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JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2021

ECONOMICS	**9757/01**
Higher 2	**13 September 2021**
Paper 1	**2 hours 15 minutes**

Additional materials: Answer Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.

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

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

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
At the end of the examination, fasten all your work for Question 1 and Question 2 separately.

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

If there are part questions you did not attempt, please write the question number and part before you submit your answers. *(e.g. if you did not complete 1b, indicate 1b in your answer script.)*

You are advised to spend several minutes reading the question and planning your answers before you begin writing.

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

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

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Question 1: The dominance of pharmaceutical firms in United States

Extract 1: The battle over high drug prices in United States

These days it is hard to find a government that is not struggling with the high price of medicines. In America, diabetics have died because of the high price of insulin. Pharmaceutical companies have long argued that the costs and risks of developing a drug warrant high price. But drug firms are not ordinary companies. Their products are needed to save lives, and they obtain monopolies on their drugs through patent systems granted by governments.

United States (U.S.) President Donald Trump said his administration is working to reduce U.S. drug prices to match the lowest in the world. For years, U.S. drug prices often exceed those in neighbouring Canada and Mexico as well as Europe. Despite pressure from the president, U.S. pharmaceutical giant Pfizer in January increased the price of 41 drugs, which represents 10 per cent of its drug portfolio. As with other pharmaceutical companies, Pfizer is facing the loss of patents for some of its biggest blockbuster drugs. Manufacturers are justifying a hike in prices saying they need to pay for research and development.

Source: Adapted from The Economist, 21 May 2019 and Straits Times, 6 July 2019

Table 1: Pharmaceutical spending[1] per capita (USD)

Country	2016	2017	2018	2019
United States of America	1245.3	1267.6	1308.8	1376.3
Germany	816.7	846.9	891.6	935.1
United Kingdom	498.3	512.4	510.8	515.5
Canada	834.4	845.5	859.9	863.9
Mexico	250.6	252.5	253.0	251.0

[1]Pharmaceutical spending covers expenditure on prescription medicines and self-medication, often referred to as over-the-counter products.

Source: OECD

Extract 2: Research and development in the pharmaceutical industry

Funding for pharmaceutical research and development (R&D) is the result of a mix of private and public sources. Governments mainly support basic and early stage research. Such funding is made through direct budget allocations, research grants, publicly-owned research institutions and funding of higher education institutions. The pharmaceutical industry translates and applies knowledge generated by basic research to develop products and invests in large clinical trials. The industry also receives direct R&D subsidies or tax credits from governments in many countries. Such investment in research and development in the area of pharmaceutical production not only improves the health of the population, but also, other aspects are detected, such as savings in health spending (by reducing hospitalizations) and the reduction of operating costs in the health sector.

Source: Adapted from *OECD iLibrary*

Extract 3: Here is why prices of many prescription drugs in the U.S. are so high

Pharmaceutical companies have long attributed high prices to innovation, arguing that new and improved drugs are naturally more expensive. But a new study suggests that, largely, prices have gone up because companies are raising the price of drugs that are already available rather than the entry of

new products. It was found that between 2008 and 2016, brand-name oral prescription drugs rose 9 percent annually, while injectable drugs increased 15 percent per year. Inflation, meanwhile, is only about 2 percent.

Price increases do not necessarily reflect improvement or even change. Research and development is only about 17 percent of total cost in most large drug companies. Once a drug has been approved by the government, there are minimal additional research and development costs so pharmaceutical firm cannot justify price increases by claiming research and development costs. Instead, it could be the lack of competition in the U.S. that allowed for price increases to be much higher than in other countries.

When prices go up, it does not just affect Americans without coverage. Studies showed that 30 percent of uninsured Americans and 14 percent of insured Americans postponed or skipped doses of their medication because they cannot afford the high drug prices.

Studies suggest that lawmakers impose new limits on how much pharmaceutical companies can increase drug prices. Other countries have had success holding down drug prices by employing centralized price negotiations, where a government body will use its collective power to bargain for lower prices for drugs.

For at least a decade, a majority of Americans have been dissatisfied with the country's largely for-profit health-care system. That is partly because pharmaceutical drugs are more expensive in the U.S. than elsewhere. Overall, the Americans spends twice as much as its peers in other countries.

Source: CNBC, 14 January 2019

Extract 4: Price controls are not the answer to expensive drugs

The advocates of price controls now are targeting the pharmaceutical industry. The consequences from implementing price controls on the pharmaceutical industry will be no different than the consequences that occurred in the grain or housing markets. Just look to the European Union's (EU) drug industry, where pharmaceutical price controls were implemented two decades ago.

Before its price controls, EU firms were the global leaders in biopharmaceutical innovation. Since the implementation of price controls, research spending in the EU has stagnated, much of it diverting to the U.S. where price controls do not exist. Over time, these diverging trends have enabled the U.S. to become the global innovation leader.

As a result, the EU has endured many adverse consequences. Access to existing medicines have faltered. While the U.S. has access to nearly 90% of newly launched medicines, patients in Germany only have access to 71%. In France, the access rate is even lower at 48%.

By some estimates, the research and development slowdown has led to 46 fewer medicines being introduced into the marketplace. The actual costs to patients (worldwide) from not having access to new (possibly better) treatments is unknowable. The lost savings potential these medicines could have created, by avoiding the need for other more expensive health care treatments (e.g. surgeries), is also unknowable. The EU has also faced economic consequences as the lost research and development activity has cost the EU nearly 1,700 high paying research jobs. Should drug price controls be implemented, the U.S. will not be exempt from the adverse consequences. Access will be reduced, innovation will suffer, and the economy will be less vibrant.

Source: Forbes, 18 October 2019

Extract 5: Actions U.S. government can take to reduce drug prices

Competition is a sacred American ideal. But policymakers have been slow to remove the barriers generic drugs face when trying to enter the market. Most people are familiar with "pay-for-delay" tactics through which pharmaceutical companies pay would-be competitors not to bring generic drugs to

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market, but they also use other tricks to smother competition before it begins. Some pharmaceutical companies use a technique known as "product hopping" to extend monopoly prices and prevent the entry of generic drugs. A company product hops shortly before the expiration of monopoly protection, it introduces minor changes to a branded drug, thereby delaying generic drug approvals and substitutions. The U.S. government could more aggressively enforce antitrust laws against such tactics and not grant cosmetically different products market exclusivity immediately before branded products are set to lose monopoly protection.

Source: *Harvard Business Review*, 21 February 2020

Question:

(a) (i)   Using Table 1, compare the pharmaceutical spending per capita (USD) between United States of America and Canada from 2016 to 2019.   [2]

   (ii)   Using evidence from the extract, justify the value of price elasticity of demand for pharmaceutical drug.   [2]

   (iii)   Explain whether the value of price elasticity of demand for pharmaceutical drug in a(ii) could be used to account for the change in pharmaceutical spending in United States of America.   [4]

(b)   With reference to Extract 2, explain why governments often need to subsidise research and development by pharmaceutical firms.   [4]

(c)   Discuss whether a policy of price control or promoting greater competition is a better way to increase affordability of pharmaceutical drugs.   [8]

(d)   Discuss the extent to which market dominance in the U.S. pharmaceutical market is a concern to the government in light of its impact on efficiency and equity.   [10]

[Total: 30]

Question 2: The Singapore economy: challenges on the horizon

Extract 6: Is low growth the new normal for Singapore?

When the global financial crisis hit Singapore in 2009, the shock left the country with real GDP growth of 0.1 per cent. But the economy rebounded quickly. The following nine years delivered an average annual growth of 5.2 per cent, owing largely to a sharp rebound in 2010, registering a growth of 14.5 per cent. The mood is discernibly more downbeat this time. The Government now forecasts that the economy will grow only within the range of 0.5 to 2.5 per cent in 2020. Is low growth the new normal for Singapore? As a small, open economy heavily dependent on external demand, Singapore's national output is subject to the vagaries of the global economy. One reason to think we are less likely to see a strong recovery this time around is that the US-China trade war is affecting the Singapore economy by disrupting global supply chains. Although many of the tariffs (taxes on imported goods) imposed by the US on Chinese goods do not directly affect Singapore, there are spillover impact due to Singapore's role in global supply chains. For example, Singapore companies that produce intermediate goods used as inputs in the production of China's exports to the US may see a lower demand for their goods.

Singapore's continued growth will be tested as it faces bigger challenges on the horizon including an ageing population and weakening productivity. The growth of Singapore's total real GDP today also depends on labour force growth, and capital investment. The number of citizens in the working ages of 20 to 64 years will start to decline from this year onwards due to more retiring and fewer entering the workforce, as the number of babies dropped to an eight-year low in 2019. This factor, taken alone, will be a drag on growth. Ageing reduces economic growth as there are fewer new workers to boost output. Workforces in some 40 countries are already shrinking because of demographic change. As the number of elderly people increases, governments may neglect growth-boosting public investment in education and infrastructure in favour of spending on pensions and health care. People in work, required to support ever more pensioners, must pay higher taxes. Technology may at some point overcome the stifling effect of ageing. Some experts find that when young workers are sufficiently scarce, manufacturers invest in more automation, and experience faster productivity growth as a result.

Source: Adapted from Channel NewsAsia, 20 January 2020 and The Economist, 30 March 2019

Extract 7: Impact of technological disruption on employment

An aging population is not the only challenge in the job market. Like the rest of the world, technological disruption is set to shift the employment landscape. Workers in Singapore will be hit hard by technological disruptions with the Republic's labour market set to face the largest degree of job displacement regionally in the next decade, based on a study on the impact of artificial intelligence (AI) on workers in six South-east Asian economies. The new study by technology company Cisco and economic forecasting agency Oxford Economics also found that Singapore will have to confront the biggest mismatch between skills and jobs created among the countries in the region. Data showed that about one-fifth of Singapore's full-time equivalent workforce (20.6 per cent) will have their jobs displaced by 2028. This is higher than the figures for Vietnam (13.8 per cent), Thailand (11.9 per cent), the Philippines (10.1 per cent), Indonesia (8.1 per cent) and Malaysia (7.4 per cent). The study noted that Singapore, which is "already close to the frontier of technological progress", has an exceptional enabling environment for innovation and digital transformation, as well as a small geographical area, and modern and upgradeable infrastructure. This means that businesses can take advantage of innovations as they become available. By contrast, the smaller job displacement in relative terms for other economies such as Indonesia and the Philippines was due to a variety of factors, including a possibly slower pace of technological change, expectations of institutional and political constraints on automation.

