TAMPINES MERIDIAN JUNIOR COLLEGE

JC2 PRELIMINARY EXAMINATION

H2 ECONOMICS **9757/01**

Paper 1

12 September 2022

2 hours 15 minutes

Additional materials

Two Answer Booklets

READ THESE INSTRUCTIONS FIRST

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

Answer **all** questions.

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

Hand in Question 1 and Question 2 **separately**.

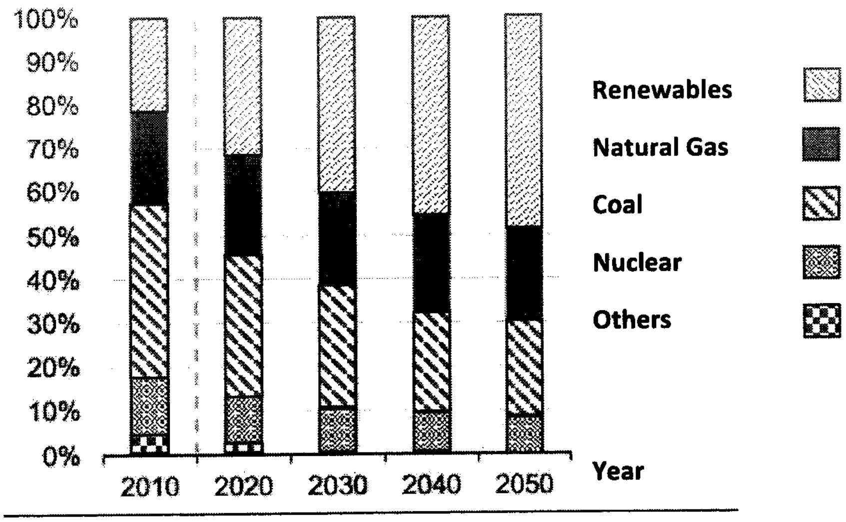
Begin Question 1 and Question 2 on a **new** answer booklet.

This document consists of 8 printed pages.

Answer **all** questions.

Question 1: Green technology – solution to clean environment and soaring electricity prices

Figure 1: Share of net electricity generation, world (per cent)



Source: US Energy Information Administration, accessed 28 Jul 2022

Extract 1: Increase in electricity prices in Singapore

Since the start of the year, we have seen a rapid increase in inflation in Singapore. One essential area that Singapore households would have experienced inflation is electricity bills. In his May Day Rally speech, Prime Minister Lee Hsien Loong spoke about the impact of soaring energy prices on Singapore and its people. Against a backdrop of increasing electricity cost which fuels inflation and rising sea levels due to global warming, experts have claimed that Singapore's move towards renewable energy sources has become more important than ever for the island nation.

But what exactly are the factors that have led to this increase in electricity prices? Singapore is a country with limited natural resources, and imports almost all their energy needs. This means, like many other goods that the country imports, the prices that the country pays for electricity are largely determined by external factors outside of her control.

In Singapore, about 95 per cent of electricity is generated from imported natural gas. The current conflict in Ukraine has resulted in the tightening of oil and natural gas supply. Unfortunately, a confluence of other factors has also caused the prices of oil and natural gas to spike since the second half of 2021. These include an increase in demand for oil and natural gas consumption as major economies around the world recover from the pandemic, seasonally high energy consumption during the winter months in the Northern Hemisphere, and a series of unexpected gas production outages that led to a supply-demand mismatch in global energy markets.

To be clear, natural gas is not the only way to generate electricity. There are other options like coal and oil to generate heat, which is subsequently used to produce steam to generate electricity. However, such fuels, like natural gas, would be extremely pollutive. The use of renewable sources of energy like solar energy is another method to generate electricity in a relatively more non-pollutive way. Due to the small land size of Singapore and high population density, there is a greater need to set up our solar power infrastructure in creative ways to maximise solar energy and make every space count. However, whether that is a viable method varies for different countries.

Sources: Adapted from Channel News Asia, 16 May 2022
and Dollars and Sense, 7 July 2022

Extract 2: OPEC members urge oil producers to focus more on renewable energy

The finance minister of Iraq, one of the founding members of the global oil cartel, Organisation of the Petroleum Exporting Countries (OPEC), urges oil producers to pursue "an economic renewal focussed on environmentally sound policies and technologies" that would include solar power and potentially nuclear reactors, and reduce their dependency on fossil fuel exports. Along with the executive director of the International Energy Agency, Fatih Birol, he wrote: "To stand a chance of limiting the worst effects of climate change, the world needs to fundamentally change the way it produces and consumes energy, burning less coal, oil and natural gas. If oil revenues start to decline before producer countries have successfully diversified their economies, livelihoods will be lost, and poverty rates will increase."

Allawi, Deputy Prime Minister of Iraq, suggested current oil price volatility, driven by the pandemic, was only the beginning of problems for producers. The climate crisis will not only require a move away from oil but will strike the Middle East and North Africa particularly badly, where rising temperatures are already causing severe problems. An alternative to remaining tied to increasingly volatile oil prices would be to invest in renewables, especially solar power. The energy sector could play a role here by making use of the region's vast potential for producing and supplying renewable energy. The shift away from oil would also translate to keeping price of oil high and stable.

A common problem that the OPEC faces is that while the OPEC countries would like to maintain a high price of oil, each member of the cartel is tempted to increase its production in order to get a larger share of the total profit. The OPEC members frequently agree to reduce production but then cheat on their agreements.

Source: Adapted from Guardian, 1 Sep 2021

Extract 3: Singapore's strategy

Singapore is putting more money into low-carbon research, with two new funds totalling 10 million dollars going to twelve research projects in the areas of hydrogen and carbon capture, utilisation and storage. Second Minister for Trade and Industry Tan See Leng said: "A key prong of our energy transition strategy is to invest in technology and innovation to address our energy challenges and sustainable development objectives."

The new funding initiatives include a 4 million dollars partnership between the Energy Market Authority (EMA) and technology company Envision Digital International to help local energy companies focus on renewable energy, urban energy efficiency and low-carbon solutions.

Another 6 million dollars from EMA and industrial developer JTC, with support from Enterprise Singapore, will fund successful ideas submitted under the Jurong Island renewable energy request for proposals. The proposals are to be targeted at accelerating the development of renewable energy innovations for implementation on the island. According to the Chief Executive Officer (CEO) of JTC, energy transformation requires a diverse mix of innovative technologies, and the partnership with EMA will support the acceleration of emerging low-carbon technologies. He believed that when such solutions are successfully deployed, they will cut carbon emissions on Jurong Island and the island will be one step closer to becoming a sustainable energy and chemicals park.

Source: The Straits Times, 23 November 2021

(a) State one key observation about the share of net electricity generation between 2010 and 2050 and briefly explain one possible reason for this observation. [2]

(b) Using a diagram, explain how the conflict in Ukraine (Extract 1) is likely to have affected both the producer surplus and the consumer surplus in the market for natural gas. [4]

(c) Explain the likely change in the value of price elasticity of supply of natural gas over time. [2]

(d) From a producer's perspective, discuss the factors that an individual member of the OPEC cartel would consider when deciding whether to reduce dependency on fossil fuel export by focusing on more environmentally sound policies and technologies. [8]

(e) (i) Explain why the market for energy generated from natural gas fails. [4]

(ii) Discuss whether Singapore's energy transition strategy can overcome the challenges of inflation and global warming. [10]

[Total: 30]

Question 2: The United States (US) and Chinese Economies

Table 1: Selected Economic Indicators of China, 2017 to 2021

Year	2017	2018	2019	2020	2021
Real GDP growth rate (%)	6.95	6.75	5.95	2.24	8.08
Nominal exchange rate (Yuan per US$)	6.76	6.61	6.91	6.90	6.45
Export revenue (US $billion)	2,263.4	2,486.7	2,499.5	2,590.0	3,363.5
Import Expenditure (US $billion)	1,843.8	2,135.8	2,078.4	2,066.0	2,686.8
Inflation rate (%)	1.6	2.1	2.9	2.4	0.9

Table 2: Selected Economic Indicators of United States (US), 2017 to 2021

Year	2017	2018	2019	2020	2021
Real GDP growth rate (%)	2.30	2.90	2.30	-3.40	5.70
Export revenue (US $billion)	1,546.8	1,664.1	1,645.5	1,431.6	1,754.6
Import Expenditure (US $billion)	2,342.9	2,642.8	2,498.5	2,336.6	2,832.9
Inflation rate (%)	2.1	2.4	1.8	4.7	8.3

Source: Statista.com, accessed 28 Jul 2022

Extract 4: Global supply chain crisis

Basic consumer staples are spiralling in price because of higher shipping costs. Shipping accounts for the movement of at least 90 per cent of goods around the world and the cost of transporting things by sea has rocketed in the past year. Industry experts warn that the supply chain crisis prompted by the coronavirus pandemic could last for many more months and even up to two years. Although there are signs that some bottlenecks are easing, the onset of the Omicron Covid variant could lead to new shutdowns, sending another disruptive spasm through the global system.

The coronavirus pandemic has created a chaotic ripple effect around the world, disrupting the global supply chains where there is a glut of containers in some ports in the US and Europe, but not enough in ports throughout Asia.

With year-end holidays in North America and Europe, Chinese New Year in Asia, the already stretched supply chain will get even further stretched as workers, truckers and terminals are off for holidays. Normally these seasonal impacts can be absorbed fairly quickly, but when already stretched, it just becomes a multiplier.

Source: The Guardian, 18 December 2021

Extract 5: US unemployment rate soared sharply

The US unemployment rate jumped to 14.7 per cent in April 2020, the highest level since the Great Depression, as many businesses shut down or severely curtailed operations to try to limit the spread of the deadly coronavirus. Claims for unemployment benefits increased in the second quarter of 2020 at the onset of the pandemic.

The Labour Department said 20.5 million people abruptly lost their jobs, wiping out a decade of employment gains in a single month. The speed and magnitude of the loss defies comparison. It is roughly double what the nation experienced during the entire financial crisis from 2007 to 2009. Many analysts believe it could take years to recover.

Source: The Washington Post, 8 May 2020

Extract 6: Major policy reforms in the US

The global growth slowdown in 2019 has been caused in large part by former President of US, Donald Trump's confrontational approach to trade. Eighteen months of on-again, off-again tariffs — and tariff threats — against products from China, India, Mexico, Canada, the European Union, South Korea, Japan and Vietnam have taken a toll on business confidence. Caught in the crossfire, global manufacturers have been weakening for months. US business investment faced the worst performance in more than three years. Weak global growth and trade tensions are having an effect on the US economy. The Federal Reserve has responded by cutting interest rates.

In 2020, the Federal Reserve (Fed) yet again slashed interest rates to zero per cent as part of a wide-ranging emergency action to bolster the US economy in the face of the coronavirus. The cut in the US interest rate, which is now in a range of 0 to 0.25 per cent, has been the most dramatic by the US central bank since the 2008 financial crisis.

Once the Fed funds rate has been cut to zero, there is nowhere else to go. Instead, once the rates are at zero, the Fed will turn to other policy tools to keep increasing the supply of money and credit in the economy – known as "quantitative easing (QE)", in which the central bank buys hundreds of billions of dollars in bonds to further increase the supply of money and drive more lending to consumers and businesses. The steeper the Fed rate cut, the more impact it can have on the cost of consumer credit, for big-ticket item purchases.

In 2021, the current President of US, Joe Biden unveiled 3.6 trillion dollars in tax increases on wealthy Americans and big corporations to pay for his plans to combat climate change, reduce income inequality and significantly expand the social safety net of the nation. This will be achieved by raising both the personal income tax rate for the top earners and corporate tax rates from 37 per cent to 39.6 per cent and 21 per cent to 28 per cent respectively.

Sources: Various

Extract 7: The dangerous new consensus – globalisation in reverse

Free trade agreements, sophisticated supply chains, the flow of people and capital around the world have combined to create an extraordinary global economy. As goods have become cheaper, the world has become richer – driving innovation in wealthier nations and raising living standards in many developing economies. In short, successful integration has tripled the size of the global economy and lifted 1.3 billion people out of extreme poverty, according to the International Monetary Fund.

However, since the start of the pandemic – and this year in particular – there have been growing rumblings that the world may be on the cusp of a period of 'deglobalisation'. A new consensus has taken hold in the world's advanced economies: It is time to deglobalise. The better path now is to control borders more tightly, build resilient supply chains, pursue self-sufficiency in critical technologies, wean off FDI inflows and inflict trade sanctions on adversaries regardless of global trade rules.

But deglobalisation has its own long list of costs and dangers, from rising inflation and labour shortages to resurgent protectionism and shocks to the global financial system. Reversing global integration has predictably raised inflation, especially in the US and eroded recent wage gains for many workers. The Trump administration's trade tariffs—and retaliation by other countries—drove up US prices for lumber, steel, aluminium, solar panels, and household furnishings. Russia's invasion of Ukraine and the tough economic sanctions that followed have disrupted energy and food supplies, accelerating price increases for fuel and food around the world. Pursuing greater self-sufficiency through reshoring the production of critical goods such as medical equipment and semiconductors and turning inward, is another popular response to the vulnerabilities exposed by the pandemic and rising geopolitical tensions.

Sources: Foreign Policy Magazine, 3 May 2022 and Forbes, 23 May 2022

(a) With reference to Table 1,

(i) Describe the trend in China's nominal exchange rate between 2017 and 2021. [2]

(ii) Explain, in theory, how trade balance affects the exchange rate and whether the data supports this relationship. [3]

(b) With reference to Extract 4, explain why economies are likely to experience spiralling prices. [4]

(c) Using Extract 5, explain the working of automatic stabilisers. [3]

(d) Assess the likely effectiveness of quantitative easing (Extract 6) used by the US Federal Reserve in solving her economic problems of rising unemployment and falling aggregate demand. [8]

(e) With reference to data where appropriate, discuss the extent to which deglobalisation is beneficial to different economies. [10]

[Total: 30]

TAMPINES MERIDIAN JUNIOR COLLEGE

JC2 PRELIMINARY EXAMINATION

H2 ECONOMICS **9757/02**

Paper 2 **16 September 2022**

2 hours 15 minutes

Additional materials

Two Answer Booklets

READ THESE INSTRUCTIONS FIRST

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

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

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

Hand in Section A and Section B **separately.**

Begin each Section on a **new** answer booklet.

This document consists of 3 printed pages and 1 blank page.

Answer **three** questions in total.

Section A

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

1 The COVID-19 pandemic brought about a global recession and lockdowns. Many people had sought to improve their mood during lockdowns by enjoying a cup of coffee. On the other hand, prices of coffee beans rose sharply due to rising freight costs and dry weather in Brazil, one of the world's largest producers of coffee beans.

Source: Various

(a) Explain the supply and demand factors that could have led to the sharp rise in price of coffee beans. [10]

(b) Assess the significance of different elasticities of demand in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages. [15]

2 Industries are being disrupted by new technologies. Travel websites have made in-store travel agencies redundant while online streaming giants such as Netflix and Disney+ have replaced traditional television. Industrial robots and the possibility of producing goods on demand via 3D printing is likely to diminish the need for storage and inventory management in manufacturing.

Adapted from: www.investopedia.com, 23 Jan 2022

(a) Using economic theory, explain how the market structure in which online streaming giants such as Netflix operate would influence the way firms compete. [10]

(b) Discuss the view that disruption by new technologies is more likely to be a threat, rather than an opportunity, to the existence of firms in an industry. [15]

3 Theory suggests that resources can be allocated efficiently by the price mechanism, yet government intervention is evident across different markets.

(a) Explain how the price mechanism can allocate resources efficiently and why government intervention is advocated where factor immobility is present. [10]

(b) Discuss the extent to which government intervention in different markets is likely to be successful in achieving the microeconomic objectives of a government. [15]

Section B

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

4 In 2021, Singapore's labour productivity grew by 5.2 per cent and its real gross domestic product (GDP) grew by 7.6 per cent. Inflation, as measured by the consumer price index, was 2.3 per cent, unemployment was 2.7 per cent and trade balance was S$77 billion in surplus.

Adapted from: https://www.singstat.gov.sg and https://stats.mom.gov.sg, accessed 20 July 2022

(a) Explain the link between labour productivity growth, cost of living and international competitiveness of a country. [10]

(b) Assess the sufficiency of the given data on GDP, inflation, and unemployment in comparing living standards between Singapore and other countries. [15]

5 Rising global crude oil prices due to the Russia-Ukraine conflict has led to an increase in import expenditure for India, the world's third largest consumer of oil. While India's exports have grown, there were fears of slowdown in advanced economies.

Adapted from: The Business Standard, 3 June 2022

(a) Explain how the above events will lead to a balance of trade deficit for India and why this might be a concern for the government. [10]

(b) Discuss whether the trade-off between macroeconomic objectives is the main factor in determining the choice of policies to achieve favourable balance of trade for any economy. [15]

6 Singapore, being a small country with no natural resources, must embrace globalisation to survive, and inking free trade agreements (FTAs) is one way of doing so, said Health Minister Ong Ye Kung.

