based on tackling the root cause of the problem. While governments recognise that the policy choice may have conflicts with another macroeconomic objective, they will usually complement it with another policy. For example, the use of expansionary exchange rate policy may result in inflation. To reduce inflationary pressures, the government can complement exchange rate policy with a supply-side policy. For example, the government may implement subsidies for upskilling programmes to improve the productivity and the quality of labour. Assuming wages remain constant, when workers become more productive, the unit cost of production will fall, reducing cost-push inflation. Furthermore, the increase in productive capacity will reduce demand-pull inflationary pressures. Therefore, the government will likely make their policy choice considering the root cause of the problem, then implement a mix of policies to tackle any unintended negative consequences resulting from a conflict of macroeconomic objectives.

Furthermore, the nature of the economy will more likely influence the government's policy choice. For countries with larger domestic markets such as the US, it is possible that they can impose protectionist measures like import tariffs to reduce trade deficit. However, given the nature of small economies that have small domestic markets, it is inappropriate for them to adopt protectionist measures to reduce trade deficit, as retaliation by their trade partners will lead to the initial positive effects enjoyed being nullified. These countries will likely adopt the signing of free trade agreements to raise net export revenues, despite this potentially leading to other macroeconomic problems like structural unemployment. Governments will likely then complement it with supply-side policies that will improve occupational mobility.

Mark Scheme

Level	Descriptor	Marks
L3	For an answer that shows a well-developed and well-balanced analysis discussing how conflicts between macroeconomic objectives, as well as other factors, will affect government's policy choice to reduce trade deficit. Answer is well-contextualised with examples.	8 - 10
L2	Answer lacks depth of analysis (i.e. incomplete or limited use of concepts) <u>OR</u> lacks breadth (i.e. one-sided but well-developed answer on how either conflict between macroeconomic objectives, or one other factor, will influence government's policy choice to reduce trade deficit). There is limited contextualisation with examples.	5 - 7
L1	For an answer that shows some knowledge of conflict between macroeconomic objectives. Answer is sometimes irrelevant to the question, descriptive or a mere listing of points. Answer may contain major conceptual errors.	1 - 4
E3	Provides a stand with clear and well-elaborated justification using criteria and/or question assumptions.	5
E2	A conclusion that addresses the question, though explanation of judgement may not be complete or weak points were chosen.	3-4
E1	Superficial evaluative statement(s) without supporting analysis and elaboration.	1-2

Question 6

Advancement in digital technology has played a significant role in driving globalisation, but the pandemic experience has led to calls in many countries for increased national self-sufficiency and moves towards protectionism.

Adapted from: Ernst and Young, Sept 2021

- (a) Explain how advancement in digital technology and the implementation of nontariff protectionist measures have **each** influenced the pace of globalisation. [10]
- (b) Discuss whether signing more free trade agreements is the best measure that Singapore should implement to increase its competitiveness amid rising protectionism in the globalised world. [15]

Part (a)

Requirement 1: Explain how advancement in digital technology has accelerated the pace of globalisation.

Requirement 2: Explain how non-tariff protectionist measures have slowed the pace of globalisation.

Introduction:

Globalisation is the increased integration of economies around the world, through the movement of goods, services, capital, labour, and knowledge across international borders. In recent years, the phenomenon of globalisation has undergone a remarkable change. This response seeks to delve into the two main factors mentioned in the preamble that have catalysed the different changes in the pace of globalisation.

Body:

Rapid advancement in digitalisation refers to the integration of digital technologies into various aspects of society and the economy. It has played a crucial role in increasing the pace of globalisation by facilitating communication and transportation. Rapid digitalisation accelerates globalisation in a few ways:

Technological solutions have modernised trade facilitation procedures and enhanced customs efficiency. Customs clearance processes have become more transparent and expedited through digitised systems. This reduces delays at border crossings, lowers trade-related costs, and encourages greater cross-border trade activity, increasing the flow of goods and services.

The COVID-19 pandemic accelerated the adoption of digital technologies for e-commerce and work from home arrangement. The latest internet technologies, including high-speed broadband and the rollout of 5G networks, have drastically improved global connectivity. This enhanced connectivity enables seamless communication across geographical boundaries, allowing businesses to engage in real-time conversations, video conferences, and information sharing. This rapid and reliable communication fosters greater trade opportunities hence as such intensify the flow of goods and service between countries.

Cloud computing technology and faster internet network has revolutionised how businesses operate and collaborate globally. Cloud computing lowers the barriers for businesses to enter new markets. Setting up physical IT infrastructure in a new overseas location can be time-consuming and resource intensive. Cloud services enable rapid deployment of IT resources, including servers,

databases, and applications. This enables firms to set up new branches overseas, increasing the flow of capital across borders.