Source Adapted from Todayonline, 16 September 2018

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Extract 8: Singapore government working to overcome key challenges

The Government is committed to developing Singaporeans and is working closely with enterprises and workers to do so, Deputy Prime Minister Heng Swee Keat said yesterday. This comes amid profound structural changes to the labour market and economy, such as an ageing population, multiple careers, and rapidly advancing technology and business models. Mr Heng said this tripartite approach has three prongs to increase labour productivity and attract investments.

1. The Government investing in enabling lifelong learning and smooth job transitions.
2. The SkillsFuture movement to enable workers to take ownership of their own learning and growth.
3. Enterprises stepping up their transformation while redesigning jobs and upgrading workers.

It is recommended that governments support continuing and lifelong education and healthcare for all, promote employment among women and older people, including through a gradual increase in the official retirement age, and support family-friendly policies, among other things. If Singapore is to remain a competitive and attractive economy for businesses, it needs to maintain a vibrant and productive workforce. So, the sooner Singapore figures out how best to tap the human capital potential of an ageing workforce and improve working lives for everyone, the better.

Amidst the ongoing trade tensions, there are strengths in Singapore's economy that serve us well. The strong trading networks and diversified sectors that Singapore has developed over the years will enable companies in Singapore to navigate disruptions, and seek out new opportunities as well as alternative suppliers and demand markets. These external linkages are best safeguarded by a strong and well-enforced set of World Trade Organisation (WTO) rules, as well as a network of Free Trade Agreements (FTAs) that Singapore will continue to expand and deepen which would boost Singapore's exports to other nations. FTAs seek to reduce barriers to trade in goods, services and investment. Singapore is also pursuing closer economic ties with emerging markets to diversify our demand sources and supply chains. For instance, Singapore is looking into FTAs with the Eurasian Economic Union, the Pacific Alliance, and the Southern Common Market in South America.

Singapore will also continue to press on with efforts to help companies build the capabilities that they need to access new markets. One example is the Industry Transformation Maps (ITMs), which are dynamic plans that will be updated to help companies respond quickly to changes in the economic environment. Currently, there are ITMs for 23 sectors. Assistance for local small and medium enterprises (SMEs) are also on hand to enhance their capabilities. Both the Enterprise Development Grant and Productivity Solutions Grant have been extended for another three years, till March 2022, to help SMEs build up capabilities to grow and transform.

*Source: Adapted from The Straits Times, 29 February 2020 and 13 July 2020,
and psd.gov.sg, 20 March 2019*

Table 2: Key economic data for Singapore

	2016	2017	2018	2019
Real GDP growth (annual % change)	3.3	4.5	3.5	1.3
Unemployment rate (%)	2.1	2.2	2.1	2.3
Nominal exchange rate (SGD per USD)	1.382	1.381	1.349	1.364
Current account balance with US (US $billion)	8983.5	10 281.8	6370.8	4798.8

Table 3: Gross Savings (% of GDP) in Singapore and China

	2016	2017	2018	2019
Singapore	44.6	45.5	42.1	40.1
China	44.5	45.0	44.4	43.8

Table 4: Exports of Goods and Services (% of GDP) in Singapore and China

	2016	2017	2018	2019
Singapore	164.7	171.1	177.1	175.9
China	19.6	19.7	19.1	18.5

Table 5: Imports of Goods and Services (% of GDP) in Singapore and China

	2016	2017	2018	2019
Singapore	138.6	144.7	148.3	147.6
China	17.3	17.9	18.3	17.3

Source: World Bank and Singstat.gov.sg

Questions

(a) With reference to Table 2:

    (i) State what happened to the nominal exchange rate of the SGD between 2016 and 2019. [1]

    (ii) Explain whether you would expect the change in the exchange rate to lead to the change in the current account balance shown. [2]

(b) Explain two factors that would determine the impact of the fall in exports of goods and services on Singapore's and China's economy. [4]

(c) With the aid of a diagram, explain how ageing population and the on-going US-China trade war would impact Singapore's productive possibility curve. [5]

(d) Discuss the extent to which technological disruption would give rise to unemployment in Singapore. [8]

(e) Extract 8 mentions that Singapore is increasing the official retirement age, building a network of Free Trade Agreements (FTAs) and developing the Industry Transformation Maps (ITMs).

In light of the economic challenges highlighted in the case study, discuss whether supply-side policies are the most appropriate policy to achieve sustained economic growth in Singapore. [10]

[Total: 30]

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## Q1 The dominance of pharmaceutical firms in United States

(a)	(i)	Using Table 1, compare the pharmaceutical spending per capita (USD) between United States of America and Canada from 2016 to 2019.	[2]

Suggested answer:
Both the pharmaceutical spending by US and Canada rose.
Pharmaceutical spending by US rose at a faster rate than Canada's.
Pharmaceutical spending by US is always higher than Canada's.

[Any of the 2 points above for 2m]

(a)	(ii)	Using evidence from the extract, justify the value of price elasticity of demand for pharmaceutical drug.	[2]

Suggested answer:
The PED value for pharmaceutical drug is less than one. This is because pharmaceutical drug is needed to save lives, thus making it less substitutable/ pharmaceutical drug is protected by patent systems in U.S., thus reducing the number of substitutes available. When price of pharmaceutical drug increases, consumers do not have other options to switch to and thus causing the quantity demanded to fall less than proportionately, making demand price inelastic. [1]

(a)	(iii)	Explain whether the value of price elasticity of demand for pharmaceutical drug in aii could be used to account for the change in pharmaceutical spending in United States of America.	[4]

Suggested answer:
PED < 1 can be used to account for the increase in pharmaceutical spending in U.S. According to Extract 1, Pfizer raises price and due to PED<1, quantity demanded falls less than proportionately, thus causing total expenditure (TE) to increase as TE = P x Q.

However, the increase in pharmaceutical spending in U.S. can also be due to other reasons, such as the population becoming more diabetic, causing increase in demand for pharmaceutical drug, which increases both price and quantity, leading to increase in TE.

(b)	With reference to Extract 2, explain why government often need to subsidise research and development by pharmaceutical firms.	[4]

Suggested answer:
Research and development (R&D) by pharmaceutical firms generates positive externalities. For example, when a firm such as Pfizer does R&D and new products or new processes are created, it has spillover benefits to third parties such as other firms in the health care sector where they can enjoy a lower cost of operation/production. [2] Thus the presence of positive externalities lead to the divergence of MPB and MSB. Producers will do R&D at MPB=MPC, however the socially optimal level is at MSB=MSC, leading to underproduction. Hence due to underproduction, governments often need to intervene by subsidising R&D by pharmaceutical firms. [2]

(c)	Discuss whether a policy of price control or promoting greater competition is a better way to increase affordability of pharmaceutical drug.	[8]

Suggested answer:

Consumers' expenditure on pharmaceutical drugs has increased over the years in US and prices of pharmaceutical drugs are also rising, thus affecting affordability. Thus the US government could consider a policy of price control such as price ceiling, or to promote greater competition by easing access for generic drugs to enter the market, in order to make pharmaceutical drugs more affordable.

A price ceiling (maximum price) is the highest permissible price that producers can legally charge. This means the price is not allowed to rise above the level set, but is allowed to fall below it. This maximum price (Pmax) is below the market equilibrium price for drugs (Pe), which is deemed too high.
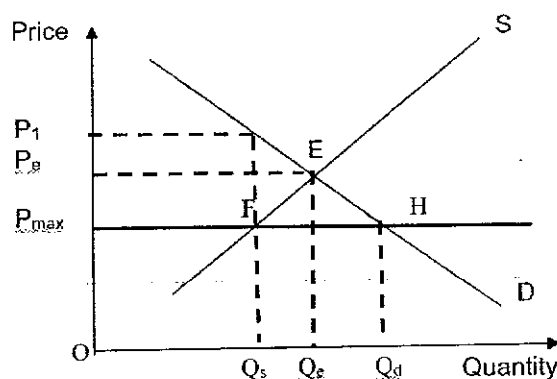
With price ceiling, pharmaceutical drugs are made more affordable to consumers as they now pay a price of Pmax rather than Pe. Consumers who are able to buy pharmaceutical drugs at OQ_s at the lower price of OP_{max} are better off since the pharmaceutical drugs are now much cheaper.

With the implementation of price ceiling, total revenue earned by pharmaceutical firm will be reduced from OP_eEQ_e to $OP_{max}FQ_s$. With the decrease in total revenue, pharmaceutical firm will have less ability to do R&D, which explains why research spending stagnated after implementation of price ceiling as stated in Extract 4. Reduction in R&D is detrimental in the pharmaceutical industry as it leads to fewer new or better quality drugs created to save lives. The reduction in R&D spending can also lead to macroeconomic consequences such as increase in unemployment and limiting potential growth.

In addition, as price ceiling results in shortage of Q_dQ_s, access of pharmaceutical drug to consumers will be reduced. This negatively affects equity as although price is reduced via price ceiling, quantity is reduced and lower income consumers may still face difficulty in gaining access to essential drugs.