Adapted from: CNA, 6 Jul 2021

(a) Explain the key drivers of globalisation. [10]

(b) Discuss whether a modest and gradual appreciation of its currency and the signing of free trade agreements would be effective for Singapore to benefit from globalisation. [15]

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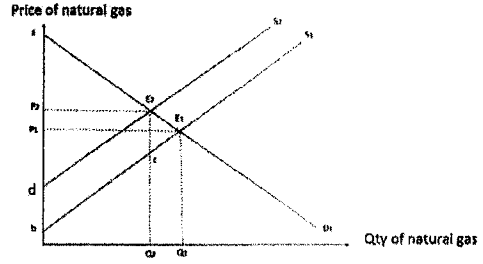
2022 Prelim H2 CSQ1: Green technology – solution to clean environment and soaring electricity prices

Suggested Answers:

(a)	State one key observation about the share of net electricity generation between 2010 and 2050 and briefly explain one possible reason for this observation.	[2]
	Any 1 observation [1] • Coal has the highest share of net electricity generation in 2010 but renewables highest but in 2050 renewable has the highest share of net electricity generation. • Coal's share of net electricity generation is decreasing. • Renewable's share of net electricity generation is increasing. And a plausible reason [1] • With more firms using renewable energy due to government policies in place → fall in share of coal as net electricity generation. *Other possible answers:* - *Natural gas – no change in proportion over the years [1] Natural gas is main source of energy for selected countries such as Singapore [1]*	
(b)	Using a diagram, explain how the conflict in Ukraine (Extract 1) is likely to have affected both the producer surplus and the consumer surplus in the market for natural gas.	[4]
	<u>Explain the impact of conflict in Ukraine: [1]</u> • The supply disruption due to the conflict in Ukraine will affect the production of natural gas negatively, leading to a <u>fall in supply</u> to S2. As a result price of natural gas increases to P2, and quantity falls to Q2. **<u>Identify & explain original & new area of consumer & producer surplus: [2]</u>** • As seen in the Figure below, the original consumer surplus is aE1P1, while the original producer surplus is bE1P1. • Thus at Q2, both the new <u>consumer and producer surplus are smaller.</u> <u>The new consumer surplus is</u> represented by area aE2P2, implying a fall in consumer welfare whereas the new <u>producer surplus is</u> represented by dE2P2 which implies decreasing producers' welfare. **Diagram [1]**	

		
(c)	Explain the likely change in the value of price elasticity of supply of natural gas over time.	[2]
	PES is likely to be more than 1 over time. Overtime, producers will be able to engage in research and development to seek improvement in technology such that it is easier for producers to produce natural gas → with an increase in price of natural gas, there will be a more than proportionate increase in natural gas, ceteris paribus.	
(d)	From a producer's perspective, discuss the factors that an individual member of the OPEC cartel would consider when deciding whether to reduce dependency on fossil fuel export by focusing more environmentally sound policies and technologies.	[8]
	Students are to explain the factors that a rational producers would consider switching away from usage of fossil fuel to more environmentally friendly methods. These factors range from the benefits & costs of the decision, the root cause of the problem, to its constraints, time lag consideration. **<u>Introduction:</u>** As seen in Extract 1 and 2, oil prices are volatile caused by the pandemic which affect oil producers' profits. Furthermore, the increasing temperature and climate change in Extract 2 has also encouraged the move towards renewable energy. Individual members of OPEC cartel such as Iraq will need to consider if they will want to switch from fossil fuel to environmentally sound policies like renewable energy. From a producer's perspective, firms need to maximise profits where MR=MC and consider the following factors. Development: (1) Producers can consider the **<u>benefits</u>** of focusing more on environmentally sound policies.	

With the rising focus towards renewable energy due to climate crisis, there will be less burning oil to generate energy and higher demand towards renewable energy. By focusing more on environmentally sound policy such as investment towards renewable energy, there will be a rising demand and this caused an increase in total revenue towards renewable energy, c.p, profits will rise. This will also prevent the situation where oil producers suffer from lost in total revenue due to fall in demand of oil as shown in Extract 2.

The oil price volatility driven by pandemic in Extract 1 & 2 will also cause fluctuation of demand and hence risk of oil producers suffering from subnormal profits. Oil producers will not only risk experiencing subnormal profits but experience the risk of shut down, causing workers to be laid off.

If oil producers become the first successfully diversify towards renewable energy, they are able to gain larger market share and market power, which allow them to set prices and restrict output and earn higher profits.

EV (C:Information): Producers will need to consider consumer stance towards renewable energy and whether there are infrastructure available for consumer to switch from traditional energy to renewable energy. Consumers may be reluctant to switch to renewable such as solar power, this prevent producers to experience higher demand and higher profits. However, given the rising climate change in the world as illustrated in Extract 1, the government will implement policies to support the transition and hence it is likely that consumers is incentivise to switch towards renewable energy and this will allow producers to gain higher profits.

(2) Producers can consider the **costs** of focusing more on environmentally sound policies.

When focusing on renewable energy, high funding is involved in building the infrastructure and research is required to ensure the reliability of the system. This involves high costs. The funds channeled to renewable energy can be use on other areas such as investment in alternative areas that can yield higher profits.
Also, it is assumed that oil producers will maintain high prices as a cartel.
However, with the switch towards renewable energy, oil producers can cheat and not follow the agreed oil prices. They can choose to increase production to lower prices as shown in Extract 2. This cause higher demand towards oil and raise total revenue of oil producers, on the other hand, consumers will switch away from renewable energy. When demand for renewable energy decreases, this will cause total revenue of renewable energy to fall and profits to fall.

EV: Producer will want to consider the likely market share that they possess as compared to other oil producers to determine if they have a tendency to cheat. While the oil producer who choose to cheat can capture larger market share and profits, other oil producers will follow suit and this limit the extent of increase in profits. If producers continue to undercut prices, it will result to subnormal profits which may not be sustainable for all producers. This is more so for oligopolist which the least market share. Hence, producers will want to consider the likely market share that they possess to know whether the price cutting measures will be sustained which will affect the market of renewable energy.

(3) Producers can consider the **constraint/ information required** of focusing more on environmentally sound policies.

The producers will want to consider the available funding to finance the infrastructure and expertise and information required to focus more on renewable energy. Although both oil and renewables are forms of energy, the infrastructure and skills set are different. Producers will also need to know if they have the technical know-how to switch towards environmentally sound policies to successfully switch towards it. High costs are involved on research and development to study how producers can switch away from oil to renewable energy such as solar power. Producers will need to consider if they are able to gather funding to switch towards renewables. This is dependent on the firms' past profits.

EV: It is likely that firms will have high profits given their high barriers to entry and large market share as an oligopolist.

Link back to the question:
Thus, using the marginalist principle, producers will maximise profits where MR=MC. Should producers experience marginal revenue more than marginal costs (MR>MC) , producers will need to produce more output towards renewable energy. The converse holds true. The availability of information and constraints will limit the expected revenue which affect the firms' ability to reach the profit maximising condition.

Evaluative Conclusion (Ranking):
The benefits of investing in renewable energy is the most important factor. The producers will want to consider the likely success of investing in renewable energy to identify the likely profits that they can gain. This is the most important consideration because with the high market share that they possessed, they are likely to possess past supernormal profits and hence the high cost is unlikely to be an issue.

Furthermore, with the expertise in oil production, it is likely that there are transferrable skills that producers can tap on when investing in renewable energy hence the producers need not be overly concerned about the constraints that they faced. When going through the various factors, producers need to consider the dynamic changes that happen in the economy, for instance, government policies to encourages use of renewable energy and restrict usage of fossil fuels will largely influence the profits of producers and affect their decision making.

Mark Scheme

Level	Knowledge, Application, Understanding & Analysis	Marks
Level 2	Answers in this level will give a sound analysis on at least 2 factors that an individual member of the OPEC cartel would consider when deciding whether to take up the suggestion of Iraq's finance minister.	4-6
Level 1	Answers in this level will give a superficial/descriptive explanation on the factor(s) an individual member of the OPEC cartel would consider when deciding whether to take up the suggestion of Iraq's finance minister.	1-3
Level	**Evaluation/Synthesis**	**Marks**
E	Marks awarded for the ranking of factors that an individual member of the OPEC cartel would consider when deciding whether to take up the suggestion of Iraq's finance minister.	1 – 2

ei) Explain why the market for energy generated from natural gas fails. [4]

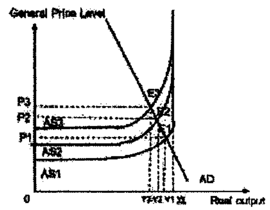
- **Private efficient output**: occurs where MPB=MPC, producers seek to maximise self-interest
- **Divergence:**
  - The production of energy from natural gas results in pollution (Ext 1) → this affects the health of residents living nearby the factories → them incurring healthcare cost for which no compensation is made
  - Thus, there is a divergence in the cost curves; MSC> MPC.
- **Socially optimal output:** However, the social optimal output occurs where MSB=MSC, where society's welfare is maximised.
- **Allocative inefficiency:**
  - As Q* > Q, there is an over-production & overallocation of resources to the production of energy from natural gas
  - Allocative inefficiency results whereby the right amt of right type of gds is not produce.
- **DWL:** This leads to a DWL.

eii) Discuss whether Singapore's energy transition strategy can overcome the challenges of inflation and global warming. [10]

Introduction

Singapore's 'energy transition strategy is to invest in technology and innovation' (Ext 4).

The rising price of natural gas results in cost-push inflation in Singapore. As natural gas is used in the production of electricity for many goods and services, the rising natural gas prices will lead to higher unit COP. If enough individual market supply curves are affected, this will lead to a fall in the SRAS to AS2. This creates a shortage and unplanned fall in inventories. This provides an incentive for producers to raise prices causing GPL to rise to P2. Assuming that the increase in price of natural gas is persistent, SRAS will continue to fall to AS3 leading to a sustained increase in GPL to P3.



Moreover, as explained in (ei), the production of energy has resulted in global warming.

Development

Explain how Singapore's approach addresses the 2 challenges

1. As the Singapore government helps 'local energy companies focus on renewable energy, urban energy efficiency and low-carbon solutions', if successful, this will reduce the extent of external cost generated from the production of energy from natural gas. This thus addresses the problem of global warming. (Accept also fall in demand of natural gas → Closer to socially optimal output→ **Therefore, reduces problem of global warming**)
2. In addition, the current approach also includes 'accelerating the development of renewable energy' in the country. This would result in a fall in demand for energy from natural gas and thus reducing prices/ with greater efficiency in the production of energy, this will result in a fall in unit COP, ceteris paribus and thus an increase in SRAS from AS3 to AS2 if enough

individual market is impacted. As a result, this lowers the GPL to P2 in the country and thereby reducing the inflationary pressure.

Explain one limitation of such approach

1. Long-time, uncertainty in outcome

However, the outcome of investing in low-carbon research takes time. Thus, it would imply that this approach will not be effective in addressing the challenges in the short run. In addition, the outcome is uncertain. This may further limit the effectiveness of the government in addressing the challenges faced.

Possible EV: If the outcome of the research is unsuccessful, it would imply that the cost of intervention > benefit of intervention resulting in a misallocation of resources in the SG's economy.

2. Costly – unintended consequences

Funding of such projects puts a strain on the government's budget. This might result in the government having to raise taxes in future resulting in a disincentive effect on work and investment. As a result, there is fall in productivity and a loss in output in the economy. If costs of higher tax rates outweigh the gain of benefits from using supply-side measures, then there is possible misallocation of resources.

Conclusion

[Opinion, Criteria: nature of economy (heavy reliance on natural gas)] While the government may be successful in reducing the externality due to the production of energy from natural gas, however, it may not be able to fully address the cost-push inflation due to rising natural gas prices due to the heavy reliance on natural gas. **[Reasoning]** The fall in demand for non-renewable energy in Singapore will not be sufficient to influence the price of natural gas worldwide. As long as the major economies continue to demand for natural gas, it will drive the prices of natural gas. Moreover, as a small economy, '95% of electricity is generated from imported natural gas' in Singapore. As such, as long as we continue to rely on imported natural gas, we will definitely be prone to imported inflation.

[Opinion, Criteria: nature of economy (lack of space)] The 'small land size & high population density' in Sg makes it even more challenging for SG to consider alternative renewable energy such as solar energy. As such, it is important for firms to 'invest in technology and innovation' as Singapore continues to move towards adoption of renewable energy.

Mark Scheme

Level	Knowledge, Application, Understanding & Analysis	Marks
Level 2	Answers in this level will give a sound analysis on how Singapore's government approach can overcome the challenges of inflation and global warming.	5-7
Level 1	Answers in this level will give a superficial analysis on how Singapore's government approach can overcome the challenges of inflation and global warming.	1-4

Level	Evaluation/Synthesis	Marks
E2	For an answer that give judgment on the extent to which Singapore's government approach can overcome the challenges of inflation and global warming.	2 – 3
E1	For an answer that gives an unsupported evaluative statement(s) that addresses the question.	1

2022 Prelim H2 CSQ2: The United States (US) and Chinese Economies

Suggested Answers:

(a)		With reference to Table 1,	
	(i)	describe the trend in China's nominal exchange rate between 2017 and 2021.	[2]
		[Provide overall trend and trend refinement] Overall, China's nominal exchange rate has **appreciated** [1m] against USD, but there was a **slight depreciation from 2018 to 2019** [1m].	
	(ii)	Explain, in theory, how trade balance affects the exchange rate and whether the data supports this relationship.	[3]
		[Explain the relationship between trade balance and ER] China's trade balance is in **surplus,** where export revenue is greater than import expenditure. This suggests that the **increase in DD for yuan is greater than the increase in SS of yuan → shortage** at original price → upward pressure in price → **Yuan should appreciate.** **Thesis**: ***Data supports*** Over the period 2017 to 2021, data supports this theoretical relationship. **Anti-thesis**: ***Data does not support*** However, from 2017 to 2019, trade surplus increased but yuan depreciated. **Conclusion**: ***Take a stand*** Overall, data **does not show** consistency in the support of theoretical relationship.	
(b)	With reference to Extract 4, explain why economies are likely to experience spiralling prices.		[4]
	Step 1: Explain the trigger from Extract 4 – 2m 'supply-chain crisis' → **increase in shipping / transportation cost**; → led to an **increase in firms' unit COP** and a fall in profit margin and thus fall in firm's supply. If enough individual market supply curve shifts left, this will lead to a **fall in SRAS.**		

	Step 2: Complete adjustment and inflation process At the initial price, there will be a shortage which incentivises firms to increase production. This in turn will **bid up prices of factors of production.** Coupled with the fact that there is year-end holidays in North America and Europe, Chinese New Year in Asia which resulted in **manpower crunch**, this will lead to **rise in labour cost** which **further adds on to the increase in unit COP** and SRAS shifts further to the left. **[Link to Qn]** This eventually resulted in the spiralling prices. *Note*: To get full marks, students must explain the inflationary process.	
(c)	Using Extract 5, explain the working of automatic stabilisers.	[3]
	Explain how automatic stabilisers work *(using Extract 5)* • ***[Definition]*** Automatic stabilisers are a **form of fiscal policy** that **offsets fluctuations in aggregate demand** during changing economic conditions without policymakers having to take any deliberate action. **OR** ***[Objective]*** Economy will move through the different stages of business cycle such as periods of economic growth and negative growth. Therefore, automatic stabilisers are put in place to **smooth out such business cycles**. • Extract 5 mentioned that "U.S. unemployment rate jumped to 14.7 per cent in April 2020" and "20.5 million people abruptly lost their jobs". This suggests that **unemployment benefits given out** as form of welfare payment **will rise** as there are more unemployed workers due to the contraction of the economy, possibly due to a decrease in AD. • As the US government spends more on unemployment benefits, there would be an expansionary effect on the economy. Assuming the workers do not spend these benefits on domestic consumption (C), more unemployment benefits given out **will prevent further decreases in AD**. This counteracts the contractionary effect and stabilises the US economy.	
(d)	Assess the likely effectiveness of using "quantitative easing" (Extract 6) by the US Federal Reserve in solving her economic problems of rising unemployment and falling aggregate demand.	[8]
	Introduction: Identify the problems of the US economy and suggest how interest rate should be changed • The US economy is facing two main problems currently – falling AD due to weak global growth and trade tensions **OR** fall in investment	

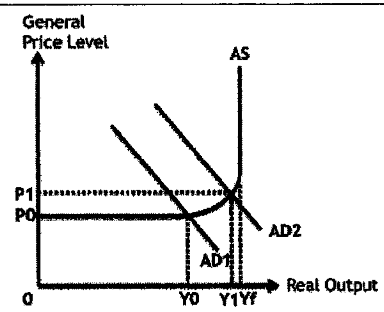
due to weak business confidence (Extract 6) as well as rising unemployment (Extract 5).

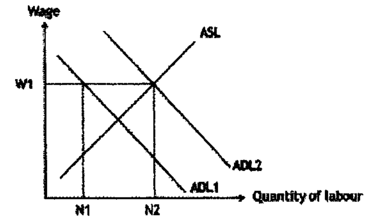
- Extract 6 mentioned that the Fed has been cutting interest rate (EMP) to boost AD to tackle the problems, however it has reached pit bottom (Extract 6 para 2) in which the Fed cannot cut interest anymore. Therefore, the Fed has decided to implement quantitative easing (QE) instead.

Thesis: Explain how QE is effective in solving US problems

- As mentioned in Extract 6, "increase the supply of money and drive more lending to consumers and businesses". This implies that QE drives interest rates lower which leads to a fall in cost of borrowing.
- ***[Explain impact on I]*** Investment projects with lower expected returns will now appear profitable for firms, increasing firms' incentive to invest. The fall in interest rate causes a movement along the MEI curve, leading to an increase in volume of investments undertaken → I increases.
- ***[Explain impact on C]*** When interest rates decrease, the fall in cost of borrowing increases the consumption of consumer durables like cars and houses which are usually financed from borrowing → Cd increases *(Extract 6 para 3: The steeper the Fed rate cut, the more impact it can have on the cost of consumer credit, for big-ticket item purchases").*
- The increase in Cd and I will lead to an increase in AD, ceteris paribus as Cd and I are components of AD.
- Given the problems faced by US, the economy is operating with excess spare capacity.

- AD shifts to the right from AD1 to AD2. At the initial GPL, P1, there is a shortage as firms face a fall in inventories, incentivising producers to step up production. Via the multiplier effect, real output increases by multiplied amount from Y1 to Y2, achieving actual growth. At the same time, the increase in real output means firms will now hire more factors of production such as labour to increase production. This leads to an increase in the aggregate demand for labour, given that the demand for labour is a derived demand. Initially, if there was demand deficient unemployment of N1N2 with wages being sticky downwards at W1, now the increase in ADL from ADL2 to ADL1 will eliminate this.





- ***[Link back to Qn]*** Hence, this policy is effective in solving the problems of falling AD and rising unemployment.