Digital advancements in transportation often lead to cost savings. Faster transport options e.g., due to intelligent transport networks which helps to avoid disruptions mean lower inventory holding costs and reduced warehousing expenses. Hence, with lower cost, this increases the flow_of goods and services across borders. Enhanced transportation networks open new markets and regions that were previously difficult to access. This expanded accessibility can lead to increased trade opportunities by connecting producers with a wider range of consumers, thus increasing the flow of goods and services across borders.

Any one of the above on rapid digitalisation will suffice.

Non-tariff protectionist measures such as a quota can slow down the pace of globalisation. Quota is a type of trade restriction that sets a limit on the quantity of specific goods that can be imported or exported during a specified period. By looking at import quota alone, it is to limit how much of a foreign product can be imported into a country. The quota works by only allowing those with permission to bring in the quantity specified by the agreement. Once the quantity specified by the quota is reached, no more of the goods can be imported for that period.



As seen in the above diagram, under free trade, the price would be at Pf, and the quantity demanded is at D. Of this, the domestic producers only supply a quantity of A, and the quantity of AD is made up of imports.

Now, the government imposes a quota on the number of units of this good that can be imported. For the quota to be effective in protecting the domestic producers, it has to be smaller than AD units. With the quota, the supply of this good in the country is now represented by the curve labelled 'Sd with import quota'. Equilibrium in the domestic market occurs at point Y. With the rise in domestic price to Pt, the quantity purchased by consumers drops to from D to C while the domestic quantity supplied rises from A to B. Overall, the quantity of imports falls to BC units (which is equal to the quota). This will reduce the amount of trade volume and with less flow of goods and services across borders, it will slow down the pace of globalisation.

Other alternative points such as export quota can be accepted.

Mark scheme

l	3	Developed explanation of the two factors that caused the pace of globalisation to	8 - 10
LJ	LU	change with good use of examples.	0 - 10
		Underdeveloped explanation of the two factors that caused the pace of globalisation	
		to change,	
l	L2	OR	5-7
		Developed explanation fulfilling only 1 question requirement; only one factor is explained.	
	L1	Demonstration of knowledge of one/two factors that caused the pace of globalisation to change, with limited or no use of examples, or serious conceptual errors.	1-4

Part (b)

Requirement 1: Explain how signing of more FTAs is the best way to increase Singapore's competitiveness amid rising protectionism.

Requirement 2: Explain one alternative measure the Singapore government should implement to increase its competitiveness amid rising protectionism.

Introduction:

Singapore, known for its open economy and commitment to free trade, faces the challenge of maintaining competitiveness in a global landscape that occasionally experiences protectionist tendencies. Protectionism refers to the imposition of trade barriers, such as tariffs and quotas, by countries to shield their domestic industries from foreign competition. Despite such challenges, Singapore can take several strategic measures to ensure its competitiveness of its exports, in both price and non-price aspects even in the face of protectionist policies. As a small and open economy, Singapore's active participation in FTAs is crucial for improving her competitiveness in order to maintain economic growth. Singapore should also explore other measures such as supply side policies to have a more lasting impact on her competitiveness to achieve economic growth.

Body

In view of increasing protectionism around the world, Singapore should continue to sign more free trade agreements as the best way to increase competitiveness.

While advocating for multilateral trade which may be hindered by growing protectionist stances, Singapore can sign more FTAs, such as bilateral and regional trade agreements that promote open markets. These agreements can help Singapore maintain preferential access to key markets and diversify its trading partners.

Bilateral or regional trade agreements often involve the reduction or elimination of tariffs on goods traded between the participating countries. This means that Singapore exporters can enjoy preferential access to partner markets, making their products more price-competitive compared to goods from countries that are not part of the agreement.

With a tariff, which are taxes levied on products when they cross national boundaries, the market price rises by the full amount of the tariff to Pt assuming a small country that cannot influence world price, as seen in Fig 1. Tariffs increase the cost of imported goods for consumers in the importing country. Through signing of FTAs, tariffs will be abolished, and Pt will fall back to Pf and Singapore exporters can offer their goods at a lower price in the foreign market. This can make Singapore exports more price competitive compared to other non-member countries (which will be charging Pt).



Bilateral or regional trade agreements provide Singapore exporters with expanded market access to the partner country. This means that they can reach consumers in the partner country more easily, without facing the same level of trade barriers they might encounter in non-partner markets. This increased market access can boost demand for Singapore's products and services, contributing to internal economies of scale. Businesses may invest in larger production and storage facilities as scale of production increases with more FTAs. With cost of building more facilities and warehouses being spread over a much larger output level, there can be a fall in average cost. This would improve price competitiveness of goods and services exported.