According to Extract 5, pharmaceutical firms are seen to be abusing their market dominance and preventing entry of generic drugs via "pay-for-delay" and "product hopping" tactics. Thus government should regulate such behavior and allow fairer competition. By reducing such barriers to entry created by existing pharmaceutical firms, generic drugs can enter the market. This will increase the number of substitutes available

and existing firm such as Pfizer will face a lower and gentler (due to increase in PED value) demand curve. Profit maximising price occurs at MR=MC, which will be lowered, hence increasing the affordability of pharmaceutical drugs.

Existing firm such as Pfizer will be operating on smaller scale due to entry of generic drugs. The lower scale of production reduces Pfizer's ability to reap economies of scale which can increase their average cost of production, reducing their profits and in turn its ability to do R&D of new drugs.

Monitoring and enforcement costs faced by the government can be very high as it can be difficult for the government to uncover "pay-for-delay" tactics. It can also be difficult to justify if an existing pharmaceutical firm is indeed "product hopping" or if it was a legitimate new innovation.

To determine which policy is a better measure depends on the weighing of benefits and costs. Both policies help to reduce price of pharmaceutical drug but price ceiling results in shortage while promoting greater competition is likely to increase the availability of drugs instead due to more firms in the market. Furthermore, a price ceiling can also result in the formation of black market, where the price charged can be as high as P_1 as shown in the above diagram. This counters the original intention of increasing affordability. Thus based on these reasons, promoting greater competition is a better policy.

(d)	Discuss the extent to which market dominance in the U.S. pharmaceutical market is a concern to the government in light of its impact on efficiency and equity.	[10]

Governments' microeconomic aims are efficiency (allocative, productive and dynamic efficiency) and equity. Whether market dominance in the U.S. pharmaceutical market is a concern to U.S. government depends on whether market dominance will help promote efficiency and equity. Overall, U.S. government will be concern by a large extent unless there are ways for them to regulate the U.S. pharmaceutical firms to ensure that they do not abuse their market dominance.

From extract 4, it is stated that the lack of competition in the U.S. pharmaceutical market allow the pharmaceutical firms to rise prices higher than other countries. This means that they are exploiting their market power to restrict output to increase price, allowing them to raise drug prices higher than marginal cost. This would lead to allocative inefficiency. With the lack of competition, the pharmaceutical firms could also pass on to consumers unnecessary additional cost (e.g.: 'pay-for-delay' tactics) in the form of higher prices, leading to X-inefficiency. Ultimately, these higher drug prices will reduce accessibility of drugs to consumers, which will negatively affect equity.

Market dominance also lead to the existing pharmaceutical firms to engage in anti-competitive behavior such as 'product hopping' and 'pay-for-delay' tactics, which prevent cheaper generic drugs from entering the pharmaceutical market. This reduces the consumers' ability to get the required dosage of medication for their treatment (Extract 3), which implies that there is a reduce equity.

However, in U.S., market dominance in the pharmaceutical market was established through patent systems granted by government (Extract 1), which give rise to positive impact on efficiency and equity. Firstly, market dominance allow them to have larger market share. Thus, in the early stages of research and development (R&D) of new drugs, it allow them to enjoy risk-bearing economies of scales, where they are able to spread the high cost and risk of R&D across large scale production of drugs. It will lead to a fall in average cost of production of new drug development. Assuming revenue remains

constant, the profit margin of pharmaceutical firms will rise. This will also give them the incentive to engage in more R&D, which will allow the pharmaceutical firms to release more new drugs in U.S (Extract 4, Paragraph 3). This will lead to dynamic efficiency as well as an increase in access to new drugs, which will improve equity.
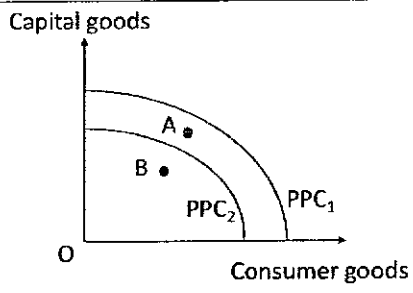
With the increase in R&D that arise from market dominance, it could also lead to more efficient pharmaceutical production which reduce operating cost in health sector (Extract 2). This means that it would be possible for firms in health sectors to transfer cost savings to consumers in the form of lower prices of healthcare services. This will lead to an improvement in allocative efficiency as well as improvement in equity for consumers when they consume healthcare services.

Based on the extract 2 and 4, market dominance is needed to incentivise firms in the pharmaceutical market to engage in costly R&D to develop better and more effective drugs. It will also give them the incentive them to release new drugs to countries which allow them to enjoy a certain level of monopoly (Extract 4), which will help in improving equity in the pharmaceutical market. However, as seen in U.S. in extract 3 and 5, market dominance could lead to higher prices, inefficiency and reduction of equity. Hence, market dominance in the pharmaceutical market will be a concern by a large extent in terms of ensuring efficiency and equity unless there are antitrust laws put in place to reduce abuse of market power and ensure consumers were not exploited in the form of high prices and restricted of access to drugs.

Question 2: The Singapore Economy: Challenges on the horizon

(a)	With reference to Table 1:		
	(i)	State what happened to the nominal exchange rate of the SGD between 2016 and 2019.	[1]

Suggested answer:
The nominal exchange rate of the SGD appreciated against USD between 2016 and 2019. [1]

	(ii)	Explain whether you would expect the change in the exchange rate to lead to the change in the current account balance shown.	[2]

Suggested answer:
With appreciation of SGD against USD, price of exports rises in terms of USD and price of imports falls in terms of SGD. Assuming demand for both exports and imports are price elastic, there will be more than proportionate fall in quantity demanded for exports and more than proportionate rise in quantity demanded for imports. Hence export revenue (X) falls and import expenditure (M) rises, resulting in a fall in net exports (X-M). This is expected, as shown by the decreasing current account surplus with US that implies a fall (X-M).

(b)	Explain two factors that would determine the impact of the fall in exports of goods and services on Singapore's and China's economy.	[4]

Suggested answer:
The two factors that would likely determine the impact of the fall in exports of goods and services on Singapore's and China's economy are the value of the fall in export revenue as a percentage of GDP and the size of multiplier.

If the value of exports revenue as a percentage of GDP is large, a fall in the export of goods and services will have a significant impact on the economy. Exports of goods and services (% of GDP) is much higher in Singapore compared to China (Table 3) since China has a large domestic market. Hence the fall in aggregate demand (AD) and national income in China will be less significant. [2]

Another factor that determine the impact is the size of multiplier (k), which is inversely related to the marginal propensity to withdraw (MPW) made up of marginal propensity to save (MPS), marginal propensity to tax (MPT) and marginal propensity to import (MPM). Singapore's imports of goods and services (% of GDP) is higher than that of China (Table 4) due to lack of raw materials and dependence on imports, translating into a higher MPM. Gross savings (% of GDP) is quite similar for both Singapore and China (Table 2). It can be concluded that the size of k is smaller in Singapore than China, hence the multiple fall in national income due to the fall in exports of goods and services will be of a smaller extent in Singapore compared to China. [2]

(c)	With the aid of a diagram, explain how ageing population and the on-going US-China trade war would impact Singapore's productive possibility curve.	[5]

Suggested answer:

Capital goods

Figure C

1 mark for diagram
4 marks for explanation

Ageing population → reduces the size of labour force → reduces productive capacity of the Singapore economy → PPC shifts from PPC_1 to PPC_2.

On-going US-China trade war → China produce less goods and demand less intermediate goods produced in Singapore → reduction in Singapore exports → movement from point A to point.

| (d) | Discuss the extent to which technological disruption would give rise to unemployment in Singapore. | [8] |

Suggested answer

Technological disruption would give rise to unemployment in Singapore. Technological disruption → firms adopting the use of new technology become less reliant on lower skilled workers → low skilled workers are made redundant → lost their jobs. Those who have been made redundant do not have the skills and knowledge that match the requirements of jobs available. Hence, they become structurally unemployment. From Extract 2, we understand that the extent of workers' jobs being displaced by new technology is greater in Singapore as compared to neighbouring countries such as Thailand, Malaysia and Indonesia as Singapore has a conducive environment and good infrastructure to support innovation, automation and adoption of new technology.

Technological disruption may result in the redundancy of the lower skilled workers but it would also create employment opportunities for the higher skilled workers if effective training is provided for the retrenched workers. Lower skilled workers who are displaced by new technology could be retrained and be deployed in new industries that require skilled workers to work with new technology. Extract 3 mentions how the Singapore government plans to equip workers with new skills and enable them to take up new jobs. The extent of the impact of technological disruption on unemployment can be reduced through government interventionist supply side policy such as retraining to equip retrenched workers with new skills → deploy in other industries that require skilled workers to work with new technology.

However, supply side policy such as SkillsFuture is a long-term policy and which require strong commitment and financial support from the government. Countries such as Singapore which have the necessary financial resources with its budget surpluses would face lesser constraints to provide incentives for workers to upgrade their skills. The success of these policies would also very much dependent on the workers educational level and attitude towards training and re-training.

Undoubtedly, technological disruption can have an adverse impact on employment, causing jobs to be displaced and resulting in a rise in structural unemployment. The extent of the impact depends on sustainability of government's financial support to provide retraining opportunities for the workers who lost their jobs due to technological disruption. As mentioned, supply side policy such as retraining is a long-term measure and it requires substantial funding from the government over a long period of time. In addition, it is also important to consider the readiness of the workers to learn new skills and be re-employed in new industries – if workers are less resistant to retraining and learning new skills and are willing to work in new industries → reduce the duration of being structurally unemployed.

(e)	Extract 3 mentions that Singapore is increasing the official retirement age, building a network of Free Trade Agreements (FTAs) and developing the Industry Transformation Maps (ITMs). In light of the economic challenges highlighted in the case study, discuss whether supply-side policies are the most appropriate policy to achieve sustained economic growth in Singapore.	[10]

<u>Suggested answer:</u>
Sustained economic growth comprises of actual growth in the short run and potential growth in the long run. The economic challenges highlighted in the case study are the US-China trade war, ageing population and weakening productivity that affected sustained growth in Singapore. Whether supply-side policies are the most appropriate policy depends on various factors that include benefits, costs, constraints and unintended consequences of the policies.