Anti-thesis: Explain how QE may not be effective in solving US problems

- However, QE may not be very effective in solving the above problems because, as suggested in Extract 6 para 1, exports were disappointing, and the recovery may falter if exports fail to increase. This suggests that export revenue may be falling, thereby causing AD to fall. This fall in AD due to fall in X may outweigh the rise in AD due to the increase in Cd and I, leading to a fall in real output overall, thereby causing negative growth and higher demand-deficient unemployment instead.
- Moreover, US has increased both personal income and corporate tax rates in bid to reduce income inequality (Extract 6 para 4). Therefore, despite QE in place, the effect of the increase in tax rates may not allow Cd & I to increase by a large extent. ***[Link back to Qn]*** This in turn would dampen the effect of the increase in Cd & I on AD and hence lead to a smaller increase in real output, growth and employment.

Evaluative Conclusion – Use CORE

Whether quantitative easing is effective in solving US problems depend on:
[Criterion] Root cause of the problems
[Reasoning] The main sources of falling AD and rising unemployment are the fall in Cd and X. Though fall in interest rate is effective in tackling the fall in Cd, it is clear from Extract 6 that consumer sentiments are not much in favour of increased spending and the main reason for this seems to be the current increase in tax. US also depends on exports for boosting growth and employment, which is not directly tackled by the change in interest rates. Due to this, the effectiveness of interest rate policy may be limited.
[Opinion] A better approach for the government would be to employ a cut in tax rates (expansionary fiscal policy) and depreciation of the currency (USD) to directly boost Cd and X, along with the fall in interest rates. Therefore, overall, whether a fall in interest rates will boost growth and employment for US or not depends on the ability of the government to utilise other policies to complement interest rate policy and tackle the main causes of these problems.

Mark Scheme:

Level	Knowledge, Application, Understanding & Analysis	Marks
L2	Answers in this level will give a sound analysis on the workings of quantitative easing in solving US problems (falling AD and high unemployment), making reference to the case material given. • Well-developed balanced analysis on the effectiveness of quantitative easing in solving **both US problems** (falling AD & high unemployment), well-supported by case study evidence. • ***[cap 4m]*** Well-developed balanced analysis on the effectiveness of quantitative easing in solving **either of the US problems** (falling AD or high unemployment), well-supported by case study evidence.	4-6
L1	Answers in this level will give a superficial analysis on the workings of quantitative easing in solving US problems (falling AD and high unemployment).	1-3
	Up to 2 marks for evaluation	
E	Evaluative comments and a reasoned conclusion	1-2

<u>Note</u>: Also accepted if students were to explain rigorously both the direct and indirect impact of falling interest rates → USD depreciates which increases (X-M) and thus AD. Then anti-thesis would probably be on other factors affecting Cd and I.

(e) With reference to data where appropriate, discuss the extent to which de-globalisation is beneficial to different economies. [10]

<u>Introduction</u>

→ Define "deglobalisation": According to Extract 7, deglobalisation refers to countries to "control borders more tightly, build resilient supply chains, pursue self-sufficiency in critical technologies, wean off FDI inflows and inflict trade sanctions on adversaries regardless of global trade rules" i.e., the process of **contracting interdependence and integration** between businesses and countries.

→ Set the context of "different economies": could consider developed countries such as US, developing countries such as China, small and open economy like Singapore, import-reliant and export-driven economies

<u>Thesis: deglobalisation is beneficial to different economies</u>

→ **Topic Sentence: Deglobalisation is beneficial to both developed and developing nations.**

- Developed nations: Correct trade deficit (Table 2 shows that US is persistently having a trade deficit). A trade deficit is often considered to be undesirable because it slows down economic growth of a country.
  To reduce trade deficit, the US government may "inflict trade sanctions on adversaries" (Extract 7, para 2) such as a tariff. A tariff raises the price of imports and reduces the quantity demanded of imports hence import expenditure. This reduces the deficit in the country's balance of trade, ceteris paribus. In addition, the imposition of tariffs increases import prices and causes domestic consumers to switch their consumption towards domestically produced goods. This increases domestic consumption, raises aggregate demand and promotes actual economic growth. National income, output, employment increases by a multiplied amount.
  EV: This is beneficial if the balance of trade deficit is due to high import expenditure. However, such a policy does not treat the root cause of a persistent trade deficit problem which may be due to domestic products being uncompetitive and thus unable to penetrate foreign markets (so that quantity of exports decreases) while domestic households find it cheaper to buy imports

(quantity of imports rise). Instead, it should improve its exports competitiveness via improving the quality of exports to maintain its comparative advantage, thereby solving the root cause of the trade deficit.

- Developing nations: Pursue self-sufficiency (less dependence on FDI inflows and develop domestic critical technologies) → protection of domestic industries to safeguard domestic employment and thus reduces income inequality
  Developing countries that open up may experience increasing income inequality because demand generated by openness helps those with basic and high education and reduces the income share of those with little education. Poor developing nations with the abundance of unskilled labour may experience an increase in inequality as compared to those with a more skilled or educated workforce.
  EV: Deglobalisation is particularly beneficial for a developing country with huge domestic market where "turning inward" may prevent a huge fall in employment should FDI withdraw and thus reduces the extent of income inequality.

OR

→ **Topic Sentence: Deglobalisation is beneficial due to the costs associated with globalisation**

- Effects of freer flow of trade in goods and services: Increased vulnerabilities to volatility in growth, unemployment and BOT
  Extract 5 mentioned that US unemployment rate has increased sharply because the onset of coronavirus pandemic has resulted in trading partners' income falling which thus affects the demand for US goods and services. Consequently, this will lead to a fall in the value of (X-M), hence, AD and less favourable BOT.
  [→ *insert brief macro. adjustment process* → real o/p falls by a multiplied amount resulting in a fall in actual growth → production in these industries have fallen and workers were made redundant and hence a rise in demand-deficient unemployment since labour is derived demand]
- Increased vulnerabilities to external shocks (Extract 7 para 3: Russia's invasion of Ukraine... disrupted energy and food supplies, accelerating price increases for fuel and food around the world) Globalisation increases integration of economies with the world and hence increases its vulnerability to external shocks like oil shocks. Countries will be <u>more prone to contagion effects</u> of other countries' economic crisis. These shocks can be transmitted from one country to another through various channels – trade, financial and mechanical spill-overs. External shocks could affect our economy through the trade channel →

increases the volatility of net X → larger fluctuation in national income and economic growth.
EV: Globalisation may also result in increased vulnerability in external shocks for countries like Singapore which is dependent on imports due to the lack of scarce natural resources. Singapore is *very vulnerable* to imported inflation, as almost all raw materials, intermediate goods as well as final consumer goods are imported from other countries. When there is an increase in the global price of commodities such as oil, Singapore experiences cost push inflation as the cost of importing these goods increases.

<u>Note</u>: Students can also discuss other challenges arising from globalisation, for example, the increase in capital (FDI) flows resulting in pollution or environmental degradation in developing countries due to over extraction of minerals or the risk of overheating when the economy is at the intermediate range of AS facing supply bottlenecks or freer movement of labour will lead to brain drain in developed nations, where local talents (high-skilled workers) choose to work overseas leading to a fall in labour supply (factor quantity and quality) and LRAS, limiting potential growth and etc.

<u>Anti-thesis: deglobalisation is NOT beneficial to different economies</u>

→ **Topic Sentence: Deglobalisation is NOT beneficial to both developed and developing nations. (explain the costs of deglobalisation)**

- In retrospect, with deglobalisation, there may be possible rising inflation and labour shortages as mentioned in Extract 7 para 3, especially because deglobalisation reduces the flow of goods and services as well as labour across economies. So therefore, deglobalisation will exacerbates cost-push inflation in the form of wage-push inflation in economies that are faced with tight labour market.
- Deglobalisation via imposition of import tariffs may invite retaliation by other countries as mentioned in Extract 7 para 3. This is turn may cause US economy to contract, further supported in Table 2 where the fall in export revenue (possibly due to the retaliation by other countries) has corresponded with contraction of the economy.

OR

→ **Topic Sentence: Deglobalisation is not beneficial due to the benefits associated with globalisation**

- Effects of freer flow of trade in goods and services: Increased economic growth, employment, living standards and favourable BOT
Extract 7, para 1 mentioned that "goods have become cheaper, the world has become richer – driving innovation in wealthier nations and raising living standards in many developing economies". Globalisation has benefited both the export-driven and import-reliant economies respectively. For the export-driven economies, globalisation has brought about an increase in export revenue since the size of foreign markets have increased. This in turn will bring about actual growth to the country especially export revenue takes up a large proportion of the AD. With the increase in AD, demand-deficient unemployment decreases. At the same time, it will improve both the material *(assuming population growth remains unchanged)* and non-material SOL *(decreased crime rates and social unrest)* of the export-driven economies (Extract 7 para 1 "successful integration has tripled the size of the global economy and lifted 1.3 billion people out of extreme poverty"). Additionally, import-reliant economies will also get to access cheaper goods (factor inputs or final consumer goods) which lowers the cost of living in these import-reliant economies, as well as keeping imported inflation at bay.

<u>Evaluative conclusion</u> – Use C.O.Re
The extent to which deglobalisation is beneficial to different economies depends on:

- ***[Criterion] Nature of economy / Degree of government intervention***
In light of the above discussion, *countries with a huge domestic market* may choose deglobalisation via strengthening their domestic market (rely more on domestic C and weaning off FDI inflows) while still remaining rather open to globalisation and trade.
[Opinion and Reasoning] One example is China. With a large domestic economy and an abundance of resources, China has been trying to rebalance their economy to reduce their reliance on exports and foreign investments. This will help to address the challenges of being vulnerable to recession in trading partners (volatility in growth) and external shocks (volatility in GPL (imported inflation). The rebalancing of the economy towards strengthening domestic market could be achieved through demand-management policies such as expansionary fiscal and monetary policies. On the other hand, *small and open countries* such as Singapore is unable to adopt this approach due to the reliance on external demand as an engine for growth. Furthermore, Singapore's domestic market is relatively small, consumption expenditure can only increase by a limited amount, limiting the effectiveness of using expansionary demand-management policies to "turn inward".

- ***[Criterion] Context and time period in consideration***
[Opinion and Reasoning] In view of escalating trade wars, deglobalisation may be a viable short-term measure to cope with problems of loss in export revenue, comparative advantage and unemployment. However, *deglobalisation is not beneficial to all over the long term* as it may invite greater retaliation and world multiplier effect which will further escalate trade wars and further erode any benefits that may be accrued from deglobalisation in the short run. Moreover, deglobalsation may also cause complacency and breed inefficiency over the long term which reduces society's welfare.

<u>Note</u>: accept any well-reasoned evaluative judgement.

Mark Scheme:

Level	Knowledge, Application, Understanding & Analysis	Marks
L2	Answers in this level will give a sound analysis on the benefits and costs of deglobalisation onto different economies, making reference to the case material given. • Well-developed balanced analysis of **both** the benefits and costs of deglobalisation on different economies, making reference to the case material given. • ***[Cap 5m]*** Well-developed one-sided analysis of **either** the benefits or costs of deglobalisation on different economies, making reference to the case material given.	4-6
L1	Answers in this level will give a superficial analysis on the effects of deglobalisation without impact on different economies. • ***[Cap 4m]*** Well-developed one-sided analysis of **either** the benefits or costs of deglobalisation only to **one** economy (US or China).	1-3
	Up to 2 marks for evaluation	
E2	For an answer that give judgement on the extent to which deglobalisation is beneficial to different	2-3

	economies, making reference to the case material given.	
E1	For an answer that gives an unsupported evaluative statement(s) that addresses the question.	1

[Total: 30]

TMJC 2022 H2 Prelim Paper 2
Suggested Answers

1 The COVID-19 pandemic brought about a global recession and lockdowns. Many people had sought to improve their mood during lockdowns by enjoying a cup of coffee. On the other hand, prices of coffee beans rose sharply due to rising freight costs and dry weather in Brazil, one of the world's largest producers of coffee beans.

Source: Various

(a) Explain the supply and demand factors that could have led to the sharp rise in price of coffee beans. [10]

(b) Assess the significance of different elasticities of demand in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages. [15]

Part (a):

Introduction:
Define market mechanism:
The market mechanism works through the interaction of the market forces of demand and supply to determine the equilibrium price of coffee beans.

Definitions of key economic terms
- The demand for coffee refers to the quantity of coffee that consumers are willing and able to consume in a given period of time at various prices.
- The supply for coffee refers to the quantity of coffee that the producers are willing and able to offer to sale in a given period of time at various prices.

Using the market adjustment process, explain how the changes in demand and supply impacts the equilibrium price (Explanation of DD-SS diagram):

- **[Initial equilibrium]** Initially, the market is in equilibrium at E_1 at the intersection of demand (D_1) and supply (S_1). The initial equilibrium price and quantity is at P_1 and Q_1 respectively.

- **[Identify and explain the shifts]:**

  - **[Demand Factor]:** Global recession due to COVID-19 pandemic → fall in income → fall in purchasing power → fall in demand for coffee, assuming that coffee is a normal good. As cocoa bean is a factor input used to produce coffee, the demand for cocoa bean is derived from the demand of coffee. Hence, a fall in demand for coffee → fall in demand for coffee beans. OR "Many people had sought to improve their mood during lockdowns by enjoying a cup of coffee" → change in taste and preference in favour of coffee → increase in demand for coffee. As cocoa bean is a factor input used to produce coffee, the demand for cocoa bean is derived from the demand of coffee. Hence, an increase in demand for coffee → increase in demand for coffee beans.

  - **[Supply Factor]:** Rising freight costs → increases the unit cost of production → lower potential profit per unit → fall in supply for coffee beans. OR Dry weather in Brazil → fall in supply as the production process is disrupted.

- **[*Make a judgement on the relative magnitude of the shifts] + Draw Diagram**

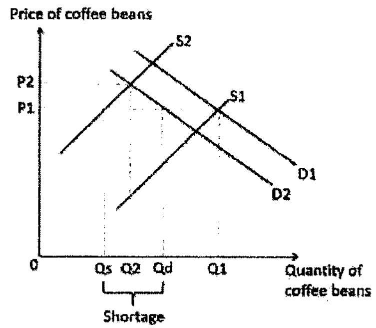


Figure 1

The fall in supply is greater than the fall in demand as there is a sharp rise in price of coffee beans as seen in Figure 1. This could be because freight costs account a significant proportion of the costs of producing coffee beans./This could be because the dry weather affected Brazil which is major producer of coffee beans in the world. Also, as coffee could be a necessity for most people, the 0<YED<1, this means that for a given fall in income, there would only be a less than proportionate fall in demand for coffee and hence coffee beans.

- **[Identify the shortage/surplus]** At the original price level P_1, as the fall in supply is greater than the fall in demand will create a shortage of QsQd as quantity demanded exceeds quantity supplied.

- **[Identify the change in price]** This exerts an upwards pressure on prices as buyers offer higher prices for the limited supply. As price rises, quantity demanded falls while quantity supplied rises. This continues until the shortage is completely eliminated at the new equilibrium E_2.

- **[State the new (final) equilibrium]** A fall in demand results in a decrease in price. A fall in supply results in an increase in price. Hence, the impact on equilibrium price is indeterminate. As the fall in supply is greater than the fall in demand, equilibrium price will increase to P_2.

<u>Use a relevant elasticity concept to address the question on "sharp rise in the price of coffee beans":</u>

- Demand for coffee beans is likely to be price inelastic with PED<1 due to the lack of substitutes for coffee beans. It is an essential factor input used in the production of coffee. Hence, for a fall in supply, there would be a sharp rise in price of coffee beans.
- Supply for coffee beans is likely to be price inelastic with PES<1 in the short run. This is because it takes time for coffee plants to grow and to harvest the coffee beans. Hence, for a rise in demand, there would be a sharp rise in price of coffee beans.

Conclusion:

Fall in supply due to rising freight costs and bad weather in Brazil, accompanied with demand that is price inelastic would explain the sharp rise in price of coffee beans.

<u>Marking scheme</u>

	Knowledge, Application, Understanding and Analysis	
L3	Well-elaborated answer that uses demand-supply analysis to explain how the events cause supply and demand to fall in the market for coffee beans, with explanation of the diagram and market adjustment process as well as the use of elasticity concepts to explain the sharp rise in price of coffee beans. Shows application to the context.	8 - 10
L2	For an answer that shows some understanding/application of how the events affect demand and supply in the market for coffee beans, with an underdeveloped explanation of the diagram, market adjustment process and the elasticity concepts. For an answer that only explains the impact of how the event affects either demand or supply. Limited application to the context.	5 - 7
L1	For an answer that shows a descriptive knowledge of demand and supply in the market of coffee beans. And/or an unexplained diagram.	1 - 4

Part (b):

<u>Introduction</u>
Total revenue refers to the product of price and quantity of a good. The revenue earned by both producers of coffee beverages and other related goods are directly or indirectly affected by changes in the price of coffee beans and the concepts of PED, YED and XED will be significant in explaining the likely effects on revenue due to the sharp rise in price of coffee beans.

<u>Development 1:</u>

<u>Thesis: PED is significant in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages</u>

- **[Explain the impact of a sharp rise in price of coffee beans on the SS of coffee beverages]** Since coffee beans are factors of production for coffee beverages, the sharp rise in price of coffee beans → increase in unit cost of production for coffee beverages → potential profits per unit falls → profit motivated producers will cut down on production of coffee beverages at every price → fall in supply of coffee beverages → lead to an increase in equilibrium price and a fall in equilibrium quantity for coffee beverages. The change in total revenue is dependent on the relative changes in price and quantity which can be determined by the price elasticity of demand.
- **[Define PED] Price elasticity of demand (PED)** measures the degree of responsiveness of quantity demanded of a good to a change in the price of the good itself, ceteris paribus.
- **[Explain the PED value]** The numerical sign of the price elasticity of demand is negative due to the inverse relationship between the price and quantity demanded of the good.