Bilateral or regional trade agreements often include provisions related to investment and cooperation. Increased business confidence and market access encourage companies to establish operations in FTA-partnered countries. These provisions can attract foreign direct investment (FDI) from the partner country, leading to technology transfer, knowledge sharing, and improvements in production techniques. In addition, increased competition from the partner country's producers can drive Singapore's businesses to become more innovative and efficient. The need to compete on price and quality can lead to the adoption of new technologies, improved processes, and better management practices, ultimately enhancing overall price and non-price competitiveness.

Evaluation:

As Singapore diversifies her trading partners, she might become less susceptible to global supply chain disruptions or changes in international market conditions that could lead to shortages of goods and increased prices. Hence, having more alternative suppliers will mean that Singapore is able to source for raw materials easier from alternative markets that will help to ensure price competitiveness is not affected.

FTAs may not be the best measure as Singapore may need to continue with supply side polices to reduce its cost of production to increase price competitiveness and to improve her non-price competitiveness. A skilled and adaptable workforce is essential for maintaining export price competitiveness in the longer run. Supply-side policies such as the refreshed CET (Continuing Education & Training) Masterplan would ensure a more competitive and career resilient workforce. It will enable working adults, regardless of their starting qualifications, to continue to build and deepen their skills and competencies, throughout their careers. Furthermore, the Skills Future Mid-Career Enhanced Subsidy (MCES) supports and encourages lifelong learning for mid-career individuals that may face greater challenges in undertaking training. Well-trained workers can improve productivity; thus, firms can hire less workers or use less factors of production to produce

the same output, leading to a fall in unit cost of production. Due to the fall in UCOP, AS would rise from AS0 to AS1 (Figure 2). Firms will then pass the cost savings on by lowering the price of their goods and services, leading to a fall in GPL from P_0 to P_1 . This will improve price competitiveness of goods and services.



Figure 2: Use of supply side policies

Having a skilled workforce may also contribute to the production of better-quality goods and services using workers' enhanced expertise. The development of new products and services will allow exports to remain competitive despite protectionist challenges.

Alternative policies can include exchange rate policy and other relevant supply-side policies.

Evaluation:

In some cases, acquiring new skills takes time and consistent effort. Employees might resist upskilling due to a fear of change, a lack of interest in learning new skills, or a belief that their current skills are sufficient. Such resistance can hinder the adoption of new skills and limit the potential for innovation, therefore hindering the improvement in productivity and product innovation.

Conclusion:

In the landscape of growing protectionism, signing more FTAs will likely be the best measure Singapore should implement to increase competitiveness.

While protectionist measures can hinder the flow of goods and services globally, signing more FTAs provide a counterbalance by maintaining open and free trade between participating countries. Furthermore, because FTAs cover a range of sectors, by signing more bilateral or regional trade agreements, such diversification can help mitigate the adverse effects of global protectionism trend. FTAs provide a range of economic benefits that make a country more attractive to foreign investors. As a result, countries that actively participate in and leverage their FTAs often experience a boost in foreign investment inflows, which can bring new technology and knowledge. This will still ensure Singapore can increase its competitiveness with favourable trade agreements.

Singapore may be faced with non-tariff barriers such as quotas, licensing requirements, and technical standards. These barriers can sometimes be more restrictive than tariffs, and even with supply side policies, may not allow Singapore to gain global competitiveness as she is not able to export beyond i.e., quota amount. Signing more FTAs can remove such barriers for Singapore.

However, Singapore must take both a short- and longer-term perspective in dealing with competitiveness, whether threatened by protectionism or otherwise. FTAs can lead to immediate market access and trade benefits, which might be beneficial for driving short-term competitiveness. Supply-side policies, on the other hand, focus on long-term structural improvements that drive sustained competitiveness.

A synergistic approach is much needed as FTAs can only facilitate market access and provide opportunities for export-oriented industries, but Singapore will need supply-side policies to enhance the country's ability to take advantage of these opportunities by improving the quality and price-competitiveness of its products and services.

Mark Scheme

L3	Developed explanation of how signing more FTAs and at least another alternative measure should be implemented to increase both Singapore's price and non-price competitiveness.	8-10
L2	Underdeveloped explanation of how signing more FTAs and at least another alternative measure should be implemented to increase both Singapore's price and non-price competitiveness. OR Developed explanation fulfilling only 1 question requirement, or only 1 measure is	5-7
	well explained.	
L1	Demonstration of knowledge of policies – links to price and non-price competitiveness may be unclear.	1-4
E3	Well-reasoned consideration of the policy choices and evaluation of their relevance based on time frame, nature of economy etc. Contextualised to Singapore.	5
E2	A conclusion that addresses the question, though explanation of judgement may not be complete.	3-4
E1	Superficial evaluative statement(s) without supporting analysis and elaboration.	1-2