The Industry Transformation Maps, Enterprise Development Grant and Productivity Solutions Grant (Extract 3) seek to encourage innovation and transformation. This increases productivity that can be boost export competitiveness in the world market as falling unit COP can be translated to lower prices of exports. Assuming demand is price elastic, there will be a more than proportionate rise in quantity demanded for exports, increasing X. As quality of exports will be boosted with innovation, demand for exports in the world market will also rise, increasing X. The increase in productivity also makes Singapore more competitive for businesses (Extract 3) as expected profit is higher, hence attracting FDI. The increase in I, X and AD from AD0 to AD1 will cause a multiple rise in real GDP from Y0 to Y1 (as shown in Figure e) via the multiplier effect and achieve actual growth.

At the same time, such innovation and transformation will increase the quality of capital and technology, reducing unit COP and increasing productive capacity of the Singapore economy. The gradual increase in official retirement age also increases the quantity of labour and productive capacity. AS curve shift outwards from AS0 to AS1(as seen in Figure e), increasing potential (full employment) output from YF0 to YF1 and achieving potential growth.
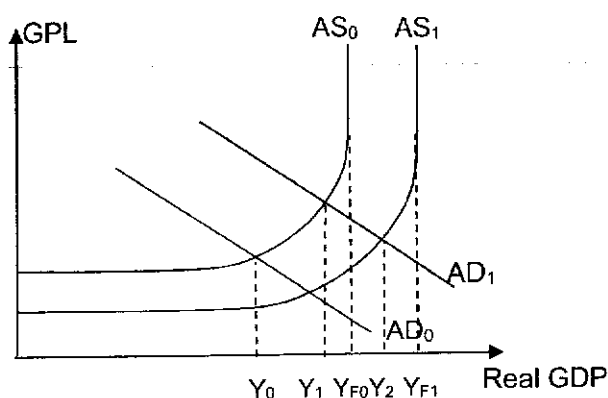

<u>Figure e</u>

With the rise in actual growth and potential growth, sustained growth can be achieved as real GDP increases from Y0 to Y2.

However, such policies have their limitations. One constraint is the time needed for technology and innovation to be adopted and for the impact to be materialised. One unintended consequence is the contagion impact the global crisis have on Singapore as a small and open economy. The ongoing US-China trade war could lead to a slowdown in global trade if it escalates, hence the diversification of export markets and boosting of export competitiveness may not be significant to increase overall (X-M). It is also costly for the government to implement ITMs and provide grants to local SMEs, incurring opportunity cost of limited government funds in terms of forgone spending on other areas of the economy such as healthcare and defence. This may then result in the unintended consequence of falling non-material SOL and hindering potential growth.

Hence the Singapore government needs to implement demand-side policies to boost AD in the short run. One example is to sign Free Trade Agreement (FTAs) with the Eurasian Economic Union, the Pacific Alliance, and the Southern Common Market in South America (Extract 3) can be used to mitigate the negative impact of the US-China trade war by diversifying Singapore's demand source and reducing barriers to entry to trade and investment. These increase X, FDI and AD from AD0 to AD1, causing a multiple rise in real GDP from Y0 to Y1 via the multiplier effect and achieving actual growth. One constraint of building a network of FTAs is the time taken to source for new trading partners and negotiate the FTAs.

One example is the use of expansionary fiscal policy. The Singapore government increases spending on skills and education, healthcare, transport etc directly increase G. The fall corporate tax also increases after tax profits and the incentive to invest, hence increasing I. These increase AD from AD0 to AD1 will cause a multiple rise in real GDP from Y0 to Y1 via the multiplier effect and achieve actual growth.

However, one constraint is the confidence level of firms. Should firms be pessimistic about future expected profit due to weak economic condition, the reduction in corporate tax will not incentivise them to increase I, hence the rise in AD and real GDP may be limited. One unintended consequence is the resource crowding-out effect whereby the rise in demand for scarce resources will increase price and cost of production. Hence private investment may fall, limited the rise in AD and real GDP.

In conclusion, the supply-side policies undertaken by the Singapore government are indeed appropriate to achieve sustained economic growth as they tackle the root causes of the economic challenges faced. Signing FTAs and embracing innovation will mitigate the impact of the US-China trade war and weakening productivity, whereas raising the official retirement age will mitigate the impact of ageing population and weakening productivity. However, they may not be the most appropriate due to their limitations.

Such policies are largely long term in nature, hence short term policies such as expansionary fiscal policy to boost C, I and G internally must be complemented to achieve actual growth in the short run. This will also help to cushion the impact of falling (X-M) on Singapore as a small and open economy that is vulnerable to external demand shocks such as the US-China trade war and Covid-19 pandemic.

Appropriateness of supply-side policies can also be enhanced through reducing the constraints and unintended consequences. For example, capitalising on existing technology to expedite the process will minimse the time constraint. Furthermore, as the Singapore government has national reserves to tap on to finance the supply-side policies, the unintended consequence on non-material SOL as a result of opportunity cost incurred may not be a large concern.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.

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

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

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **three** questions in total, of which **one** must be from **Section A, one** from **Section B** and **one** from **either** Section A or Section B.
Answer each question on a fresh sheet of paper.
At the end of the examination, fasten your answers to each question SEPARATELY
The number of marks is given in brackets [ ] at the end of each question or part question.

If there are part questions you did not attempt, please write the question number and part in the margins before you submit your answers. *(e.g. if you did not complete 2b, indicate 2b in the margin of the answer script that you submit for question 2.)*

You are advised to spend several minutes reading the question and planning your answers before you begin writing.

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

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

[Turn over

Answer **three** questions in total.

Section A

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

1   A significant fall in cost of producing batteries for electric cars, a key component in electric cars, has benefited electric car manufacturers such as Tesla. At the same time, rising cost of raw materials has affected car manufacturers of high-end petrol cars such as Toyota. A rise in income and greater concern for the environment have caused more drivers in Singapore to switch from high-end petrol cars to electric cars.

  (a) Explain how the significant fall in cost of producing batteries and rising income impact the market for electric cars.   [10]

  (b) Discuss how the above events affect total expenditure on electric cars and high-end petrol-run cars in Singapore.   [15]

2   Due to COVID-19 pandemic, Singapore experienced an economic contraction of 5.8% in 2020. Some brick and mortar stores such as Robinsons are closing down their physical stores while others such as Sheng Siong that are able to adopt the use of technology are doing well.

  (a) Explain the relevance of different types of cost to a firm when deciding whether to shut down.   [10]

  (b) Discuss the extent to which the type of market structure that the firms operate in determine their ability to maintain profit margin in the midst of a recession.   [15]

3   A new coastal and flood protection fund, with an initial injection of $5 billion, will be set up to help protect Singapore against rising sea levels. In addition, Singapore's healthcare expenditure will triple to about $12 billion a year, to ensure that every Singaporean has access to affordable and quality healthcare.

  (a) Explain what needs to be considered when a government makes a rational spending decision about such projects like flood control.   [10]

  (b) Discuss whether government intervention will always lead to an efficient allocation of resources in the healthcare market.   [15]

Section B

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

4   China experienced a growth of real Gross Domestic Product (GDP) of 2.3% and balance of trade (BOT) surplus of US$535.4 billion in 2020. Under the five-year pro-growth policy plan, the country aims to move to rely more on consumption and investment for growth rather than export. The government also wants to emphasise on high-quality growth that is based on innovation and protects the environment.

   (a) Explain how real GDP and BOT data might be used to measure the economic performance of China.   [10]

   (b) Discuss the extent to which the pro-growth policy in China will lead to improvements in standard of living.   [15]

5   Monetary policy in Singapore is centred on the exchange rate. In the small and open Singapore economy, the exchange rate is often used to maintain price stability.

   (a) Explain why maintaining price stability is an important macroeconomic objective of a government.   [10]

   (b) Assess whether monetary policy centred on exchange rate is considered to be the most appropriate policy in maintaining price stability in Singapore.   [15]

6   COVID-19 has led to sharp fall in real GDP of many countries. Governments around the world have committed large amount of government spending to fight the negative effects of COVID-19.

   (a) Explain the constraints that governments face in the use of expansionary fiscal policy.   [10]

   (b) Discuss the extent to which the use of expansionary fiscal policy will lead to conflicts in government macroeconomic objectives.   [15]

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A significant fall in cost of producing batteries for electric cars, a key component in electric cars, has benefited electric car manufacturers such as Tesla. At the same time, rising cost of raw materials has affected car manufacturers of high-end petrol cars such as Toyota. A rise in income and greater concern for the environment have caused more drivers in Singapore to switch from high-end petrol cars to electric cars.

(a)   Explain how the significant fall in cost of producing batteries and rising income impact the market for electric cars.   [10]

(b)   Discuss how the above events affect total expenditure on electric cars and high-end petrol-run cars in Singapore.   [15]

a) Explain how the significant fall in cost of producing batteries and rising income impact the market for electric cars   [10] .

The fall in cost of producing batteries of electric cars, which is a key component of electric cars, will cause supply for electric cars to rise. The rise in income will cause demand for electric cars to rise. The combined effects of a rise in demand and supply will have an impact on the market for electric cars, which will cause the equilibrium price and quantity to change.

Fall in cost of producing batteries will lead to a rise in supply for electric cars. As batteries is a key component in electric cars, the fall in cost of producing batteries will lead to a fall in cost of production of electric cars. For profit maximising firms producing electric cars such as Tesla, it will lead to an increase in profit, ceteris paribus, which will increase in the incentives of firms to be more willing and able to produce electric cars, causing supply of electric cars to rise. As a result, it will lead to a rise in equilibrium quantity and fall in equilibrium price of electric cars.