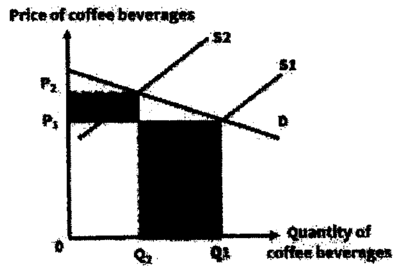


Figure 2:

- **[PED>1]** Demand for coffee beverages sold at Hawker Centre is price elastic due to availability of close substitutes as there is highly likely to be

other stalls selling similar coffee beverages in the Hawker Centre or at Food Court nearby. Consumers are very responsive to price increase as they can easily switch to purchasing other readily available substitutes. This means that a given **increase in the price** of coffee beverages → there will be a **more than proportionate fall** in the quantity demanded, ceteris paribus. Thus, the increase in total revenue due to increase in price (Area A) is less than the decrease in total revenue due to the fall in quantity demanded (Area B) as seen in Figure 2. Overall, total revenue will decrease.
    - **[PED<1]:** The demand for artisanal coffee could be price inelastic due to the lack of close substitutes. For example, Apartment Coffee's coffee beverages not only sell unique coffee beverages but also provide a unique experience for the consumers. Consumers get to watch the baristas in action and interact with them over a cup of coffee. This means that for a given **increase in the price** of coffee beverages, there will be a **less than proportionate fall** in the quantity demanded, ceteris paribus. Thus, the increase in total revenue due to increase in price is greater than the decrease in total revenue due to the fall in quantity demanded. Overall, total revenue will increase.
- **[Link back to question]** Hence, PED is significant in determining changes in total revenue for producers of different types of coffee beverages.

Anti-thesis: PED is not significant in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages

- PED is not significant in explaining the impact of the above events on the revenue earned by producers of coffee beverages if demand factors are more significant than supply factors in explaining the rise in price of coffee beverages.
- For example, there could be a large change in taste and preference towards coffee during the COVID-19 pandemic.
- OR
- For example, for luxurious coffee such as Bacha coffee beverage, a fall in income would lead to a more than proportionate fall in demand for Bacha coffee beverage. Hence, demand factor and hence YED may place a more significant factor in explaining the impact on total revenue than PED.

Development 2:

Thesis: YED is significant in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages

*Students need to note that their depth of elaboration would depend on whether they have explained how a change in income impacts demand of coffee in (a).

- As there is a global recession due to COVID-19 leading to a fall in income, YED is significant in explaining the impact on the revenue earned by producers of different types of coffee beverages.

- **[Define YED] Income elasticity of demand (YED)** measures the degree of responsiveness of demand of a good to a change in income, ceteris paribus.
- **[Explain the YED value]** The numerical value of income elasticity of demand may be positive or negative.
    - Inferior goods have negative income elasticity of demand. For example, coffee beverages sold in hawker food centres. Hence, with the global recession due to COVID-19, as income decreases the demand for the coffee beverages sold in hawker food centres increases, ceteris paribus. Hence, for hawker food sellers who sell coffee beverages they may experience an increase in total revenue or a smaller fall in total revenue.
    - On the other hand, coffee beverages such as Starbucks or Bacha coffee beverages are considered as normal goods with positive income elasticity of demand i.e. as income decreases the demand for the good decreases, ceteris paribus.
        - **[YED>1]** For Bacha coffee beverages that are known for its hand-roasted beans, bespoke grinds and elegant service, which are deemed as a luxury good, **YED>1** and demand is income elastic. Hence with recession and a **fall in income**, there will be a **more than proportionate** decrease in the demand of the good. Hence, for producers of Bacha coffee beverages they will experience a large fall in total revenue.
        - **[YED<1]** For Starbucks coffee beverages which are deemed with a higher degree of necessity, **YED<1** and demand is income inelastic. Hence with a recession and a fall in income, there will be a **less than proportionate** decrease in the demand of the good. Hence, for producers of Starbucks coffee beverages they will experience a smaller fall in total revenue.

Anti-thesis: YED is not significant in explaining the impact of the above events on the revenue earned by producers of coffee beverages

- YED is not significant in explaining the impact on the revenue earned by producers of coffee beverages as income factor is not the most significant factor that influences demand for coffee.
- There could be other more significant factors influencing the demand for coffee beverages.
- Example: One of the major drivers of demand in the coffee beverage market is the rising popularity of coffee among the millennials. This means that change in taste and preference in favour of coffee beverages could be a more significant factor affected demand and hence total revenue earned by producers of coffee beverages. Hence, YED is not a significant in explaining the impact on total revenue.

Development 3:

XED is not significant in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages

- **[Define XED]** Cross elasticity of demand (XED) of other beverages with respect to the price of coffee beverages measures the degree of responsiveness of demand of another beverage to a change in the price of coffee beverages, ceteris paribus.
- XED is not significant in explaining the impact of the above events on the revenue earned by producers of different types of coffee beverages as coffee beans are factor inputs used in the production of coffee beverages for all producers.

Conclusion/Synthesis:

[Criterion: Factors affecting change in demand and supply/time period] The significance of the different elasticities of demand is dependent on the factors affecting the change in demand and supply. If the main reason for the change in price of coffee beverages is due to change in price of coffee beans, PED is the most significant factor in the short run. As coffee beans take up a large proportion of the cost to produce coffee beverages, PED of coffee beverages is most relevant in showing the effects a decrease in supply of coffee beverages on total revenue of producers of coffee beverages in the short run. Over time, the impact of production disruptions and rising freight costs may be reduced as countries revert to normalcy with more flights and better management of COVID-19 situation and coffee beans farmers adopting more efficient methods of production/more resilient coffee beans. Thus, PED may be less significant in the long run. If the change in price of coffee beverages is largely due to a change in income, then YED is the most significant factor.

[Criterion: Extent of problems in the use of elasticity concepts] However, in reality, elasticity data may not be accurately computed. In addition, internal changes (e.g., coffee beans farmers or coffee beverages producers learn more cost-effective methods of production) or changes to the firm's external environment (e.g., more substitutes to the firm's products appear in the market) may occur. Therefore, such data may also change from time to time, making it harder to rely upon and therefore less significant to determine the changes in total revenue. Moreover, ceteris paribus assumption may not hold in reality. The impact on total revenue is also dependent on a variety of factors such as changes in demand (e.g., due to changes in health trends) and changes in supply (e.g., due to firm strategies).

Mark scheme:

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Well-developed analysis of the changes in total revenue for the producers of different types of coffee beverages, with application of different elasticity concepts to clearly demonstrate significance.	8-10
L2	An underdeveloped analysis of the significance of various elasticity concepts. OR Limited scope of elasticity concepts/markets considered in analysis.	5-7
L1	For an answer that shows some knowledge of changes in the market and/or elasticity concepts. Mere listing of points and definitions.	1-4
	Evaluation	
E3	Provides analytically well-reasoned judgement on the relative significance of elasticity concepts in determining changes in total revenue on producers of different types of coffee beverages.	4-5
E2	Makes some attempt at a judgement on the relative significance of elasticity concepts in determining changes in total revenue on producers of different types of coffee beverages.	2-3
E1	Gives an unsupported statement on the relative significance of elasticity concepts.	1

2 Industries are being disrupted by new technologies. Travel websites have made in-store travel agencies redundant while online streaming giants such as Netflix and Disney+ have replaced traditional television. Industrial robots and the possibility of producing goods on demand via 3D printing is likely to diminish the need for storage and inventory management in manufacturing.

Adapted from: www.investopedia.com, 23 Jan 2022

(a) Using economic theory, explain how the market structure in which online streaming giants such as Netflix operate would influence the way firms compete. [10]

(b) Discuss the view that disruption by new technologies is more likely to be a threat, rather than an opportunity, to the existence of firms in an industry. [15]

Suggested answer to part (a)

Introduction:

To consider the market structure which best describes the characteristics of the online streaming market in Singapore, we would need to look at the number and size of firms (market share of the firms), nature of product, barriers to entry, their ability to set prices and the presence of long-term profits of these firms.

Development: The oligopolistic industry describes the characteristics of the online streaming industry.

An oligopoly has few large firms dominating market with high barriers to entry that deters entrants and this could explain how each firm would have significant market share. The online streaming industry is hence likely to be an oligopoly based on the market share/market concentration ratio where the largest 5 firms account for more than 50% of the market share and that implies that there are substantial barriers to entry. For instance, HBO Max has 12% of the streaming share in the United States, while Hulu and Disney+ (both owned by Disney) dominate 13% market share each. Amazon Prime Video comes in second with 19% share. Netflix remains in first place with 25%.

There are high barriers to entry to in the online streaming industry telco. Barriers to entry are anything that prevent the entry of new firms into an industry, thereby limiting the amount of competition faced by existing firm. An example will be financial barriers to entry which comprises high start up costs. For instance, to deliver streaming services, these firms need to ensure that the technical and satellite infrastructure is set up to ensure that the streaming is seamlessly transmitted. There are also legal barriers such as the need to obtain license to stream and the complexity could differ depending on the country and governance. Furthermore, there are firm-created barriers where new firms will need to incur substantial amount of advertising funds for brand establishment so as to differentiate

themselves from the incumbents. These barriers to entry may deter new firms from entering the industry.

The high barriers to entry result in the market dominated by a few large firms like Netflix, Disney+. With significant market share, these firms possessed high market power with the ability to set prices where they would be able to restrict output to raise price. This small number of firms reduces the substitutability of the products of each firm hence they each face a steep downward sloping demand curve where the PED value is highly price-inelastic.

Development 1: Explain how the market structure (characteristic of mutual interdependence) would influence the way firms compete in terms of pricing decisions.

1. **Collusive behaviour [Explicit collusion]**

The small number of firms would result in the action of one firm having significant effect on its rivals hence they are **mutually interdependent.** The online streaming industry can either compete or collude. Their behaviour will affect the pricing decisions of the firms. If the firms in the industry collude, they will act like a monopoly and set prices and output at profit maximizing level where MC (marginal cost) =MR (marginal revenue), and where MC cuts MR from below. As such, demand is relatively price inelastic (oligopolistic market structure), the demand curve would be downward sloping and the firm is able to charge a higher price, P1. The firm maximises its profits at Q1 because at any other level of output, it can adjust its level of production to increase profits further. It is only at Q1 where MC = MR that it maximises its profits as it cannot adjust its production level in any way to increase its profits further. Therefore, the firm's output will be Q1, and price would be P1, derived from the demand curve when output is Q1.

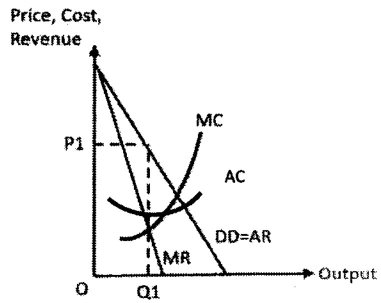


Figure 1

2. **Tacit collusion**

Another example of collusion is the price leadership model. When costs continue to rise throughout the market, prices must rise too. Pressure will build up within the industry for a price change, but each individual firm will be reluctant to be the first to raise the price. Each firm will fear the loss of its consumers if other firms do not follow the price increase.

Often the other firms in the industry look to one leading firm to make the first move. This firm is called the price leader. Firms in the oligopoly will follow the pricing decisions of the firm chosen to be the price leader. Generally, firms do not get together and agree to follow the leader; the practice develops over the course of time.

The price leader can set its price (as if it were a monopoly), at a point that maximises its own profits. Other firms, which individually could have little influence over the price anyway, would take the price set by the dominant firm as given and produce accordingly (based on their individual cost curves). Thus, the leader will initiate price changes which will then be followed by all the other firms in the oligopoly.

3. **Competitive pricing behaviour**

The competitive **oligopolist** is likely to face a **kinked demand curve**. The price and output of the oligopolist is predetermined at the kink. As there is a high level of mutual interdependence, each oligopolist assumes that its rival would match any price decreases it makes but not follow it in any price increase. This is because if a firm reduces its price, rivals will follow suit to match the price cut to prevent losing customers to the first firm. If the firm increases its price, rivals will not follow suit since by doing so they can expect a gain of customers from the first firm.

Therefore, an increase in price from OP to OP1 causes a more than proportionate fall in quantity demanded as the oligopolies is likely lose a large number of consumers, Q to Q1 to its rivals. The cut in price will brings about a less than proportionate increase in quantity demanded from Q to Q2. As a result, **prices tend to stay rigid** at P for the oligopoly, even if costs conditions change. This is evident on how prices for online streaming plans are similar and these firms tend to follow price changes of their rival firms.

Development 2: Explain how the market structure (high barriers to entry and supernormal profit) would influence the way firms compete in terms of pricing and output decisions.

While oligopolistic firms like Netflix prefer to keep prices similar to other rival firms due to mutual interdependence, they may continue to compete in other ways to differentiate themselves from rival firms. With high barriers to entry to protect their supernormal profits, Netflix would have the ability to engage in research and development and conduct extensive competitive advertising to differentiate themselves from the rest.

For example, Netflix has been innovative in creating new features continuously on its application. Short video content type Netflix introduced a full-screen feed feature of hilarious teasers on mobile devices earlier in 2021 to feature short video content type

which is currently ruling on social media platforms like TikTok etc. Funny clips from new movies, series, sitcoms and stand-up acts were introduced so that users would be able to watch them immediately or save the suggestions on their watch list. These non-price strategies could enhance the product differentiation of Netflix's online streaming services and increase the demand (and AR) through a favourable change in taste and preference for its services and reduce the degree of substitutability (XED value falls) and/or to make the demand more price inelastic (so that they can increase the price of their products without the fear of a drastic fall in quantity demanded).

Hence, the market share for Netflix may increase and there will be a greater ability for Netflix to set higher prices in future should demand be more price inelastic.

Conclusion:

Hence, the online streaming industry is considered as a competitive oligopoly based on its characteristics. This will determine the way they compete, in terms of pricing and output decisions, which then influence their performance.

Level	Knowledge, Comprehension, Application and Analysis	Marks
L3	For a developed response that addresses how the market structure in which online streaming giants such as Netflix operate in would influence the way these firms compete.	8-10
L2	For a less developed response on how the market structure in which online streaming giants such as Netflix operate in would influence the way they compete. The answer may lack sufficient depth in linking clearly to the characteristics of the market structure and how they would compete in these firms.	5-7
L1	For an answer that lists points or has conceptual errors	1-4

Part (b)

Introduction

Disruptive technologies could bring both beneficial and negative consequences to different firms (MPC vs Oligopolistic firms for example) based on the characteristics of their market structure and the strategies they use to overcome these impacts. Firms that faced a reduction in total profits and possibly earn subnormal profits because of disruptive technologies, may be more vulnerable to closures and hence these disruptions could more likely be a threat to their existence.

For firms to survive in the long run, a firm's TR must be at least equal to TC. While operating its business in the SR, the firm's TR must be at least equal or exceed its TVC for it not to shut down.

Body paragraph:

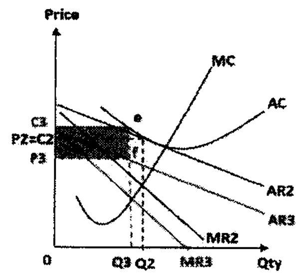
Thesis: Disruptive technologies is more likely to be a threat to the existence of some firms

1. **Thesis 1: Disruptive technologies could cause a fall in AR which may threaten the existence of some firms**

Disruptive technologies may reduce demand for goods and services from firms because there are opportunities for consumers to seek cheaper alternatives online (e.g digital financing vs traditional banking to access cheaper funds) or to self-manufacture (via 3D printing) or consumers booking online for their own flights instead of going through a travel agent. Hence, prices of goods and services from these alternatives due to disruptive technology are relatively cheaper. Demand will also be more price elastic because there are more substitutes that are available.

Diagrammatical analysis:

Disruptive technologies → fall in demand for goods and services assuming normal goods → reflected by a leftward shift of firm's AR and MR curves to AR3 and MR3 respectively → assuming firms seek to profit max where MC=MR, the new eqm price and output will be at P3 and Q3 respectively. Firms will experience a fall in profits in the SR.



Assuming firms (oligopolistic & monopolistic competitive (MPC) firms) are currently making normal profits in the SR, the fall in AR & MR would result in firms making subnormal profits (C3efP3).

Link to question (existence → shut down condition): Firms will shut down in the short run if AR < AVC to minimise losses. But should AR > AVC, firms will continue production to minimise losses. Hence, the fall in AR may affect their ability to survive especially if they are only earning normal profits.

2. **Thesis 2: Disruptive technologies could threaten the existence of small firms (like MPCs) due to the proportion of AFC relative to AVC.**

The following reasons could explain how MPC firms could be more vulnerable to closure from disruptive technologies compared to oligopolistic firms (or firms with more market dominance).

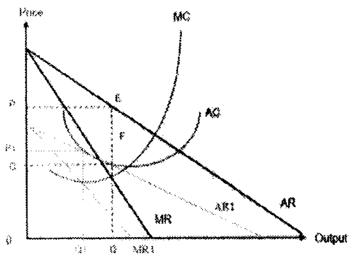
1. Proportion of AFC relative to AVC

Perfectly competitive (PC) or MPC firms are more vulnerable to closures given the greater proportion of AVC relative to AFC. An MPC firm is more likely to face a greater proportion of AVC relative to its AFC. AFC is relatively higher for oligopolistic/monopolist firms due to the huge capital requirements needed to start production. This thus accounts for the relatively higher set-up costs.

Link to question (shut down condition in the short run): Thus, a slight fall in AR would imply that it is more difficult for firms facing high levels of competition to be able to cover their AVC. As such, they are more vulnerable to closure in the short run if there is a fall in demand due to disruptive technologies

Link to question (shut down condition in the lonf run): Meanwhile, in the long run, as there are no fixed costs, firms earning subnormal profits due to the fall in demand for their goods and services will have to shut down as AR< AC. PC or MC firms are more vulnerable to closure in the LR given that they can only earn normal profits due to the absence of BTE (or very low BTEs for MPC firms).

[Briefly explain LR equilibrium for MPC firms] If existing MPC firms are earning supernormal profits in the SR, this attract new firms into the industry due to the relatively lower barriers to entry → they will compete away customers from existing firms. Therefore, each existing firm will now have a smaller market share and hence face a smaller demand for its product → The demand (AR) curve of the firm will shift leftward and become relatively more price elastic due to the existence of more substitutes. Supernormal profit is thus reduced → AR continues to fall and becomes relatively more price elastic until it is tangent to the LRAC curve and normal profit is made. When the firms in monopolistic competition make only normal profit, there is no incentive for new firms to enter the market. Long run equilibrium is attained. The firm produces output OQ1 & charges a price of OP1 which allows the firm to make only normal profits.



Link to the question: As firms in highly competitive industries make only normal profits in the LR, a fall in the firm's AR & MR would imply that these firms are now earning subnormal profits and would have to shut down especially if the fall in demand due to disruptive technologies continue to **persist in the LR.**

EV: However, anti-competitive laws and high taxes may deter firms in less competitive markets from making large supernormal profits even if they are able to do so. Hence, in such instances, these firms may not necessarily have an advantage over other firms in highly competitive markets.

3. **Thesis 3: Disruptive technologies could threaten the existence of small firms (like MPCs) due to the inability to invest in R & D.**

In addition, an MPC/PC firm is more vulnerable to closure due to its inability to influence unit COP/ demand through investing in R&D/ advertising as it lacks the ability (as they only earn normal profits in the LR) to do so. As explained earlier, unlike an MC/PC firm, an oligopolistic firm is able to retain supernormal profits in the LR due to the presence of BTE. Due to lack of LR supernormal profits, an MPC firm does not have the resources to conduct R&D and extensive advertising to ↑demand to mitigate the ↓demand due to disruptive technologies → more vulnerable to closure which may threaten their survival [Link to the Q]

Anti-thesis: Disruptive technologies is more likely to be an opportunity to some firms

1. **Anti-thesis 1: Disruptive technologies can be an opportunity for some firms to increase its profits due to the presence of high BTEs.**

However, an oligopolist/monopolist is able to retain supernormal profits in the LR due to the **presence of high BTE**. As such, a fall in AR & MR would imply that these firms are now earning lesser profits. Even if these firms earn subnormal profits currently due to a fall in demand from the emergence of disruptive technologies, they are able to tap on past profits to help them cover the costs for the duration.

In addition, the past supernormal profits protected by high barriers to entry can be used by these firms to engage in R and D. Larger oligopolistic firms like Samsung can extract benefits from disruptive technologies and extensively engaged in R and D. For instance, Samsung has been leading the industry by introducing hardware (HW) and software (SW) that break the existing mold every year for the past 12 years since the unveiling of the first Galaxy S device in 2010. Some of the most game-changing so far include a large-screen smartphone with excellent immersion; a smartphone-stylus combination that enhanced productivity and creativity; and the world's first dual-pixel camera technology. In addition, the Galaxy Note series, Galaxy tablet series and various wearable devices including Galaxy Watch and Galaxy Buds have contributed to the wider Galaxy ecosystem that has so transformed user's lifestyles [examples].

This has boosted the demand for Samsung products (hence increasing their AR) over the years and enabled them to gain a greater market share where they have been thriving in profits while tapping on disruptive technologies.

EV: It depends on how these large firms could make use of their existing supernormal profits to engage in research and development as product and process innovation may not always be successful.

2. **Anti-thesis 2: Disruptive technologies may benefit some first as there could be cost savings for these firms**

Technological advancement can reduce costs of firm. Technology improvement has increases computer processing speed and storage capability eg cloud storage, allowing firm to manage larger amount of information at a much reduced costs. Improvements in communication made possible by the internet and devices like laptops and smart phones has streamline the communication processes firm has within and outside with suppliers and customers. The ability to tap on technology to mass produce has also allow firms to enjoy economies of scale. These can increase its efficiency in work processes and reduce units cost. In addition, technological advancement in the form of automation has reduced the need for labour in manufacturing process; significantly reducing costs for many manufacturing and logistic firms. The firm will see a downward shift of its AC and MC curves. The firm's supply rise at each output level. Thus, technological advancement can reduce costs for firms in many aspects for firms of different sizes and industries.

Link to the question: Hence, with a fall in costs, this might be an opportunity for the firms to earn greater profits, assuming that there is no change in AR. As explained earlier, firms will consider their variable costs in both SR and LR (where all costs are variable) to decide if they are able to survive.

EV: However, it depends heavily on how these firms utilizes the disruptive technologies to their advantage. Firms that are responsive to adopt these technologies may find increasing costs in the SR at first from the investment in technology but could experience long run unit cost savings from the greater scale of production. Conversely, firms that are more resistant to adopting technology may be faced with higher unit costs subsequently.

3. **Anti-Thesis 3: Disruptive technologies may not be a threat to the existence of MPC firms compared to firms in less competitive industries because there are other factors affecting their survival.**

One factor that influences the vulnerability of a firm to closure is the nature of the good sold:

- Firms selling normal goods where YED>0, during a recession where there is ↓income → ↓demand → subnormal profit → more vulnerable to closure
- The **magnitude of YED determines the threat to existence** → the greater the magnitude → the greater the ↓demand → more likely to earn subnormal profit → greater degree of threat to existence
- However, for firms selling inferior goods where YED is negative, during times of recession → ↓income → ↑demand → ↑supernormal profit → not impacted negatively by recession
- This is regardless of the level of competition faced by the firm, hence it is dependent on the state of the economy as well as the type of good that they sell.
- Hence, even in light of disruptive technologies, there are also other factors that could be a threat or an opportunity to the existence of different firms.

Conclusion

- **[Address Question]** The degree of competition, among other factors, plays an important role in influencing profit levels and therefore a firm's vulnerability to closure due to disruptive technologies.

- **[Evaluation - other strategies]** Therefore in view of disruptive technologies, the existence of firms that are less likely to be threatened by it would be those that have made conscious effort to diversify the products that they sell, as they are

able to use the profits made from the sale of certain goods to offset losses incurred from some of the other goods that have falling demands. Government intervention may also aid in helping firms adapting to disruptive technologies and this could then reduce the threat to the firm's existence. For instance, in Singapore, the government offers the Productivity Solutions Grant (PSG) to help local firms who are keen on adopting IT solutions and equipment to enhance their businesses.

- **[Evaluation – theory of contestable markets]** In reality, firms may not face actual competition but may still face potential competition. Thus, even if there were only a few firms facing little actual competition → they may only be able to earn normal profits for fear of potential entrants. Thus, it is also crucial to consider the degree of potential competition and not merely actual competition in the market. Hence, this might affect monopolies who could be more severely affected by disruptive technologies especially if they are not quick to adapt to new IT solutions and digitalisation.

Marking scheme

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	Well-developed and balanced analysis of how different firms' existence could be affected by disruptive technologies.	8-10
L2	An underdeveloped analysis of how different firms' existence could be affected by disruptive technologies. OR one -sided analysis	5-7
L1	For an answer that shows little analysis of the impact on firms. Mere listing of points and definitions.	1-4
	Evaluation	
E3	Provides analytically well-reasoned judgement on the how different firms' existence could be affected by disruptive technologies.	4-5
E2	Makes some attempt at a judgement on how different firms' existence could be affected by disruptive technologies.	2-3
E1	Gives an unsupported statement.	1

3 Theory suggests that resources can be allocated efficiently by the price mechanism, yet government intervention is evident across different markets.

(a) Explain how the price mechanism can allocate resources efficiently and why government intervention is advocated where factor immobility is present. [10]

(b) Discuss the extent to which government intervention in different markets is likely to be successful in achieving the microeconomic objectives of a government. [15]

Part (a)

Introduction

In a market economy, resources are allocated based on the ***price mechanism***. However, the price mechanism works assuming the 2 conditions hold. Firstly, there is a perfectly competitive market, and secondly there are no externalities.

Development

1. Explain how the price mechanism works to allocate resources efficiently

The mkt is currently in equilibrium at point E1. Assume that the demand for coffee has ↑ given a change in taste & pref in favour of coffee to D2. Consumers signal ↑ dd for coffee by casting more dollar votes.

This will create a shortage of Q1Q3 at the original price, P1, which leads to an upward pressure on price. The ↑ in price signals to coffee producers to produce more as the upward pressure on price reflects higher profits per unit → qty ss ↑.

More resources will flow into the coffee industry. In the LR, the higher profits will also attract new firms into the industry → ↑ ss of coffee.

↑ price of coffee → csrs who are unwilling or unable to pay the higher price will be rationed out of the mkt → ↓ qty dd for coffee

[Allocative Efficiency] Thus, in the LR, a mkt economy operating in competitive mkts will result in allocative efficiency, whereby the right amount of the right type of goods is produced & society's welfare is maximised.

[Productive Efficiency] Moreover, in the mkt economy, producers are in competition with each other for the spending votes of csrs as csrs will buy from producers which offer the lowest price → thus producers are incentivized to produce at lowest cost if they are to survive in the mkt in the LR → thus in the LR, the mkt economy operating in competitive markets results in productive efficiency as firms uses least cost method of production.

2. Explain how factor immobility leads to market failure

However, factor immobility is one example of how distortions in the markets prevent the price mechanism from allocating resources efficiently, resulting in welfare loss.

- Suppose there are changes in dd patterns from basic electrical items to sophisticated bio-medical gds as consumers become more aware of the health benefits.
- As labour is a derived dd:
  - ↑dd for pharmaceutical workers *(sunrise industry)*
  - ↓ dd for workers in the electronic industry *(sunset industry)*
- Due to occupational immobility, workers retrenched from the electronics industry are willing but unable to take up the jobs in the pharmaceutical industry due to the mismatch of skills.
- They will become structurally unemployed & would not be able to contribute to increasing production in the pharmaceutical industry.
- Allocative inefficiency: Labour immobility → underproduction of pharmaceutical gds due to an under-allocation of resources to the pharmaceutical industry → allocative inefficiency.
- Productive inefficiency: Due to the lack of skilled labour in the mkt for pharmaceutical gds → ↑wages for skilled labour → ↑ unit COP of pharmaceutical firms → prevents firms from using the least cost method of production → productive inefficiency.

Hence, labour immobility gives rise to both allocative and productive inefficiency & causes the market to fail.

Conclusion

Thus, due to factor immobility, the government will need to intervene to correct the market failure.

Level	Descriptors	Marks
L3	For a thorough & well-developed explanation using economic concepts & appropriate eg on how the price mechanism works to allocate resources efficiently <u>AND</u> how factor immobility (geographical/ occupational immobility) may lead to mkt failure.	8 – 10
L2	For an <u>under-developed explanation</u> on how the price mechanism works to allocate resources efficiently and/or how factor immobility (geographical/ occupational immobility) may lead to mkt failure. Answer may contain some conceptual errors but appropriate economic concepts and analysis used. Some examples provided but not well-explained.	5 – 7
L1	For an undeveloped answer that shows lack of knowledge of how the price mechanism allocate resources efficiently and/or how factor immobility leads to market failure . Answer contains a few valid points, which are mostly irrelevant and erroneous.	1 – 4

Suggested Ans for (b)

Discuss the extent to which government intervention in different markets is likely to be successful in achieving the microeconomic objectives of a government. [15]

Introduction

The government intervenes in different markets in order to ensure an efficient allocation of resources. The government would also intervene to address the distributional problem of inequity. Inequity refers to an allocation of resources that is considered to be unfair.

Development

Thesis: Govt intervention is successful in achieving the microeconomic objectives of a govt

1. **Explain how govt intervenes in the case of factor immobility – to address inefficiency & inequity**

Government may implement interventionist supply-side policy via providing or subsidizing education and training programmes.

Assuming workers are receptive, education & retraining will result in an increase in labour productivity & thus labour mobility as workers are more employable. This leads to a fall in supply of low-skilled workers as they leave the industry. As these workers move to the sunrise industries, this results in an increase in supply of high-skilled workers This thus reduces the problem of factor immobility.

- Allocative efficiency: Labour mobility → firms are able to produce the right amt of the right type of gds → allocative efficiency achieved.
- Productive efficiency: The increase in the ss of high-skilled workers → fall in wages for skilled labour → fall unit COP of firms in sunrise industries → firms are able to use the least cost method of production → productive efficiency achieved.

Moreover, with improved labour mobility → reduces the wage differential & thus income inequality btw the low-skilled & high-skilled workers.

Possible EV: However, edn & training is a long-term and costly process to undertake with uncertain outcomes. The success of this measure depends on the receptivity of the workers which is highly unpredictable. If they are less receptive, ss of high skilled workers will ↑ to a smaller extent. As there is still a lack of high skilled workers, there is still an underproduction of pharmaceutical gds though to a smaller extent.

2. **Explain how govt intervenes in the case of public goods to brg abt a more efficient allocation of res**

Since it is not feasible & not technically possible to prevent non-payers from gaining access to the public good → weakens the incentive for csrs to offer to pay → no expression of dd → not possible to charge a mkt price for the gd.

Once the gd is provided → additional cost of providing the gd to another person is 0 → MC of providing the gd to one more person is 0 → the efficient price to charge should be 0 (P=MC) → hence, no profit-motivated private firms would be willing to ss the gd if the price is zero.

However, public gds are essential services to the ecy & yield valuable benefits to society. Since the mkt mechanism fails to provide for such gds, there is a need for govt intervention in the provision of public goods.

[Link back to qn] Thus in the case of public gds → govt intervention WILL MOST LIKELY brg abt a more efficient allocation of res.

Anti-Thesis: Govt intervention is not successful in achieving the microeconomic objectives of a govt

1. **Case where the price mechanism allocates resources efficiently**

As explained above, as long as there are no externalities and the assumption of a perfectly competitive market holds, the price mechanism works in allocating resources efficiently. In such cases, any form of govt intervention will then brg abt an inefficient allocation of resources.

2. **Explain how govt intervention in the case of taxation → may not achieve efficiency and equity**

In the case of coal-generated energy, the govt may intervene due to the presence of negative externalities in production.
The burning of coal releases airborne toxins which will bring about higher healthcare costs to residents staying close to these factories, for which no compensation is made. As such, MSC> MPC.
As the pte efficient output > socially optimal output → overproduction of energy → overallocation of resources in the mkt for coal-generated energy →resulting in a DWL.

The government could impose indirect tax, CF, that is equal to marginal external cost at the socially optimal level of output. Taxes cause the energy firms to internalise the external costs. This will increase the unit cost of producing coal-generated energy → MPC now coincides with MSC → new pte output is at socially optimal level, deadweight loss is now eliminated. The market is now allocative efficient.

Since energy is a necessity, demand for it tends to be relatively price inelastic which means that as price increases, quantity demanded falls less than proportionately. Hence, to reduce quantity of energy produced significantly, this would mean that a very large tax would be needed as opposed to if demand for energy was price elastic. This can worsen inequity issues as energy becomes less affordable to the lower income consumers.

Or

Moreover, the success in the use of taxes is limited by the accuracy in measuring the exact value of external costs which in practice is a difficult task as they may be difficult to monetise and estimate since externalities are "unpriced effects". The govt may over-tax, and if the new DWL > original DWL → misallocation of resources

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Conclusion
[Extent of mkt failure] Govt intervention will always brg abt a more efficient allocation of res in the case of missing mkts whereby the price mechanism fails to allocate any resources to the production of public gds given its characteristics.

However, on the other hand, government intervention will NOT ALWAYS bring abt a more efficient allocation of resources in the following cases:

1. In the case of perfectly competitive mkt & no externalities→ As the price mechanism would have able to allocate resources efficiently
2. If the extent of mkt failure is small, thus there is higher possibility of govt failure as they may easily overestimate the mkt failure & over-intervene. This is more likely to occur in countries whereby the govt lacks the resources & infrastructure to ensure accuracy & reliability of data.
3. [depends on the type of govt intervention] In the cases of taxes, govt intervention will worsen the problem of equity as it brings about a rise in the price of g&s. likewise in the case of price ceiling, it brings about a permanent shortage in the market which could result in black market. In such cases, it will worsen the problem of equity as firms may offer a higher price to those who are willing and able to pay.

Level	Knowledge, application, understanding, analysis	Marks
L3	For a thorough & well-developed explanation using economic concepts & appropriate eg to provide a balanced argument whether government intervention in different markets is likely to be successful in achieving the microeconomic objectives of a government	8-10
L2	For an under-developed explanation as to whether government intervention in different markets is likely to be successful in achieving the microeconomic objectives of a government Answer may contain some conceptual errors but appropriate economic concepts and analysis used.	5-7
L1	For an undeveloped answer that shows lack of knowledge of govt intervention/ govt failure Answer contains a few valid points, which are mostly irrelevant and erroneous.	1-4
	Evaluation	
E3	Well-reasoned judgements / decisions Critically evaluates the extent of government failure. Synthesizes economic arguments to arrive at well-reasoned judgements and decisions such as in a good summative conclusion	4-5
E2	Largely unexplained judgements Some attempt at evaluation or a summative conclusion	2-3
E1	An unsupported evaluative statement Unsupported evaluative statement(s) or judgements	1

4 In 2021, Singapore's labour productivity grew by 5.2 per cent and its real gross domestic product (GDP) grew by 7.6 per cent. Inflation, as measured by the consumer price index, was 2.3 per cent, unemployment was 2.7 per cent and trade balance was S$77 billion in surplus.