The rise in income in Singapore will lead to a rise in demand for electric cars. The rise in income in Singapore will means that the purchasing power of households in Singapore rises. As electric cars could be considered as a luxury good (as the degree of necessity of having an electric car is low), it will lead to a more than proportionate increase in demand for electric cars. Thus it will lead to a rise in both equilibrium quantity and a rise in equilibrium price of electric cars.

The combined impact of fall in cost producing batteries and rise in income will lead to a definite increase in equilibrium quantity of electric cars but impact on equilibrium price of electric cars is uncertain. It could be possible that the rise in income could have a more significant impact compared to the fall of cost of batteries. Firstly, there are other components of electric cars that could contribute to the cost of producing electric cars, which could prevent the cost of producing electric cars from falling drastically. Secondly, as electric cars is deemed to be a luxury good, the impact of rise in income on demand is more significant (rises more than proportionately). Hence, the increase in demand could be more than the rise in supply, which leads to an overall increase in price of electric cars.

Thus, the combined impact of fall in cost producing batteries and rise in income will have a definite increase in equilibrium quantity of electric cars while the impact on equilibrium price depends on the extent of increase in demand relative to increase in supply.

b) Discuss how the above events affect total expenditure on electric cars and high-end petrol-run cars in Singapore. [15]

Total expenditure is equal to price multiplied by quantity of cars sold. The rise in cost of raw materials for high-end petrol-run cars and rise in income will have an impact on price and quantity of high-end petrol-run cars, it will have an impact on total expenditure on high-end petrol-run cars. The fall in cost of batteries of electric cars, rise in income and the rise in price of high-end petrol-cars will also have an impact on total expenditure of electric cars as it also affects price and quantity of electric cars. The extent of impact on total expenditure on these two markets requires the concept of price elasticity of demand (PED), income elastic of demand (YED) and cross elasticity of demand (CED).

The rise in cost of raw material for high-end petrol-run cars will lead to an overall rise in cost of production of high-end petrol-run cars. While the effect rise in income in Singapore on demand depends on the classification of good of high-end petrol-run cars.

The rise in cost of raw material for high-end petrol-run cars will cause supply to fall. This will lead to a fall in profit, leading to a fall in supply of high-end petrol-run cars. This will lead to a rise in price and fall in quantity. However, the impact on total expenditure depends on the PED value of high-end petrol-run cars. Given that the loan repayment of such cars takes up a large proportion of income, demand is price inelastic. Thus a rise in price will lead to a more than proportionate fall in quantity. Thus, total expenditure will fall. Given that high-end petrol-run cars are luxury goods, a rise in income in Singapore will lead to a more than proportionate rise in demand for high-end petrol-run cars. Thus, equilibrium price and quantity will rise, leading to a rise in total expenditure. Thus, a rise in cost of raw material for high-end petrol-run cars will lead to a fall in total expenditure while the rise in income will lead to a rise in total expenditure for high-end petrol-run cars.

However, the combined effects on these two events on high-end petrol-run cars depends on the extent of the fall in supply and increase of demand. If demand increases more than fall in supply, total expenditure will rise. If demand increases less than the fall in supply, total expenditure will fall. Thus, we will need to know the extent of impact of rise in cost of raw material for high-end petrol-run cars in order to determine whether demand or supply changes by a larger extent.

Furthermore, given the analysis above on total expenditure on high-end petrol-run cars depends on ceteris paribus assumption, it does not account on the impact of growing concern of petrol-run cars on the environment. This could reduce the preference of Singapore drivers of owning a high-end petrol-run cars, which will reduce the willingness of Singapore drivers to purchase such cars. Thus, demand for high-end petrol-run cars will fall. This will also dampen the rise of demand, which could ultimately cause total expenditure to fall if demand changes less than the fall in supply.

Thus the impact on total expenditure of high-end petrol-run cars depends on extent of rise in cost of raw materials of high-end petrol-run cars and the extent of rise in income and growing concern of the environment affect demand.

As explained in part a, the significant fall in cost of battery will lead to a rise in supply of electric cars, which leads to a fall in price and a rise in quantity. The rise in income will lead to a rise in demand, leading to a rise in price and quantity. The PED value of electric car is more than 1 because the loan repayment for electric cars takes up a large proportion of income. Thus the fall in price will lead to a more than proportionate increase in quantity for electric cars, leading to a rise in total expenditure. As demand for electric cars will rise due to the rise in income, the increase Given that YED value is more than 1 (as it is a luxury good), there will be a rise in price and quantity of electric cars. Thus total expenditure will rise due to a rise in income.

Given that electric cars and high-end petrol-run cars are substitutes, the rise in price of high-end petrol-run cars will mean that electric cars will become relatively cheaper, ceteris paribus). Thus, Singapore drivers will switch to relatively cheaper electric cars, leading to a rise in demand for electric cars. Even though they might not be considered close substitutes yet, it will still cause demand for electric cars to rise, causing total expenditure to rise. Thus, these three events above will lead to an overall rise in total expenditure of electric cars.

For electric cars, the above events will definitely cause an increase in total expenditure. For high-end petrol-run cars, the effects on these events on total expenditure is more uncertain. It depends on whether demand rises overall (due to rise in income and fall in preference for high-end petrol-run cars) compared to the extent in the fall in supply.

Furthermore, the assumptions of these analysis depends on the ceteris paribus assumption. Given that there is an increase in taste and preference for electric cars and more government's policies to encourage ownership of electric cars (e.g. rebates for owning electric cars and higher spending on infrastructure for charging electric cars), it will cause demand for electric cars to rise and demand for high-end petrol-run petrol cars to fall, which will have further positive impact on total expenditure on electric cars and negative impact on total expenditure on high-end petrol-run cars.

2021 JPJC Prelim H2 P2 Question 2:
Due to Covid-19 pandemic, Singapore experienced an economic contraction of 5.8% in 2020. Some brick and mortar stores such as Robinsons are closing down but companies such as Sheng Siong that are able to adopt the use of technology are doing well.

(a) Explain the relevance of different types of cost to a firm when deciding whether to shut down.
[10]
(b) Discuss the extent to which the type of market structures that the firms operate in determine their ability to maintain profit margin in the midst of a recession. [15]

The different types of cost that a firm may face are fixed cost and variable cost. Fixed cost are costs that do not change when output changes while variable cost are cost that changes when output changes. Thus the sum of fixed cost and variable cost will give rise to total cost. Whether the different types of cost are relevant in the decision of a firm to close or not would depend on whether the firms operate in the short or long run.

Using an example of monopolistic competitive firm such as a bubble tea shop and assuming that it is earning subnormal profits as shown in the diagram below.
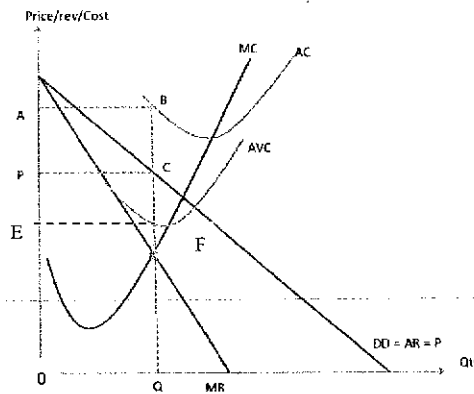
From the diagram above, at the equilibrium output of the firm 0Q where MC=MR, the firm makes subnormal profits as AC (0A) is larger than AR (0P). The subnormal profit made is shown by area PABC. However, the firm will continue to operate as the AR (or price) is able to cover AVC. This is because the firm will make a smaller loss as compared to shutting down in the short run.

By shutting down, the firm will have to incur fixed cost, e.g. the rental contract signed by a bubble tea firm for a period of a year is considered a fixed cost as it must still be paid back by the firm even if it were to shut down before the contract is up. Since the difference between the AC and AVC is the AFC which is shown by the distance BF, total fixed cost which will be incurred when the firm shuts down is equal to the product of BF and quantity 0Q and is equal to area EABF. The loss of shutting down (area EABF) is greater than the loss of continuing (PABC).

Thus, the firm should continue to operate as long as AR is greater than AVC as it will lead to a smaller loss made. This is because the excess of AR over AVC can be used to offset part of AFC, making the loss smaller if the firm were to continue.

However, if the firm is producing at where P < AVC, firms should shut down in the short run.

This is because when P<AVC, the firm not only incurs losses from the use of its variable factors, it also incurs losses from the use of its fixed factors. Thus, the firm can minimize its losses by shutting down as variable costs such as cost of raw materials (cups and tea) and wages of the labor need not be incurred if a firm were to shut down.

Thus, when the AR or price cannot even cover the AVC, it will be better for the firm to shut down to minimize its loss.

However, in the long run, the firm will definitely shut down whenever AR is less than AC. This is because in the long run, the firm must at least make normal profits to cover opportunity cost of being in the business or what it can earn in the next best alternative business. If the firm makes subnormal profit, the firm will be better off to shut down in the long run and shift its resources to other business where it can make more profits.

Thus, in the long run, it is necessary for the price to cover its AC (and not just its AVC) for the firm to continue to produce when face with a fall in demand.
Hence, a firm will shut down when its AR or price is lesser than its AVC in the short run but lesser than AC in the long run.

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(b) Discuss the extent to which the type of market structures that the firms operate in determine their ability to maintain profit margin in the midst of a recession. [15]

In a scenario of recession, national income is falling and consumers' income is falling. As such, demand for normal goods and services would fall and thus affecting the levels of revenue the firms in different market structures would be earning. To a small extent, the ability of firms to maintain profit are based on the market structures they are located in. However, this may not be true as the level of profit margins of firms in times of recession would also depend on other factors such as type of goods that the firms sell, ability to innovate and cost structure of the firm. In times of recession, the ability to maintain profit by firms can be affected by the market structures they are located in. For instance, in a more competitive industry such as the monopolistic competitive market, firms are generally more badly affected compared to firms in less competitive markets such as an oligopolistic market.

As a monopolistic competitive firm such as the bubble tea shop is likely to earn normal profits due to the low level of barriers to entry, a fall in demand due to falling income during a recession would result in the firm experiencing a fall in total revenue and thus earning subnormal profits. If the demand falls below AVC in the short run, the monopolistic competitive firm may ev end up be producing at where P < AVC and based on the analysis in part (a), the monopolistic competitive firm may even shut down since it may not have much reserves to draw on given that it makes normal profits in the long run.

Whereas for firms in less competitive industries such as the oligopolistic firm, fall in demand during recession may only reduce its level of initial supernormal profits. This is so as oligopolistic firms are large firms and each firm holds a significant market share. This indicates that there is high/substantial demand for their goods and service. Furthermore, due to the high barrier to entry, oligopolistic firms are most likely able to maintain its supernormal profits even in the long run. Hence, when demand falls in the midst of a recession, it is able to draw on its past profits to maintain its operations. Thus, even when demand falls below AVC, the oligopoly firms are able to continue its operation and survive through the recession.

As such, firms' ability to maintain their profit margin can be affected by the market structures they are located in.

The type of goods sold by firms can affect ability to maintain profits in the midst of a recession. Firms such as a monopoly that sells goods that are unique with little substitutes and sometimes essential for survival, despite a fall in national income due to recession, demand for its goods and services may only fall by a small extent as the YED for it's goods are between 0 to 1.

For example, a natural monopoly such as water and electricity power plant would only experience a fall in demand for its goods and service by a small extent. This is so as demand for goods and services such as water and electricity are likely to be positive income inelastic (0<YED <1) as they are basic necessities and are essential for survival. Hence when income falls, demand for the good will only fall by a small extent and its ability to maintain profit will not be adversely affected to a large extent.

However, for a monopolistic competitive firm such as a blogshop selling clothing and fashion accessories, it is likely to experience a larger fall in demand compared to demand for goods like water and electricity as these goods are not considered as essential for survival. Consumers are more likely to reduce expenditure on non-essential items during times of recession given that incomes are falling and there is negative expectation about future income. Thus, ability to maintain its profits will be affected greatly as the total revenue earned by a monopolistic competitive firm is likely to fall significantly. For firms that sell inferior goods (such as Sheng

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Siong supermarkets that sell more house brands and relatively less luxurious groceries), the recession may present an opportunity for them to even raise profits as demand for their goods rise significantly due to the YED being less than 0. Hence, ability to maintain profits for such firms will even rise significantly during a recession. For firms selling cars or branded goods, they are more likely to suffer a large fall in demand as such goods and services are considered as luxury goods. Luxury goods are goods with high positive YED that is greater than 1. This meant that any change in income causes demand to change by a larger extent. Thus given that recession will cause income to fall, demand for such goods are most likely to fall by large extent, greatly affecting the firms' ability to maintain profits.

Hence, ability to maintain profit for firms that are selling non-essentials are much lower compared to firms selling essential goods and inferior goods.

However, it may not be true that firms selling luxury goods may find it difficult to maintain their profits in a recession. If they are able to continuously innovate and produce unique goods as such, despite recession, demand for such goods would increase and the firms will continue to earn supernormal profit. An example would be the smartphone industry. Apple has been continuously innovating its smartphone, improving its function and technology such that it is a unique good that has very little close substitutes and is deemed to be essential for developed countries and working adults. Thus despite recession in 2009, Apple launched its Iphone 4 and attained record sales and market success for demand for its good. Thus whether oligopolistic firms would suffer a large fall in demand for goods and services would also depend on whether they were able to innovate and produce unique goods and services.

On the other hand, this argument is also applicable to firms who are able to provide personalized services or adapt its products to cater to the taste and preference of her consumers (e.g. small travel companies which specializes and provides unique travel experiences which appeals to the consumers even in times of recession). This will allow the firms to maintain her demand and thus be more able to maintain profits even in the midst of a recession

There are other reasons that can explain how profit margin of firms can be affected in the midst of a recession such as the cost structure of the firm. A firm that operates at a smaller scale might face less difficulty in maintaining its profits during a recession as it has a different cost structure compared to large firms which operates with higher fixed cost.

Small firms such as a bubble tea shop would only incur low fixed cost such as rental or simple machines in setting up a shop. But for a larger firm such as the petrol retailing industry, the firms would need to incur high fixed cost such as the specialized machineries to distill crude oil and as well as large trucks that are well equipped to transport its petroleum to the different sales outlet. In addition, firms operating on a smaller scale are also more nimble in times of a recession and can seek ways to lower its average cost much faster. As such, firms operating on a smaller scale are more likely to have a lower fixed cost and thus a lower AC as compared to large firms that have a higher fixed cost and thus a higher AC. Hence, assuming that demand for both the large and small firms fall by the same extent during a recession, it is more likely that the fall in demand would cause the large firm to suffer from subnormal profits much earlier compared to the small firm as the demand for the smaller firm must fall by a much greater extent for it to experience subnormal profits.

Thus, ability to maintain profits is also dependent on the cost structure of the firm on top of the market structure the firms are located in.

While large firms operate at higher average and fixed costs compared to a smaller firm, their

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ability of maintain profits can be affected greatly depending on whether there is government intervention. For instance, if the government provides subsidies and support for firms such as what the Singapore government did with the Jobs Support Scheme, the ability to maintain profits for large firms are greatly enhanced.

In conclusion, while firms' ability to maintain profits can be affected by the market structures they are in, it may not be absolutely true as it would also depend on other factors such as the ability to innovate, cost structure of the firm and type of good that the firms sell. Hence, firms' ability to maintain profits are only affected by the type of market structure to a small extent.

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2021 JPJC Prelim H2 P2 Question 3
A new coastal and flood protection fund, with an initial injection of $5 billion, will be set up to help protect Singapore against rising sea levels. In addition, Singapore's healthcare expenditure will triple to about $12 billion a year, to ensure that every Singaporean has access to affordable and quality healthcare.

a) Explain what needs to be considered when a government makes a rational spending decision about such projects like flood control. [10]

b) Discuss whether government intervention will always lead to an efficient allocation of resources in the healthcare market. [15]

Flood control is a public good, hence there is no market and there is a need for the government to provide for the same. The reasons why Singapore government allocate funds for flood control is due to both her microeconomic and macroeconomic objectives.

The government would need to consider the benefits, costs, constraints, information required, different perspectives required and unintended consequences, when a government makes a rational spending decision.

An example of flood control is the use of a flash flood alert system, which relies on the meteorological forecast of the weather, ie, whether will there be impending heavy rainfall and rising sea levels. If there is an impending heavy downpour, a flash flood alert will broadcasted to the neighourhood near the vicinity to warn people of likely occurrence of a flash flood.

In this case, an additional person consuming or receiving the flash flood alert does not diminish the information available to the others in the vicinity. In addition, once the flash flood alert is being broadcasted to the public, it is not possible or is costly to prevent non-payers from receiving the flash flood alert. Therefore, flood protection is a public good as it has both characteristics of non-rivalry and non-excludability.

The characteristic of non-rivalry in consumption shows that the marginal cost of provision of public goods to an additional user is zero. This is because once the flash flood alert system is set up; the government does not incur extra cost in providing one additional person with the broadcast information. When a public good is provided to one person, it is provided to all.

Due to the characteristic of non-excludability in consumption of public goods, this leads to the problem of free ridership here where individuals do not want to reflect their wants in the market system. Hence leading to zero production resulting in complete market failure.

The benefits of a government intervention in flood control would be to correct the complete market failure as mentioned above. In addition, the said project would safeguard lives, property and livelihood as it would prevent enormous economic losses.

Other than the flash flood alert system, there are also plans to build sea walls, widen and deepen canals. Such engineering feats will definitely be costly and will cause a dent in the nation's coffers. The $5billion coastal and flood protection fund mentioned in the preamble is only an initial injection and the fund will be topped up subsequently whenever Singapore's fiscal situation allows. It is estimated that $100 billion or more may be needed over 100 years to

protect Singapore, her citizens' livelihood and quality of life against rising sea levels caused by climate change.

There may be fiscal constraints in terms of funds availability where the topping up of flood protection fund is ultimately dependent on Singapore's fiscal situation. Further, the current economic catastrophe due to Covid-19 may have drained Singapore's national reserves substantially. Hence, due to limited funds, the Singapore government may need to make tough decisions in identifying her salient areas of needs and placed that as her economic priority. Such spending on flood control would incur opportunity cost given that funds are limited, needless to say the next best alternative will be forgone. Hence, if the government was to go ahead with the provision of flood control, spending on other areas such as the education sector will be forgone. Such a sacrifice may have serious implications on the quality of workforce, bringing about unintended consequences on productivity of workforce and hindering potential growth.

The amount of funds required by the Singapore government to intervene in this market depends on the seriousness of climate change issues and cost requirements of various infrastructure needs. Hence, the government would need to gather information on the scale of this problem and make necessary provision for provision of various flood control projects. The government would also need to gather different perspectives before making the decision on how much funds to devote to such a project. The government may seek the advice of geologists, consult the help from overseas experts on this matter and also the views of businesses and citizens. Further, the current estimate on infrastructure needs may also change overtime due to the scale of destruction by the volatile climate change.

In the context of healthcare market, there exists imperfect information and positive externalities that warrant government intervention. The government intervenes through public education and subsidy to address these root causes of market failure, resulting in an efficient allocation of resources.

This is on the assumption that the government is able to accurately estimate the extent of market failure and hence provide the optimal degree of intervention.

Referring to the Figure 1 below, the marginal private benefit (MPB) to an individual would be a better physical and mental health state for each additional unit of healthcare consumed. On the other hand, the marginal private cost (MPC) would be his healthcare costs incurred in visiting the doctor or medication fees for each additional unit of healthcare consumed.