Adapted from: https://www.singstat.gov.sg and https://stats.mom.gov.sg, accessed 20 July 2022

(a) Explain the link between labour productivity growth, cost of living and global competitiveness of a country. [10]

(b) Assess the sufficiency of the given data on GDP, inflation, and unemployment in comparing living standards between Singapore and other countries. [15]

Part (a)

Introduction:

Define key terms:

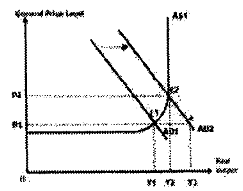
- Labour productivity is defined as the efficiency of labour and measured by output per man hour → influences COL and global competitiveness of a country.
- Cost of living refers to the level of prices relating to a range of daily necessities.
- Global competitiveness: consider the following aspects
  → increasing price competitiveness of a country's exports,
  → increasing non-price competitiveness of country's exports and
  → attracting investments such as foreign direct investments

Main Development:

Explain the possible link between labour productivity growth, cost of living and global competitiveness of a country:

- Higher labour productivity growth means that output per man hour worked is higher, Ceteris paribus, this lowers unit labour cost of production (COP) and thus higher profit margin. This could increase the attractiveness of the country to investor and enhance SG's global competitiveness. An increase in I will lead to an increase in AD from AD1 to AD2, ceteris paribus and increase in LRAS.

illustrate with AD-AS analysis (diagram and explanation)
Increase in AD:

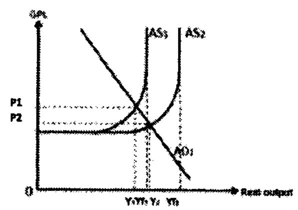


→ In the figure above, assuming the SG economy is operating the intermediate range of AS and the initial equilibrium is at E_1 **(where AD_1 cuts AS_1)**. The initial GPL and real output is at **P_1** and **Y_1** respectively. An **increase in I**, this could lead to an increase in AD causing total spending to exceed total output resulting in a shortage (Y1-Y3). This leads to a fall in inventories which provides an incentive for producers to increase output to meet demand. As there is limited spare resources, firms will have to bid up factor prices causing GPL to rise. There is a movement up along the AD & AS curve. The process continues until a new equilibrium is reached at E2 where AD2 = AS1.

→ Real output increases from Y1 to Y2 and GPL rises from P1 to P2 and thus a larger increase in a country's cost of living assuming real income remains unchanged.

→ At the same time, demand-deficient unemployment decreases as production of output hence firms' derived demand for labour increases which in turn increases ADL. With more people employed, it widens the tax base, and thus more tax revenue can be collected by the government. This increase in tax revenue collected can be used in providing education / training subsidies → further raise labour productivity growth

Increase in AS:



→ ↑ I → ↑ factor quantity / quality → economy is able to produce a higher level of output → increase in productive capacity of the economy → increase AS from AS1 to AS2 → fall in GPL from P1 to P2 → reduce inflationary pressure → fall in COL assuming real income remains unchanged

or:

- enhance global competitiveness via ss-side policies → increase I → enhance capital stock accumulation → enhance labour productivity growth → output per man hour worked is higher → lower unit COP, ceteris paribus → increase in profit margin → SRAS & LRAS rise and shift rightwards → fall in GPL → fall in COL assuming real income remains unchanged

or:

- enhance labour productivity growth via ss-side policies → skilled labour as a factor endowment → gain CA in the production of high valued-added manufacturing products (pharmaceuticals, automotive parts) → lower opportunity cost → lower unit COP, ceteris paribus → increase in profit margin → shift rightwards → fall in GPL → fall in COL assuming real income remains unchanged

→ exports become more price competitive → SG's global competitiveness is enhanced

Level	Descriptor	Marks
L3	For an answer that gives a thorough economic analysis on the linkages between labour productivity growth, cost of living and global competitiveness through the use of the AD-AS model.	8-10
L2	For an answer that gives a limited explanation on the linkages between labour productivity growth, cost of living and global competitiveness with some usage of the AD-AS model.	5-7
L1	For an answer that shows some knowledge the linkages between labour productivity growth, cost of living and global competitiveness and/or contains inaccuracies.	1-4

(b) Assess the sufficiency of the given data on GDP, inflation, and unemployment in comparing living standards between Singapore and other countries. [15]

Introduction:

Define key terms:

- Living standards or standard of living (SOL) refers to the level of material and non-material well-being of an individual. Material well-being is determined by the quantity of goods and services enjoyed by an individual and are affected by changes in availability of goods & services. Non-material well-being is the qualitative aspect of standard of living and includes changes in quality of life, as well as the changes in social factors and quality of the environment. Environmental factors are pollution, urban crowding, crime rates while socio-economic factors are life expectancy, infant mortality rates, availability of healthcare and amount of leisure.
- Data such as GDP, inflation and unemployment are known as key economic indicators used to assess the economic performance of a country.

Explain the model of framework:

- This essay aims to discuss the sufficiency and limitations of using economic performance data suggested in the signpost i.e., real GDP, inflation and unemployment rate in comparing SOL between Singapore and other countries.

Development 1:

Thesis: Explain how the statistics (real GDP, inflation and unemployment rate) can be used to compare SOL between SG and other countries (explain all 3 indicators)

The statistics given in the signpost can be used to compare *material* SOL of the Singapore economy with other countries in 2021.

(i) Real GDP:

- *[define]* Real GDP is the monetary value of final goods and services produced within the geographic boundaries of a country over a year adjusted for price changes.
- *[economic explanation]* If Singapore's real GDP growth rate of 7.6% is higher than the previous year, it implies that the economy is enjoying economic growth with increasing production, employment and rising income due to rising AD, assuming economy operates with excess capacity. Assuming that growth in real GDP is greater than growth in population size, this means that residents experience an increase in disposable income which increases their purchasing power, enabling them to consume more goods and services. Hence, material welfare increases, ceteris paribus, living standard increases.
- *[link to question]* A higher growth rate of real GDP in SG compared to another economy means that residents in SG is likely to enjoy access to more goods and services relative to the other economy, thus increase in material SOL is higher in SG than the other economy.
- *[EV]* It is necessary to use real GDP per capita i.e., to consider the effect of changes in the size of the nation's population. This is because an increase in GDP over time does not necessarily translate to higher standard of living in the country since the population size may have increased. Furthermore, for a more accurate comparison between countries, real GDP per head must be converted to a common currency such as US$ which is adjusted for purchasing power parity (PPP). If real GDP per capita measured at PPP in Singapore is two times that of Hong Kong, this will imply that twice as many goods and services are produced in the Singapore economy for each person than in HK leading to material well-being in Singapore to be two times that of Hong Kong.

(ii) Inflation:

- *[define]* Inflation is defined as a period of sustained increase in the general price level. The inflation rate is the annual percentage change (rate of change) in CPI.
- *[economic explanation]* Singapore's inflation rate in 2021 is 2.3%, indicating that general prices rose by 2.3% compared to 2020. Inflation rates reflect the cost of living for citizens in Singapore and hence determine their real purchasing power of goods and services. Real GDP can be calculated accurately only if there is information about inflation rates hence it should also be taken into account in measuring material welfare.
- *[link to question]* Since Singapore has relatively lower inflation rate than US with an inflation rate of 4.2% in 2021, the real purchasing power of goods and services are higher in Singapore compared to US, thus leading to a higher material SOL in Singapore.

- *[EV]* However, it is also important to consider the cause, magnitude and duration of the change in inflation rate in deciding whether a higher inflation rate will worsen the material well-being.

(iii) Unemployment rate:

- *[define]* Unemployment level (of labour) refers to the number of people in the working age population who are actively looking for work but are without a job. Unemployment is usually measured by the unemployment rate, which is the percentage of unemployed persons to the labour force (comprises the total number employed and unemployed).
- *[economic explanation]* Low unemployment indicates resources are more fully employed; the economy is producing nearer to maximum productive capacity, which suggests there is a high material standard of living as output and income is high. A country aims to achieve low and stable unemployment of 2-3%. Given that Singapore's unemployment rate is low at 2.7% in 2021, this suggests that material SOL is therefore high.
- *[link to question]* A lower unemployment rate in Singapore compared to other economies such as Brunei (one of the two smallest states in Southeast Asia) with an unemployment rate of 7.65% in 2021 would suggest a higher material well-being, ceteris paribus. With a greater proportion of the labour force being employed, it would mean that more individuals have higher income. Purchasing power would have risen and therefore the quantity of goods and services that an individual can enjoy would be higher. There are also other benefits such as lower crime rates leading to higher non-material standard of living.
- *[EV]* As unemployment rates can be computed in different ways such as claimant count and labour force surveys, such computations are not without inaccuracies due to illegal claiming of unemployment benefits, sampling error, etc. Thus, comparison between countries may be less meaningful if the countries use different methods of computing unemployment rate.

Development 2:

Anti-thesis 1: Explain the limitations of these statistics used to compare SOL between SG and other countries (choose 1 to explain)

The use of real GDP, inflation and unemployment rate may be limited in scope while comparing the changes in SOL to other countries due to the following reasons:

- **Measurement Problem: Size of non-market economy differs**
  Goods and services which are produced but not traded or exchanged through barter trading (i.e., **non-marketed goods and services**) goes unrecorded. Workers who moonlight may not declare their income to avoid tax payments. For example, a teacher may receive payment for undertaking private tutoring in his spare time and not declare the income he receives to tax authorities. In this case then, some of the services that this tutor provides will not be included in the GDP data. As a result, the GDP for Singapore, hence SOL of Singapore residents may be understated by the extent of non-marketed activities and undeclared activities. The difference in the size of the hidden economy by different countries have different extent of accuracy in estimating

GDP data which makes any international comparison between countries inaccurate and difficult.

- **Usage Problem: Non-material welfare differs and cannot be measured by economic indicators as indicated by real GDP, inflation and unemployment rate, etc.**
  These statistics is an incomplete measure of the differences in standards of living between countries because it reflects only differences in material well-being and fails to consider differences in non-material well-being. For example, given Singapore's fast pace of living, her residents' non-material aspect of living could have been compromised due to their inadequate quantity of leisure. This aspect of standard of living cannot be reflected using only the above economic performance indicators as it considers only the material well-being of Singaporeans. If the real GDP per head of SG is 2 times that of Malaysia, but the residents of SG enjoy a lower level of non-material wellbeing due to urban crowding and high level of stress, then the SOL of SG residents is less than 2 times that of Malaysia. Economic indicators / data has overestimated the gap in SOL between the 2 countries.
  [EV:] Even though a low unemployment rate suggests low stress levels, low crime rates, etc. and hence a high non-material SOL, it is not a holistic indicator of the non-material SOL of Singapore and other indicators (as explained above) are also required to compare SOL with other countries.
- **Usage Problem: Income distribution differs**
  Although increases in real GDP per capita suggest improvements in material SOL, this may not be reflective of all residents due to unequal income distribution. If income gap has become relatively bigger, not all residents may experience a higher SOL. Hence the Gini coefficient should be taken into account when assessing the standard of living of a country and while comparing it with other countries. Countries with similar per capita incomes may still have very different standard of living for the majority of their population, if their distributions of income are not the same. For example, a country with a lower average income but a fairer income distribution actually enjoys higher overall standard of living, compared to another that has a higher income but with tremendous income disparity between the rich and the poor. For the latter country, it is because the small minority of the rich is so rich that their income is able to pull the average up and make the per capita income higher than other countries with more even distribution of income.

Anti-Thesis 2: Explain alternative measures that can be used to address the limitations highlighted in Anti-Thesis 1 (explain 1 alternative indicator)

One key weakness of economic indicators as a measure of standard of living across countries is non-material aspect of standard of living is not reflected.

Hence, need to examine a range of QoL indicators which include single dimension indicators (Gini coefficient, infant mortality, crime rates etc) and composite indicators such as Gross Progress Indicator (GPI), Human Development Index (HDI) and Measure of Economic Welfare (MEW).

[Explain HDI as composite indicator of SOL] The HDI) is a summary measure of average achievement in three key dimensions of human development – a long and healthy life, being knowledgeable and having a decent standard of living. HDI index is expressed as a value between 0 and 1, where 1 is the best possible score and zero is lowest possible score. High values of HDI scores are associated with good health care systems, widely available education and a productive economy. The higher the HDI index (i.e., closer to 1) the higher will be the level of standard of living, in terms of both material and non-material aspect. This is because an increase in a country's HDI value would have been attributed to an increase in ***life expectancy index, education index** and/or **GNI index (measured by real GDP per head (PPP$))***.-Countries like Kuwait and Singapore have lower HDI than real income per head. This suggests that GDP statistics over-estimate the SOL in countries like Kuwait and Singapore and hence a need to a holistic measure to SOL.

[EV:]

1. Generally, there is a positive correlation between income levels and HDI scores. However, the relationship is not always clear – cut. Some countries – low HDI scores despite relatively high-income levels e.g., Kuwait & Oman. Some countries – similar HDI scores but very different income levels (like Indonesia and South Africa).
2. Despite being more encompassing than real income per capita figures, critics have pointed out that HDI is still an incomplete measure of welfare because it does not take into account issues like political, social and economic freedom, human rights, protection against violence and discrimination and opportunities for creativity.

Synthesis and conclusion: [Make judgement & take a stand]

[Rank the three economic performance indicators in signpost]

Within the domain of material welfare, notwithstanding its limitations, real GDP is the best choice for measuring SOL of a country and real GDP per capita measured at purchasing power parity is the **best choice** for international comparison. This is because GDP statistics is one of the **most commonly** and **accurately computed data**. In addition, GDP data compared to other economic performance indicators such as inflation and employment, provides direct information about the purchasing power of the citizens and hence the quantity of goods and services citizens have access to can be determined.

[Compare GDP statistics and QoL indicators]
However, the given data is NOT sufficient to compare living standards between Singapore and other countries.

For instance, GDP statistics is **not** a **perfect** or **infallible** measure as it is only reflective of an average resident's material welfare, does not take into consideration income distribution and ignore non-material welfare. The extent to which real GDP per head and real GDP per head (PPP$) is the best measure depends on the viewpoint of Singapore and different countries on the relative importance of non-material welfare and material welfare.

A more meaningful comparison of SOL can only be made if people in Singapore and other countries are able to make a qualitative assessment on how much they value quality of life. **(People need to be able to value quality of life).** The greater the emphasis given to non-material well-being by countries, the less accurate a quantitative indicator such as the real GDP per head or real GDP per head (PPP$) is. In this case, it is very important for **GDP data to be used together with other quality of life indicators for a more holistic assessment.**

However, composite indicators such as HDI, MEW, GPI which incorporate various factors that affect the quality of life hence providing a more complete picture of comparison of SOL between countries are commonly criticized for the less accurate and more subjective methodologies used.

Mark Scheme

Level	Knowledge, Application, Understanding and Analysis	Marks
L3	Sound analysis on the limitations of the data in assessing both standard of living and in making comparisons with other economies.	8 – 10
L2	Description of measures of standard of living and / or their limitations. OR Analysis of conclusion on the limitations of the data in assessing material SOL but makes no reference to the non-material SOL.	5 – 7
L1	Unexplained knowledge of measures of the standard of living or their limitations.	1 – 4
	Evaluation	
E3	For an answer that arrives at an analytically well-reasoned judgment on both standard of living and comparisons with other economies	4 – 5
E2	For an answer that makes some attempt at evaluating or a conclusion that answers the question but does not explain the judgement or base it on analysis.	2 – 3
E1	For an answer that gives an unsupported evaluative statement.	1

5 Rising global crude oil prices due to the Russia-Ukraine conflict has led to an increase in import expenditure for India, the world's third largest consumer of oil. While India's exports have grown, there were fears of slowdown in advanced economies.

Adapted from: The Business Standard, 3 June 2022

(a) Explain how the above events will lead to a balance of trade deficit for India and why this might be a concern for the government. [10]

(b) Discuss whether the trade-off between macroeconomic objectives is the main factor in determining the choice of policies to achieve favourable balance of trade for any economy. [15]

Part (a)

Introduction

[Define balance of trade] Balance of trade (BOT) refers to the difference between the value of exports and imports of goods.

[Explain the model of framework] Herein my essay, I will be examining the possible causes of trade deficit for India, which could possibly be due to rising import expenditure since oil prices have risen amidst the Russia-Ukraine conflict and slowdown in growth of export revenue.

Main Development 1 – causes of BOT deficit

1. **Oil prices increase due to Russia-Ukraine conflict**
   [Topic sentence] Due to the Russia-Ukraine conflict, oil prices have increased which led to the increase in import expenditure. ***[Elaboration]*** The Russia-Ukraine conflict has disrupted global oil supply which led to rising oil prices *($139 a barrel, the highest level in 14 years)*. As mentioned in preamble, India is the 3rd largest oil consumer and because crude oil is an important input for generation of power and electricity, as well as for industrial/ manufacturing production, its demand tends to be price inelastic. Therefore, the increase in global oil prices will lead to less than proportionate decrease in quantity demanded for oil hence an increase in import expenditure. ***[Link to BOT]*** Assuming that export revenue remains unchanged, the *increase in import expenditure* will lead to BOT deficit, assuming that BOT is initially in equilibrium. ***OR***

   [Topic sentence] Due to the Russia-Ukraine conflict, oil prices have increased which led to trade deficit. ***[Elaboration]*** The Russia-Ukraine conflict has disrupted global oil supply which led to rising oil prices *($139 a barrel, the highest level in 14 years)*. As mentioned in preamble, India is the 3rd largest oil consumer and because crude oil is an important input for generation of power and electricity, as well as for industrial/

manufacturing production, thus the increase in price of oil increases the unit cost of production. This reduces profit margin to producers and thus market supply falls. If sufficient market supply are impacted, there will be a fall in SRAS which results in a rise in GPL. Assuming that domestically produced goods are meant for exporting purposes, the increase in GPL would therefore reduce the export price competitiveness of India's exports. Assuming PEDx>1 as there are many substitutes in the global market, there will be a more than proportionate fall in quantity demanded for India's exports, thus fall in export revenue, ***[Link to BOT]*** Assuming that BOT is initially in equilibrium, the *fall in export revenue* will lead to BOT deficit.

2. **Slowdown in advanced economies**
[Topic sentence] Due to the covid-19 pandemic and Russia-Ukraine conflict, there were fears of a global economic shock which resulted in slowdown in most advanced economies such as United States. ***[Elaboration]*** As advanced economies experience economic slowdown, the real output increases at a decreasing rate which translated to a slower growth in income and hence slower growth in purchasing power. As such, there will be a slow growth in the demand for exports from India, assuming they are normal goods. This in turn leads to a smaller increase in export revenue for India. ***[Link to BOT]*** Assuming that import expenditure remains unchanged, the slow increase in export revenue will lead to BOT surplus, assuming that BOT is initially in equilibrium. ***[Link back to Qn]*** So, while export revenue may have increased slightly, import expenditure has increased significantly due to oil imports. If this trend were to persist, then India is likely to experience trade deficit where export revenue is less than import expenditure.