Individuals may not be able to value their private benefits correctly due to a lack of knowledge and thus undervalue the private benefits of consuming them. For example, consumers may put off health screening as they are not aware of the full extent of benefits such as early detection which will increase the chances of recovery and reduce the cost of treatment. Thus their $MPB_{perceived}$ is less than the MPB_{actual}. Consumers will consume healthcare up to the point, Q_p where their $MPB_{perceived}$ is equal to MPC. However the consumer optimal level with perfect knowledge is at Q_{p1} where MPB_{actual} is equal to MPC. This leads to under-consumption, resulting in welfare loss equivalent to area abc.
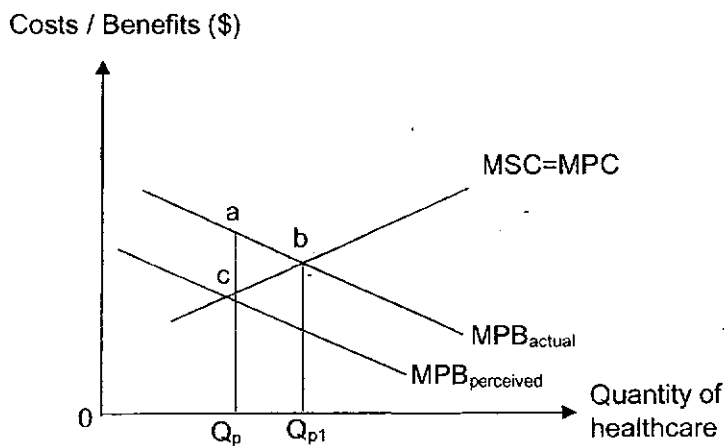
Figure 1

Positive externalities are benefits to third parties who are not directly involved in the production or consumption of the good. It is not reflected in the price of the good and the third parties do not need to pay for it. The existence of positive externalities in the consumption of healthcare also leads to market failure. Positive externalities include reducing the chances of 3rd parties falling sick from contacting the diseases from a sick worker and the increase in productivity of the workforce due to healthier individuals, leading to higher economic growth. Referring to the Figure 2 below, due to the presence of positive externality, which is shown by the marginal external benefit (MEB) at a particular level of consumption, marginal social benefit (MSB) will be greater than marginal private benefit (MPB), i.e. MSB>MPB. There is a divergence between MPB and MSB. This means that the benefits of consumption to society include not just the benefits to the consumer but also the benefits to others enjoying the positive spillover effects, shown as MEB. Assuming that MPC=MSC. Since consumers will only consider their private benefit and cost while ignoring the benefits to third parties, he will consume until the level Q_{p1} where MPB=MPC. However, the socially optimum level of consumption occurs at Qs where MSC=MSB. Since Q_{p1} is less than Qs, it means that the price mechanism on its own cannot achieve an efficient allocation of resources. There is an under-consumption of the good. Between Q_{p1} and Qs, the social benefit of an additional unit of healthcare consumed is higher than the social cost resulting in welfare loss equivalent to area def. Market failure is deemed to have occurred due to the under consumption of healthcare and government intervention is required to ensure that Qs amount of healthcare is consumed.
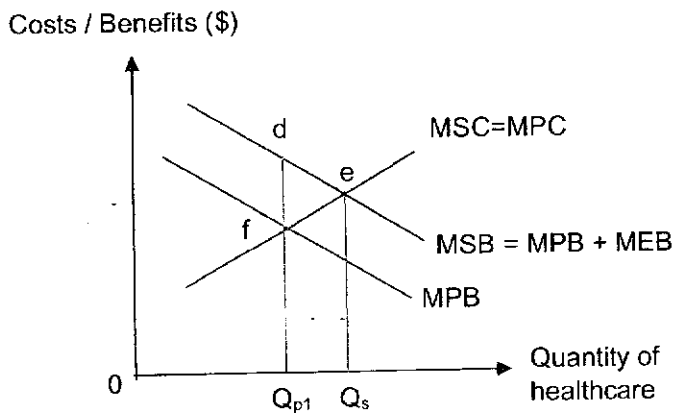
Costs / Benefits ($)

Figure 2

Through public education, consumers will be more aware about the true benefits of heathcare and will increase their demand for healthcare services. This will lead to an increase of MPBperceived to MPBactual as seen in Figure 3 below, where consumption of healthcare increases from Qp to Qa, tackling market failure due to imperfect information.
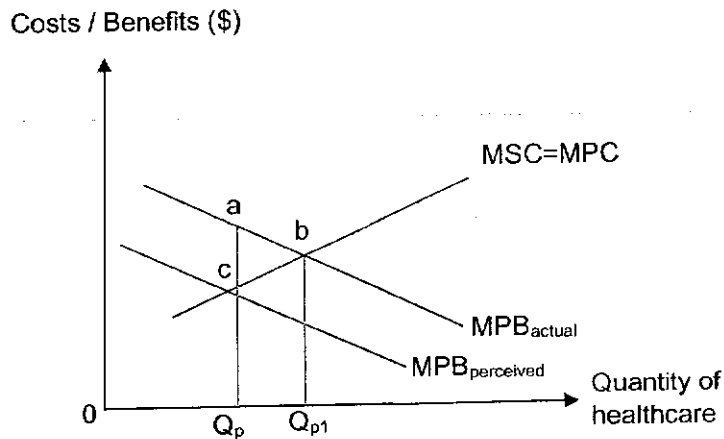
Costs / Benefits ($)

Figure 3

Assuming that the government provides a subsidy per unit amount, which is equivalent to the MEB at Qs, the government aims to lower the cost of producing healthcare. Hence, supply of health care services rises in the market, which leads to lower prices of health care. In view of the lower prices of health care, the private costs incurred by consumers will fall and this is reflected in Figure 4 below. MPC shifts to MPC^1 that causes the equilibrium output to increase to the socially efficient level Qs.
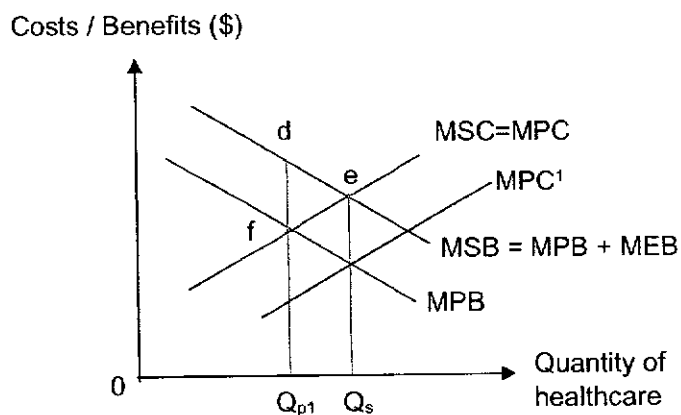
Costs / Benefits ($)

Figure 4

The government's subsidy for healthcare may not result in allocative efficiency if there is government failure – the government might over or under-estimate the amount of subsidy to provide, thereby not achieving the social optimum output level. In addition, the government incur high costs when they spend on public education and providing subsidies, leading to opportunity cost due to limited funds. This may result in spending on the education sector forgone. Further, the use of public education is highly dependent on the receptiveness of consumers.

There may also be government failure as well in terms of bureaucracy, and lack of public support for government policies. Although the socially optimal level of output may not be attained due to limitations of implementing measures, government intervention usually ensures a better allocation of resources and results in an output level that is closer to the socially optimal level.

To conclude, government intervention will always lead to efficient allocation of resources if their policies are able to address the various root causes of market failure in the healthcare market. In addition, the government is able to estimate the extent of market failure accurately, and hence provide the optimal degree of intervention.

2021 JPJC Prelim H2 P2 Question 4
China experienced a growth of real GDP of 2.3% and BOT surplus of US$535.4 billion in 2020. Under the five-year pro-growth policy plan, the country aims to move to rely more on consumption and investment for growth rather than export. The government also wants to emphasise on high-quality growth that is based on innovation and protects the environment.

(a) Explain how real GDP and BOT data might be used to measure the economic performance of China. [10]

(b) Discuss the extent to which the pro-growth policy in China will lead to improvements in standard of living. [15]

(a) Explain how real GDP and BOT data might be used to measure the economic performance of China. [10]

The economic performance of China includes the key macroeconomic objectives that are sustained economic growth, low unemployment rate, low inflation rate and favourable balance of trade (BOT). As such, the key macroeconomic indicators to measure economic performance are the growth of real GDP, the unemployment rate, the inflation rate and BOT data that are closely monitored by the government to achieve the macroeconomic objectives.

To assess whether the economic performance of an economy is good, we have to see whether the country is experiencing any economic growth. Economic growth is measured by a rise in the country's real Gross Domestic Product (GDP). GDP measures the total value of final output produced within the geographical boundary of a country, regardless of the ownership of factors of production, over one year and before adjustment for depreciation. When calculating real GDP values, constant base year prices are used.

Given that real GDP growth was 2.3% in 2020, it implies that real GDP increases by 2.3% from 2019 and China is experiencing positive actual growth in the short run. This could be attributed to either a rise in aggregate demand (AD) and/or a rise in aggregate supply (AS) in the short run.

Assuming China operates under full employment, the rise in AD causes a multiple rise in real GDP via the multiplier effect, which represents actual growth of 2.3% in China. This increases production of goods and services by firms, in turn increasing the derived demand for factors of production, including labour. Hence unemployment rate falls via the reduction in cyclical unemployment. However if China operates near full employment, the rise in AD will result in higher competition for increasingly scarcer resources, increasing the prices of such resources that are then passed on as rising general price level (GPL) in the economy. This causes higher inflation rate via demand-pull inflation. Should China's inflation rate be higher than that of its trading partners, exports in the world market will be less competitive. Assuming demand is price elastic (PED>1), the rise in price causes a more than proportionate fall in quantity demanded, causing export revenue (X) to fall. On the other hand, China's consumers switch to consume relatively cheaper imports, causing demand for imports to rise, causing import expenditure (M) to rise. With the fall in X and rise in M, net exports (X-M) falls, worsening China's BOT.