Main Development 2 – costs associated with rising BOT deficit *(any 1 of the following)*

1. **Negative growth → lower material SOL**
[Topic sentence] Increasing trade deficit may bring about costs to India economy such as negative growth and lower material SOL. ***[Elaboration]*** Given a trade deficit, there will be a fall in net exports and thus AD, ceteris paribus. Assuming that the India economy is operating with spare capacity, this will lead to surplus whereby total output is greater than total spending at original price level. This in turn leads to an increase in the firm's inventories which incentivises producers to reduce production. Via the reverse multiplier effect, in which one's spending equals to another's income, there will be multiple decrease in production, output and national income. Real output decreases by dampened multiplier effect and thus results in negative growth. Assuming population size unchanged, there will be a fall in per capita income which suggests a fall in purchasing power and hence lower ability to consume goods and services thereby lower material SOL. ***[Link back to Qn]*** Therefore, rising trade deficit may bring about negative growth and lower material SOL.

2. **Rise in unemployment → lower material & non-material SOL**
[Topic sentence] Increasing trade deficit may bring about costs to India economy such as increased unemployment and lower SOL. ***[Elaboration]*** Given a trade deficit leads to negative growth, there will be decreased in production of goods and services. As such, demand for factors of production will decrease. As labour is derived demand, there will be a fall in ADL. Assuming wages are sticky downwards, at the prevailing wage rate, there will be excess supply of labour which gives rise to increased demand-deficient unemployment, which in turn may bring about increased crime rates/social unrest, thus lowering the quality of life and hence, lower non-material SOL. In addition, with increased unemployment, it could possibly result in budget deficit since government would have to increase expenditure on unemployment benefits and the tax base has decreased thus tax revenue collected *(both direct and indirect taxes)* would have fallen. If budget deficit were to grow and persist, may become public debt which in turn will reduce India's credit rating and thus reduce the investors' confidence to invest in India. This impedes potential growth, hindering the achievement of sustained economic growth for India which lowers future SOL. ***[Link back to Qn]*** Therefore, rising trade deficit may bring about rise in demand-deficient unemployment and lower non-material SOL and in the longer-term, it may lead to lower future SOL.

3. **Depreciation of rupee**
[Topic sentence] Increasing trade deficit may bring about costs to India economy such as depreciation of rupee. ***[Elaboration]*** With increasing trade deficit in which export revenue falls short of import expenditure, this implies that the increase in supply of rupee is greater that the rise in demand for rupee in the foreign exchange market (FOREX). This would in turn cause a surplus at original price P1 which will exert a downward pressure on external value of rupee. ***[Link back to Qn]*** As such, rising trade deficit may lead to depreciation of rupee and should India government wish to intervene in the FOREX, it would lead to depletion of foreign reserves.

Conclusion

As increasing trade deficit brings costs to the economy, it is therefore necessary for India government to intervene with appropriate policies to mitigate the harmful impacts.

Mark Scheme

Level	Descriptors	Marks
L3	• Well-developed analytical explanation of the causes of a trade deficit with reference to the events mentioned in signpost **and** analytical explanation of costs associated with increasing trade deficit. • Assumptions clearly made.	8 – 10
L2	• Under-developed explanation of the causes of a trade deficit **and** costs associated with increasing trade deficit. ***OR*** • Well-developed explanation of either cause of a trade deficit or costs associated with increasing trade deficit. *[cap 6m]* • Analysis is not consistently rigorous and lacks economic rigour. • Some conceptual errors in answers	5 – 7
L1	• Weak and incomplete explanation. • Mere listing of points without explanation.	1 – 4

(b) Discuss whether the trade-off between macroeconomic objectives is the main factor in determining the choice of policies to achieve favourable balance of trade for any economy. [15]

Introduction

[State reason for government intervention] Government aims to achieve sustained economic growth, low inflation rate, low unemployment rate as their internal goals and a stable balance of payment as their external goal.

[Explain the model of framework] In pursuit of favourable balance of trade, there is a plethora of policies that governments may choose to implement such as expenditure-reducing, expenditure-switching or long-run supply side policy of R&D to reduce reliance on imported goods (oil). Herein my essay, I will be examining whether trade-off between macroeconomic objectives would is the main factor that determine the choice of policies for governments to achieve favourable balance of trade. Undeniably, the use of some policies may result in trade-off between macroeconomic objectives, but there could be other factors at play such as root cause of increasing trade deficit, time period in consideration or even severity/extent of the trade deficit.

Main Development 1 – *Thesis*: *Trade-off between macroeconomic objectives is a factor in determining the choice of policies to achieve favourable balance of trade*

1. **Conflict between BOT and EG + Full Employment through the use of Expenditure-Reducing policy via CFP/CMP**
[Topic Sentence] To reduce trade deficit so as to achieve favourable balance of trade, governments can implement expenditure-reducing policy.

[Step 1: Explain the aim of expenditure-reducing policy] Expenditure-reducing policies are aimed at reducing expenditure on imports via reducing the aggregate demand (AD) of the economy so as to reduce the level of national income and hence expenditure on imports. In other words, this method aims to deflate the economy thereby reducing consumers' ability to buy foreign imports. When there is a fall in the level of imports, import expenditure will decrease and hence, this will lead to the improvement in balance of trade.

[Step 2: Elaborate how expenditure-reducing policy reduces trade deficit] Expenditure-reducing policy via contractionary FP works by reducing G and increases taxes. The rise in personal income tax will lead to fall in disposable income of households, leading to fall in purchasing power. This in turn leads to fall in C. The raise in corporate tax will lead to lower after-tax profits for firms, discouraging investment, hence I will fall. With the fall in G, C and I, AD will fall, ceteris paribus. The fall in AD will lead to rise in inventories and this signals firms to reduce production. Firms retrench workers leading fall in output. This results in rising unemployment and falling income of households. As income falls, spending by households will fall. As one's spending becomes another's income, the fall in spending will lead to fall in income of another group of people because of the fall in demand for the goods and services the produce. The multiplier effect is triggered off leading to a multiple fall in national income. This contraction of the economy will result in the fall in households' income levels and hence induce a corresponding fall in the demand for foreign goods (imports) and hence fall in import (M) expenditure. At the same time, a fall in AD also reduces the domestic inflation rate which improves the price competitiveness of the country's exports. As a result, there will be a more than proportionate increase in quantity demanded of exports and export revenue rises assuming that demand for exports is price elastic since there are many close substitutes in the global market. Ceteris paribus, fall in import expenditure and a rise in export revenue will lead to an improvement in the balance of trade.

Note: Students may elaborate in terms of contractionary monetary policy (rise in i/r).

[Step 3: Elaborate how well expenditure-reducing policy works – focusses on conflict of macro goals (unintended consequences)] While expenditure-reducing policy via contractionary fiscal policy or contractionary monetary policy may reduce trade deficit and achieve favourable BOT, it results in trade-off with full employment and sustained economic growth *(elaborate any 1 unintended consequence).*

- **Impact on full employment:** As AD decreases to reduce BOT deficit, this results in the contraction of real national output which will affect the demand for labour, since labour is a derived demand. As a result, aggregate demand for labour would fall. Assuming that wages are sticky downwards, at the prevailing wage rate, there will be excess supply of labour in which it gives rise to demand-deficient unemployment. ***[Link back to Qn]*** Since expenditure-reducing policy has resulted in trade-offs in terms of employment, government may instead turn to expenditure-switching policies/supply-side policies. Therefore, conflict in macroeconomic objectives is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT.

- **Impact on sustained economic growth:** As AD decreases to reduce BOT deficit, if the government over-contracts the AD, then recession will ensue. The worst scenario will be 'hard-landing' where the economy transits suddenly from a period of expansion to recession. Furthermore, by raising direct taxes it will have long-term supply-side effects on incentives to work efforts and investment which may adversely impact LRAS and thus potential growth which in turn hinders achievement of sustained economic growth. ***[Link back to Qn]*** Since expenditure-reducing policy has resulted in trade-offs in terms of sustained economic growth, government may instead turn to expenditure-switching policies/supply-side policies. Therefore, conflict in macroeconomic objectives is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT

Henceforth, because of the conflict of macroeconomic goals, government may look towards the use of other policies such as supply-side policies to reduce trade deficit.

<u>OR</u>

2. **Conflict between BOT and Price Stability through the use of <u>Expenditure-Switching policy</u> via depreciation of exchange rate**
[Topic Sentence] To reduce trade deficit so as to achieve favourable balance of trade, governments can implement expenditure-switching policy.

[Step 1: Explain the aim of expenditure-switching policy] Expenditure-switching policies are aimed at switching imports expenditure to domestically produced goods, and to switch foreign expenditures towards the purchase of the country's exports. This is done by raising the price of imports relative to domestically produced goods and making exports relatively cheaper through the use of currency devaluation or depreciation, and protectionist measures (trade restriction measures).

[Step 2: Elaborate how expenditure-switching policy reduces trade deficit] Expenditure-switching policy via devaluation of domestic currency (depreciation of exchange rate) makes the domestic country's exports relatively cheaper in foreign currency, improving her export competitiveness. The fall in price of exports will cause foreigners to increase their demand for the country's exports as long as price elasticity of demand for exports is more than zero (i.e. PEDx>0) leading to an increase in export revenue (X) measured in the domestic currency. At the same time, a devaluation of domestic currency will lead to a rise in price of imports in the domestic currency. With a rise in price of imports, quantity demanded of imports decreases. If PEDm >1, a rise in the price of imports brings about a more than proportionate fall in quantity demanded and leads to a fall in import expenditure (M or Cm). Domestic consumers will also switch their consumption to domestically produced goods, increasing domestic consumption (Cd). Assuming Marshall-Lerner condition (PEDx + PEDm >1), a devaluation raises the export revenue and reduces the import expenditure. This reduces the BOT deficit, hence achieving a more favourable balance of trade.

<u>Note</u>: Students may elaborate in terms of imposing import tariffs (protectionism)

[Step 3: Elaborate how well expenditure-switching policy works – focusses on conflict of macro goals (unintended consequences)] While expenditure-switching policy via devaluation of domestic currency may reduce trade deficit and achieve favourable BOT, it results in trade-off with price stability. Devaluation will result in foreigners demanding more exports (↑X) and domestic residents demanding more domestically produced goods (↑Cd) as they switch away from imported goods (quantity demanded for imports falls). As such, AD will increase. Assuming that the economy is operating with limited spare capacity, the rise in AD will in turn increase the demand for FOPs as production increases to meet rising demand. This will lead to factor prices bidding upwards as there are limited idle resources available, bringing about demand-pull inflation over time. Therefore, conflict in macroeconomic objectives is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT. Henceforth, because of the conflict of macroeconomic goals, government may look towards the use of other policies such as supply-side policies to reduce trade deficit.

Main Development 2 – *<u>Anti-Thesis</u>: Other factors that determine the choice of policies to achieve favourable balance of trade (elaborate any 1)*

Apart from the possible conflicts between macroeconomic aims, there are also other factors (constraints) that resulted in the choice of policies governments may decide to reduce trade deficit so as to achieve a more favourable BOT.

1. **Root cause of trade deficit**
[Topic sentence] In deciding the choice of macroeconomic policies to implement, governments are likely to consider the root cause of the problem. ***[Elaborate how root cause of trade deficit affect the choice of macroeconomic policies to***

reduce trade deficit] <u>For instance</u>, in the case of India, her increasing trade deficit is likely to be due to the high import expenditure arising from her reliance on imported oil as mentioned in the preamble that she is the 3rd world largest consumer of imported oil, which makes India highly vulnerable to supply shocks. Therefore, to overcome the root cause of the trade deficit, India government should look at ways to reduce her reliance and thus imports on oil. This is possible by investing in R&D for cleaner and greener source of energy. Although the effects of R&D may be uncertain and may see effects on in the long run, the success of the R&D will not only reduce import expenditure but may also be an avenue for India to increase her export revenue. **<u>OR</u>** <u>For instance</u>, the fact that US has been suffering from a persistent and large trade deficit indicates a fundamental economic problem in the US and the country is continually living beyond its means. US could suffer from loss of comparative advantage to emerging economies as a result of increased globalisation and rapid modernisation of technology. Therefore, implementing expenditure-reducing or switching policies to correct the deficit may not be appropriate since it does not address the root cause of the problem. A better option for US is to restructure its economy by pursuing supply-side policies that increase the export competitiveness in the global economy. For instance, the US government can fund scientific R&D and establish comparative advantage in the exports of new fields such as green energy, nano-technology, bio-medical research in order to avoid competing head-on with China, so as to boost its export revenue. ***[Link back to Qn]*** As such, root cause of trade deficit is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT.

2. **Time lag of policies**
   [Topic sentence] In adopting macroeconomic policies, some policies may take a long time to take effect than others, so governments may have to choose the policies according to the urgency of the problem. ***[Elaborate how time lags of policies affect the choice of macroeconomic policies to reduce trade deficit]*** <u>For instance</u>, in reducing a BOT deficit, supply-side policies to increase productivity and boost export competitiveness may be adopted to increase export revenue. However, it takes time to raise the productivity of labour and capital. In the meantime, governments may adopt expenditure-switching policies via devaluation of domestic currency. This is because with a weaker currency, exports will become relatively cheaper in foreign currency while imports become relatively dearer in domestic currency. Assuming PEDx>0, there will be an increase in demand for domestic country's exports and hence a rise in export revenue. At the same time, assuming that PEDm>1, there will be a more than proportionate decrease in quantity demanded for imports and hence a fall in import expenditure. The increase in net export revenue may reduce BOT deficit. This policy allows trade deficit to be reduced over a relatively shorter period of time, and may be adopted in the short-run to reduce a BOT deficit, while time is given for productivity in the export sectors to improve in the long-run. ***[Link back to Qn]*** As such, considering the time lag from the policies, expenditure-switching policy may be favoured over supply-side policies. As such, time lags of policies is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT.

3. **Severity / Extent of the trade deficit**
   [Topic sentence] In deciding the choice of macroeconomic policies to implement, governments may consider the extent of the problem *(i.e., large vs small trade deficit)*. ***[Elaborate how extent of the problem affect the choice of macroeconomic policies to reduce trade deficit]*** <u>For instance</u>, US has been suffering from a persistent and large trade deficit which may calls for more immediate actions to be taken to resolve the problem because the extent of negative impact arising from trade deficit could be dire. As such, US government may choose to implement expenditure-switching policies of erecting trade barriers or expenditure-reducing policy so as to reduce the size of the deficit in the immediate term, while devising supply-side policies in the meantime. ***[Link back to Qn]*** As such, considering the severity or the extent of trade deficit, expenditure-reducing or expenditure-switching policies may be favoured over supply-side policies. Thus, severity or the extent of trade deficit is a factor that determines the choice of macroeconomic policy to reduce trade deficit to achieve favourable BOT.

Synthesis & Evaluative conclusion – Judgement on whether trade-offs between macroeconomic objectives is the MOST important reason that underlies the policies undertaken to reduce trade deficit

As elaborated above, conflicts of macroeconomic goals may be one of the many reasons affecting the decision for governments to implement policies to achieve favourable BOT. Ultimately, whether trade-offs are the main reason for choice of policies depend on the state of economy, other appropriate policies in place to mitigate the harmful effects and the aim of government.

[E/Criterion] State of the economy

[E/Reasoning] Expenditure-reducing policy and expenditure-switching policy *(protectionist measures)* to reduce trade deficit may conflict with government's aim of sustained economic growth and full employment. However, if the economy is facing high rate of economic growth and henceforth high inflation, the fall in AD via expenditure-reducing policy may actually bring about price stability instead. Moreover, expenditure-switching policy *(depreciation of domestic exchange rate)* and trade policy through signing more Free-Trade-Agreements (FTAs) to reduce trade deficit may conflict with government's aim of price stability. However, if the economy is operating with excess spare capacity, expenditure-switching policy *(depreciation of domestic exchange rate)* and trade policy through signing more Free-Trade-Agreements (FTAs) may not necessarily conflict with price stability.

[E/Opinion] As such, supply side policies to correct trade deficit to achieve a more favourable BOT is inevitably the better option for governments.

[E/Criterion] Other appropriate policies in place to mitigate the harmful effects

[E/Opinion] In reality, governments tend to implement a combination of policies to effectively tackle problems facing economy as there is no one perfect policy since every policy has its own limitations. ***[E/Reasoning]*** Expenditure-reducing policy to reduce trade deficit may conflict with government's aim of sustained economic growth and full employment. However, if the government is also adopting trade policy to correct trade deficit by signing more FTAs to diversify the risk of contagion effect from trading partners, then perhaps this can help negate the trade-offs arising from expenditure-reducing policy. *For instance*, with the recent economic slowdowns and recessions in Western countries, countries like India may diversify and sign more FTAs focussing her trade with emerging economies which in turn may help to boost her export revenue and hence AD.

[E/Criterion] Aim of government

[E/Opinion] In my opinion, since governments tend to prioritise their macroeconomic aims in reality, trade-offs between the aims may not be the main reason for the choice of policies implemented to reduce trade deficit. Instead, it is the limitations and budget constraints that are of more importance underlying the choices of policies to reduce trade deficit. ***[E/Reasoning]*** This is because, in reality, governments usually will implement a combination of policies as it would be more likely to increase the success of achieving a particular aim instead. Furthermore, the assumption made is that governments prioritise all macroeconomic aims equally and strive to achieve all of them concurrently. Hence, when there are trade-offs, governments would adopt a combination of policies to achieve both aims. However, in reality, given the constraints faced (e.g. budget constraint), governments usually prioritise one aim over the other depending on the severity of the macroeconomic issues. *For instance*, for persistent and large trade deficit, the priority may be to implement expenditure-reducing policy so as to reduce trade deficit swiftly despite resulting in negative growth and demand-deficient unemployment. Despite these consequences arising from expenditure-reducing policy, governments may not adopt supply-side policies to increase productive capacity, if it is already facing a tight budget.

Mark Scheme

Level	Descriptors	Marks
L3	• Well-developed (2-sided) economic discussion on how trade-offs between macroeconomic objectives **and** other factors determine the choice of policies undertaken by governments to reduce trade deficit. • Assumptions clearly made.	8 – 10
L2	• Under-developed (2-sided) discussion on how trade-offs between macroeconomic objectives **and** other factors determine the choice of policies undertaken by governments to reduce trade deficit. ***OR*** • Well-developed (1-sided) economic discussion on how trade-offs between macroeconomic objectives **or** other factors determine the choice of policies undertaken by governments to reduce trade deficit. • Analysis is not consistently rigorous and lacks economic rigour. • Some conceptual errors in answers	5 – 7
L1	• Weak and incomplete explanation. • Mere listing of points without explanation.	1 – 4
	Evaluation	
E3	For a rational conclusion and an evaluative assessment that is based on economic analysis (that is, a well-explained evaluation).	4-5
E2	For an undeveloped rational conclusion that is based on economic analysis.	2-3
E1	For an unexplained judgment, or one that is not supported by analysis.	1

6 Singapore, being a small country with no natural resources, must embrace globalisation to survive and inking free trade agreements (FTAs) is one way of doing so, said Health Minister Ong Ye Kung.

Adapted from: CNA, 6 Jul 2021

(a) Explain the key drivers of globalisation. [10]

(b) Discuss whether a modest and gradual appreciation of its currency and the signing of free trade agreements would be effective for Singapore to benefit from globalisation. [15]

Part (a):

Introduction

Globalisation as the process through which an increasingly free flow of goods and services, capital, labour and technology leads to the integration of economies and societies. It is brought about by improvements in information and communication technology lower transportation costs and economic liberalization, allowing countries to enhance their comparative advantage.

One of the key engines of globalization is the exploitation of comparative advantage which has led to rising volumes of world trade, rising volume of capital flows including short-term financial capital and foreign direct investments and also increases in labour mobility.

In recent years, comparative advantage that countries possess has been enhanced due to technological developments which have lowered transport costs and improvements in information and telecommunications.

Development

Devt (1): Globalisation has led to rising volume of world trade and one of the key drivers is driven by the **theory of comparative advantage**.

The theory of comparative advantage states that even when a country has absolute advantage over another in production, both countries can gain from mutual trade if each country specialises in producing and exporting the good or service in which it has a comparative advantage i.e. can produce at **lower** opportunity cost. Extending from this, a country should export what it has CA in and import what it has comparative disadvantage in.

Different countries have different levels of factor endowments and thus are faced with different patterns of potential specialisation – differing opportunity costs in the production of goods. If each country specialises in the production of the good in which they enjoy comparative advantage in, total production of the good can be increased and each country will enjoy a higher level of living standards as trade makes it possible for a country to consume more goods and services; beyond its production possibility curve. The pursuit

of such gains from free trade has led to the increasingly free flow of goods and services between countries.

Developing countries which tend to have a comparative advantage in labour-intensive industries like textiles tend to be exporters of such goods while developed countries which have a comparative advantage in technological industries tend to be exporters of goods like microchips and electronic products

Devt (2): Another driver of globalisation is the rise of the information economy due **to advances in communication, transport and information technologies** which bypass national boundaries.

With the rise of the information economy, new ideas move to market faster than ever before. There has been rapid development of computing equipment, including higher speed and lower prices. Adding to this is the development of high-speed transmission of information by relay stations, satellite and fiber optics. The result has been an explosion in the use of cellular phones and the Internet. This, combined with the rapid spread of computers to homes and offices, **helped to** create a service sector specialising in the provision and analysis of information. Supply chains also **cross over** oceans, letting firms buy whatever they want from whoever makes it most efficiently.

Also, technological innovation brings about the fall in transport cost over time. The development of containerisation and improvement in engineering technologies have facilitated the movement of goods, factors and people across countries. Globally, with the advent of air travel and entry of low-cost air carriers, this further stimulated the trend of rising flow of trade and capital across countries in different continents and thus enabling globalisation.

Devt (3): Another driver of globalisation is the **opening of markets and higher level educational attainment** leading to **international mobility of labour**.

As China, India, and the Eastern bloc countries have opened up, world markets and opportunities to export have expanded considerably for advanced economies and developing countries alike. This has created global surplus of workers in these markets waiting to be tapped on by trans-national corporations (TNCs). Hence this has resulted in growing investment flows to emerging countries and the set-up of export production facilities to the rest of the world. Together with relaxation of migration laws, greater flows of labour in the global economy.

Higher levels of educational attainment and labor productivity in emerging economies increased the mobility of labor competing for jobs in developed countries. This led to the migration of skilled labor from emerging to developed countries where labor shortages existed. The reduction in labour shortages will help to ease the high wages, lowering cost of production, enhancing comparative advantage of the country.

Devt (4): Another driver of globalisation is rising volume of capital flows which includes short term financial capital and FDI due to **comparative advantage and fall in transportation costs.**

Since the theory of comparative advantage determines the goods that a country should specialize in production and trade with other countries, it also governs the inflows of FDI into the country. Based on the factor endowments in the country, foreign direct investors will tap on the abundant factors that the country is endowed with and invest in the production of goods in which the country has a comparative advantage in. Hence, FDI inflows into a country would be in industries where the country has a comparative advantage. E.g. Singapore has been attracting FDI in industrial sectors in which it has comparative advantage in – high-end manufacturing and knowledge-intensive industries.

Advances in information and computer technology have reduced transport costs significantly across borders and are increasing the ease with which producers can coordinate production throughout the world. This increases the ability of producers to outsource and offshore production to other countries, to tap on the comparative advantage offered by foreign countries. Thus FDI inflows into these countries increase. Offshoring and outsourcing of production processes would lower cost of production and further enhance the comparative advantage of the industry in the domestic economy.

In addition, increased productivity due to improvement in information and technology enables MNCs to assemble products and parts of products not only in industrialised countries but also in developing countries. Firms from DCs carry out FDI in the developing countries to take advantage of cheap labour while developing economies welcomed FDI as a convenient means to increase domestic employment and capital accumulation.

Note: Devt (4) has the same driver as Devt (1) & (2).

Conclusion:

The factors contributing to the trend towards globalization tend to reinforce each other. Trade liberalization implies that capital and labour become increasingly mobile.

In the world of growing integration, there are bound to be winners and losers. It must be acknowledged that the trend towards globalization has some negative aspects including a widening of income disparity between the rich and the poor within and across countries, exploitation of low skilled labor in developing countries by MNCs and environmental and natural resource degradation while under certain conditions this would lead to economic growth and higher standard of living.

Level	Knowledge, Application & Understanding	Marks
L3	For an answer using economic analysis to explain at least two key drivers of globalisation. Answers should span across reasons for increase in trade, capital flows and labour flows in the entire essay.	8-10
L2	For a largely descriptive answer (lacking analysis) OR an answer lacking in scope (e.g. only explains why there is an increase in trade flows or one driver of globalisation).	5-7
L1	For an answer which shows some knowledge of what are the causes of globalisation or a list of unexplained reasons.	1-4

Part (b):

Introduction:

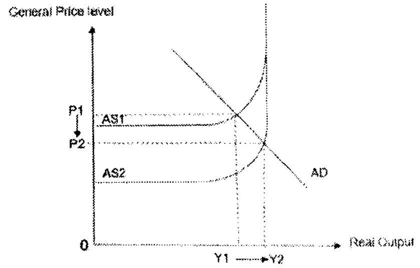
Globalisation can bring about both benefits and costs to an economy. For a small economy like Singapore with small domestic demand, it is important to embrace globalisation to benefit from globalisation fully. The essay looks at the benefits of modest and gradual appreciation and signing of Free Trade Agreements in doing so.

Development #1 –Appreciation of Singapore dollar helps to achieve price stability allowing exports to remain price competitive

As Singapore is highly dependent on imports for both local consumption and for production of exports due to the lack of natural resources, the Singapore dollar cannot be too weak or strong. Therefore, the Monetary Authority of Singapore (MAS) allows for a *gradual and modest* appreciation of the Singapore dollar, making its currency relatively more expensive against a basket of currencies in order to achieve price stability.

Appreciation of SGD can help to **reduce imported inflation:**
As Singapore imports a large amount of its necessities (food) and raw materials (oil which is necessary for all production processes), an appreciation of the Singapore dollar would cause the prices of imported goods and raw materials to be relatively cheaper in domestic currency. As such, it reduces the cost of production of goods and services that make use of imported factors of production, hence lowering the price that domestic consumers have to pay for final goods and services produced. Hence, firms in the economy are willing and able to increase production at every price level, causing a rightward shift of the AS curve from AS1 to AS2 as seen in Figure 3. GPL falls from P1 to P2, hence reducing cost-push inflation. At the same time, real output increases from Y1 to Y2.

Figure 3: Appreciation of S$ to address imported inflation



Therefore, an appreciation of Singapore dollar would dampen cost-push inflation resulting from imported inflation.

Appreciation of SGD can help to **reduce demand-pull inflation**:
With a *gradual and modest* appreciation of the Singapore dollar, the domestically produced goods for exports become relatively more expensive in foreign currencies. As such, it loses its export price competitiveness in the international market. The demand for exports will fall since price of exports (in foreign currency falls), and assuming the price elasticity of demand for exports is positive (PEDx>0), this will result in a fall in total export revenue (in domestic currency) collected. With the fall in price of imports in domestic currency, assuming the demand for imports is price elastic (PEDm>1), there will be a more than proportionate increase in quantity demanded of imports, causing a rise in import expenditure.

Assuming that the Marshall-Lerner condition holds, where the sum of price elasticity of demand for exports and imports is greater than 1, an appreciation of Singapore dollar will then lead to a fall in the value of net exports. Thus, a stronger Singapore dollar can help to dampen the rise in AD in Singapore, hence easing demand-pull inflationary pressure due to excessive rise in external demand.

Establish link to how Singapore benefits from globalisation with lowered inflation.

With appreciation, inflation will be lowered. This will lead to a decrease in price of exports in terms of foreign currency and improve the competitiveness of exports. With the proliferation of E-commerce markets, lowered export prices can help to incentivise more foreign consumers from buying Sg-made products. This allow Singapore to benefit from globalisation by tapping on a bigger market size from overseas and not be limited by the domestic demand. This brings about higher increase in export revenue and aggregate demand. Actual growth is attained. It also improves the trade balance and balance of payments.

Low and stable rate of inflation also creates a more conducive environment for firms to invest. As household save more, the supply of loanable funds increases which reduces interest rates, lowering the cost of borrowing for firms to finance their investments. Low inflation also enhances the confidence of firms since they now have greater certainty over the expected returns of their investment. This will promote firms to take out long term investments which benefits Singapore's potential growth. Since globalisation promote capital flows, this allow benefits of globalisation to be harnessed.

Address whether it would be effective for a small and open economy like Singapore

(+) The increase in net export revenue due to lowered inflation by appreciation enables Singapore tap on external demand and not to be limited by the small domestic demand. This allows them to achieve higher actual growth and standard of living. This is especially important for a country that is heavily reliant on trade.

(+) Since Singapore is heavily reliant on imported raw materials and finished products, appreciation will be effective to reduce imported inflation.

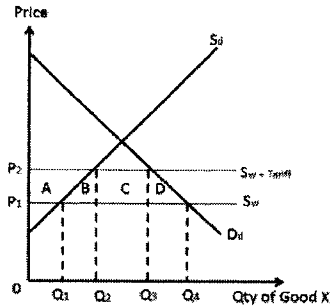
(-) Appreciation may bring about conflicts with other goals. Appeciation reduces net export revenue and worsen trade position assuming Marshall-Lerner condition (PEDx+PEDm)>1 holds. It dampens inflationary pressure if economy is near full employment, however, if the economy is below full employment it may cause negative growth. This lowers standard of living.

EV: [E- Criterion – Nature of Economy] Being a small country without any natural resources, Singapore is highly dependent on imported final goods and services as well as raw materials. Therefore, the problem of imported inflation is severe. [E- Opinion & Reasoning] There is a need to use appreciation to reduce inflationary pressure to harness the benefits of globalisation such that they can sell to a larger market. It is also unlikely that Singapore will experience negative growth due to appreciation because the economy is near full employment and even if it is below full employment, it can be complemented with alternative policies like expansionary fiscal policy. Hence it is likely that appreciation is effective.

Development #2 –Signing of FTAs allow countries to tap on larger market and greater investment opportunities.

Free Trade Agreements are binding agreements between 2 or more countries to reduce or remove trade barriers and facilitate cross border movement of goods and services between the territories of the parties.

With FTA, Singapore's exports may be more price competitive in member countries and also gain access to larger markets. This is due to the removal of trade barrier like tariff that lower the price of exports.



Given that previously tariffs were placed on imports, resulting in price of Good X being P2 and quantity consumed at Q3. Upon opening up the market to free trade, domestic consumers are able to enjoy the lower world price of P1 and consume more quantities of Good X (from Q3 to Q4). Assuming Good X is an intermediate good meant for producing final goods and services, the lower price of P1 lowers the unit cost of production for firms that require Good X in their manufacturing process. This helps to increase supply and hence lowers prices of goods produced in Singapore. Therefore, price competitiveness increases.

With lowered price of exports, assuming demand is price elastic, there will be a more than proportionate increase in quantity demanded. This increases export revenue as exports become more competitive.

The larger access the market also allows firms to reap economies of scale. Firms may expand their production lines and get workers to specialize in a particular production stage. Workers thus become adept at their work and are able to produce more output per man-hour. This lowers unit cost of production and hence further making exports more competitive. Since producers can also sell to other countries freely, this increases the market size and further increase export revenue. The increased trade links with globalisation provide competition for domestic producers and enable greater efficiency of production and quality of the products. This further increase export competitiveness which in turn increase export revenue.

Signing of FTAs may attract foreign investments into Singapore, where foreign firms may be attracted to locate in Singapore to have access to the free trade markets. This is achieved by lowering barriers to entry for investors. Hence, this may help to further improve competitiveness when investments are targeted at technological changes to further increase productivity levels. Furthermore, such technology may also aid greater product innovations, where transfer of technology know-how may enable improvements to be made to the quality and design of Singapore exports, allowing Singapore firms to gain greater non-price competitiveness.

Establish link to how Singapore benefit from globalisation with larger access the markets and increased export competitiveness from FTA.

With FTA, the greater access to market enables lower prices of exports and increase export revenue. Both increase in export revenue and investment expenditure will promote actual growth. The specialisation of goods according to theory of comparative advantage allows greater gains in consumption and increase standard of living.

Similar to that of appreciation, Singapore will benefit from globalisation from FTA by <u>tapping on a bigger market size from overseas and not be limited by the domestic demand.</u> This brings about higher increase in export revenue and aggregate demand. Actual growth is attained. It also improves the trade balance and balance of payments. The inflow of FDI from stronger trade links allow faster economic growth for developing countries. Trade aids the transfer of skills and technology from the developed countries (DCs) to developing countries (LDCs), brings about better methods of production, better technology and leads to growth in productive capacity of the developing countries. The increased economic productivity due to more advanced shifts the AS curve rightwards and contribute to potential economic growth. As such, the economy can achieve sustained economic growth.

Address whether it would be <u>effective</u> for a small and open economy like Singapore

(+) FTA allows access to larger markets for Singapore who is heavily reliant on trade. FTAs may bring about cheaper raw materials for Singapore → fall in COP → AS increases → fall in imported inflation → offset the increase in prices due to demand pressure.

(-) Free trade increased dependency on external trade and trading partners, growth might be more volatile. For instance, if the trading partners suffer from recession, it will cause a fall in export revenue for Singapore.

(-) FTAs also result in ↓import tariffs → may lead to ↑import expenditure → assuming ↑import expenditure > ↑export revenue → may cause current account deficit if current account is initially in equilibrium

(-) The degree of technology transfer may be limited with FTA as the senior management of foreign MNCs tend to consist of their own foreign staff, rather than training locals to manage operations.

E(Criterion – Nature of Economy, Ability to overcome Negative impact): It is necessary for Singapore to sign FTA due to its small domestic demand. Her ability to overcome the negative impact will allow the benefits of globalisation to be harnessed. E (Opinion, Reasoning): To reduce the susceptibility of external shocks, Singapore will sign many free trade agreements with countries around the world so that they diversify their markets. To prevent the rise in import expenditure, the Singapore government can adopt supply side policies to ensure exports are competitive to improve its trade balance.

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Overall Judgement

Both FTA and appreciation are effective policies for Singapore to benefit from globalisation in the short run. E(Criterion – Nature of the Economy, Root Cause of the Problem): This is because Singapore has a small domestic demand and is trade dependent. Appreciation enables goods to be priced competitively by reducing imported inflation and FTA enables greater access to markets they Singapore can sell to and attracts foreign direct investment. However, to fully harness the benefits of globalisation, there is a need to ensure that good quality of resources. E(Reasoning and Opinion): This is done by implementing supply side policies in the long run such as R&D to ensure that exports are competitive in terms of its quality and also education such that locals will be able to ride on the wave of globalisation to take on complicated jobs as structure of economy changes and not be structurally unemployed with greater rate of change of economy with trade. The supply side policies will re-position Singapore to be more ready to augment the positive effectis of globalisation.

Mark Scheme

Level	Knowledge, Application, Understanding and Analysis	Marks
L3	Clear analytical explanation of modest and gradual appreciation and signing of free trade agreement to benefit from globalisation. Balanced argument to show the effectiveness of both policies (benefits and costs).	8-10
L2	One-sided answer that *either* explains how one of the policies (modest and gradual appreciation and signing of free trade agreement) enable Singapore to benefit from globalisation or explain how both policies work without linking to how the policies enable Singapore to benefit from globalisation. Limited discussion on effectiveness of policies. OR Underdeveloped answer lacking use of a clear analytical framework to explain how policies work and how Singapore benefit from globalisation. Limited discussion on effectiveness of policies.	5-7
L1	Knowledge of how appreciation or free trade agreement works to address macroeconomic goals in Singapore.	1-4
	Allow up to 5 additional marks for Evaluation	
E3	For an answer that arrives at an analytically well-reasoned judgment on whether or not the 2 policies are effective for Singapore to benefit from globalisation.	4-5
E2	For an answer that makes some attempt at evaluating or for a conclusion that answers the question but does not explain the judgment or supports it with analysis.	2-3
E1	For an answer that gives an unsupported evaluative statement.	1