The rise in AS in the short run (downward shift of AS curve) causes a rise in real GDP, which represents actual growth of 2.3% in China. Similarly, this causes unemployment rate to fall via the reduction in cyclical unemployment. In addition, GPL falls as lower cost of production (COP) is needed to produce the same amount of unit. This lowers inflation rate via reducing cost-push inflation. Exports may then be more competitive in the world market, improving BOT of China. Hence the rise in real GDP of 2.3% real GDP growth rate might be used to measure the economic performance of China in terms of the other macroeconomic objectives.

1

Balance of trade (BOT) is one of the components of balance of payments, where it measures the net exports of goods and services with China and the rest of the world over a period of time. To assess the economic performance of China, we need to know the position and directional change of BOT.

China's BOT surplus was US$535.4 billion in 2020 and let's assume that the BOT was also in a surplus in 2019. However, we must also compare whether this surplus is increasing or decreasing with respect to the previous year 2019 in order to assess the economic performance of China.

Assume that there is an increase in BOT surplus due to to rising export competitiveness, the rise in (X-M) and hence AD causes a multiple rise in real GDP via the multiplier effect, which represents positive actual growth in China. As explained above, this increases production of goods and services by firms, in turn increasing the derived demand for factors of production, including labour. Hence unemployment rate falls via the reduction in cyclical unemployment. However if China operates near full employment, the rise in AD will result in higher competition for increasingly scarcer resources, increasing the prices of such resources that are then passed on as rising GPL in the economy. This causes higher inflation rate via demand-pull inflation. Furthermore, countries that are in BOT deficit may resort to import controls (e.g tariffs used in the US-China trade war) to lower their trade deficits. This causes a fall in China's X and AD, resulting in a multiple fall in real GDP via the reverse multiplier effect, reducing actual growth and increasing unemployment rate via cyclical unemployment. The spillover effect is the lowered business confidence, especially in the exporting industries, due to lower expected profit. This causes a fall in investment expenditure (I) and AD, reinforcing falling actual growth and rising unemployment rate. The fall I also causes rise in unit COP and fall in productive capacity as quantity of capital in China falls. This causes AS to fall (parallel leftward shift), reducing potential output and lowering potential growth. The fall in actual growth and potential growth will then impede sustained growth in China.

Assuming that there is a decrease in BOT surplus from 2019 to 2020, the fall in (X-M) and AD causes a fall in actual growth and rising unemployment rate. However the falling BOT may be due to rising M on capital goods to facilitate China's pro-growth policy to rebalance its economy to rely more on C and I instead of X. This will cause AS to rise in the long run due to the fall in unit COP and rise in productive capacity, hence achieving potential growth as well as falling unemployment rate and inflation rate. Hence the data of BOT surplus of US$535.4 billion might be used to measure the economic performance of China in terms of the other macroeconomic objectives.

In conclusion, both real GDP and BOT data might be used to measure the economic performance of China in terms of the 4 macroeconomic objectives. Whether the economic performance is good or bad depends on factors such as root causes of economic growth BOT surplus as well as the state of economy.

(b) Discuss the extent to which the pro-growth policy in China will lead to improvements in standard of living. [15]

Based on the preamble, under the five-year pro-growth policy plan, the country aims to move to rely more on consumption and investment for growth rather than export. The government also wants to emphasize on high-quality growth that is based on innovation and protects the environment, that will be beneficial to standard of living (SOL) in China. The extent to which such a pro-growth policy will lead to improvements in SOL depends largely on the benefits, costs and unintended consequences, as well appropriate government intervention to mitigate the negative impact of the pro-growth policy.

By adopting the pro-growth policy to rely more on consumption expenditure (C), investment expenditure (I) for growth rather than export revenue (X), China will make itself less vulnerable to external demand shocks such as a global financial crisis that will cause demand for exports and X to fall. The rise in C and I from its large domestic sector will cause a rise in AD and multiple rise in real GDP via the multiplier effect. The rise in I will also reduce unit COP and increase productive capacity, increasing AS and potential output of the economy. With the rise in AD and AS, real GDP rises in both the short run and long run.

Firstly, assuming the rise in income exceeds the rise in GPL, there will be a rise in real purchasing power of China's residents. This increases the amount of goods and services consumed, improving material SOL in China. Secondly, assuming the rise in real GDP exceeds the rise in population, there will be a rise in real GDP per capita. This causes a rise in amount of goods and services available for an average person's consumption, hence improving material SOL in China. Thirdly, as income of workers and profit of firms increase, China's government will be able to collect more personal income tax and corporate tax respectively assuming tax rate remains unchanged. This improves the budget position and enables the government to provide more merit goods such as healthcare and education, as well as public good such as dams and national defence for its people, improving their non-material SOL.

With a focus on innovation, technology as well as quantity and quality of capital will rise. This reduces unit COP and increase productive capacity, increasing AS and potential output of the economy, hence achieving potential growth. Together with the rebalance of economy that achieves achieve growth, sustained growth can be achieved. Hence standard of living will improve as explained above for both the current and future generations. In addition, innovation will enhance the variety and quality of domestic goods, hence improving the non-material SOL of China's residents.

In addition, protecting the environment will help to achieve sustainable growth in China. This could be through policies such as carbon tax, tradable permits, R&D in green technology etc. This will reduce the negative externalities generated from production of goods and services, improving air quality and health of China's residents, hence improving non-material SOL. Hence, such a pro-growth policy will indeed lead to improvements in both material and non-material SOL due to the above explained effects.

The fall in X may exceed the rise in C and I, such as during the current Covid-19 pandemic where income of China's trading partners falls which worsens China's BOT. Overall AD may fall, causing real GDP to fall multiple times via the reverse multiplier effect. Firms reduce derived demand for labour and cyclical unemployment rises. This will cause a fall in material standard of living as purchasing power and amount of goods and services consumed falls.

In addition, assume that China's economy operates near full employment, and that the rise in AD is slower than the rise in AS, non-inflationary sustained growth will be hindered. The rise in AD due to the rise in C and I will result in rising GPL as firms compete for increasingly scarcer factors of productions. This raises cost of living China, and for the fixed income earners, their real purchasing power will fall, leading to a fall in material SOL as lesser amount of goods and services is consumed.

In addition, such high-quality growth as part of the pro-growth policy that focuses on innovation may result in structural unemployment due to the disruption of traditional industries. Workers who are retrenched from the labour-intensive industries may not have the relevant skills to work in capital-intensive industries. Such a mismatch of skills will result in structural unemployment with the unemployed having a loss of income and purchasing power, hence reducing their material SOL.

3

Furthermore, income inequality will worsen in China. On one hand, there will be a rise in supply and fall in demand for lower-skilled workers, reducing their wages. On the other hand, there will be a rise in demand for high-skilled workers to work in the sunrise capital-intensive industries that use innovation, increasing their wages. This results in a fall in average material SOL as the rise in income is only enjoyed by the higher skilled workers. The rise in income inequality may also result in social problems such as rising crime rate that reduces the safety and security of China, reducing non-material SOL.

In addition, such high-quality growth requires large government spending in areas of R&D and implementation of green policies. This will worsen the budget position of China and the government will incur opportunity cost in terms of forgone spending in other areas of the economy such as healthcare and education. This may then reduce non-material SOL as accessibility and availability to such basic necessities are reduced. In addition, rising government debt will put a burden on future generations in term of higher tax rates, reducing their material SOL due to falling disposable income and purchasing power to spend on goods and services. Hence, such a pro-growth policy may not lead to improvements in both material and non-material SOL in China due to the above explained effects.

In conclusion, such a pro-growth policy will lead to improvements in standard of living in China to a large extent. The nature of China's economy is that of large and less open. Hence it is able to rely more on their domestic C and I to drive growth due to the large size. The smaller degree of openness also means that it can rely lesser on external exports to drive growth. This makes the pro-growth policy of rebalancing from X to C and I beneficial and effective to increase growth and improve material SOL. It is also evident the China's emphasis on high-quality growth, as part of the pro-growth policy, to focus more on innovation and environmental protection are steps taken by the government to ensure that the growth is sustained and sustainable so that material and non-material SOL can be improved in both the short and long run.

The extent to which such a pro-growth policy will lead to improvements in SOL ultimately depends on the level of government intervention to mitigate the costs and unintended consequences. For example, to mitigate the impact of innovation on structural unemployment and rising income inequality, retraining needs to be complemented to achieve inclusive growth. This will improve SOL in China as a whole and not just the higher-skilled, higher-income workers. In addition, the focus on innovation can also boost export competitiveness in the world market to mitigate the possible fall in BOT due to the contagion impact arising from a global crisis.

4

2021 JPJC Prelim H2 P2 Question 5
Monetary policy in Singapore is centred on the exchange rate. In the small and open Singapore economy, the exchange rate is often used to maintain price stability.

(a) Explain why maintaining price stability is an important macroeconomic objective of a government.
[10]
(b) Assess whether monetary policy centred on exchange rate is considered to be the most appropriate policy in maintaining price stability in Singapore.   [15]

(a) Explain why maintaining price stability is an important macroeconomic objective of a government.   [10]

Price stability (low rate of inflation) is one of the government's macroeconomic objectives along with low unemployment rates, sustained economic growth and favourable balance of trade. Low inflation rate means a low rate of increase in the general price level usually between 1-3% annually. Having price stability in an economy helps to promote investment and export competitiveness thus leading to a more sustained economic growth. In addition, price stability also helps to maintain the standard of living in the economy. Hence, maintaining price stability is an important macroeconomic objective of a government.

Maintaining price stability helps a government to achieve potential economic growth. Low or stable inflation means that there would not be major fluctuation in prices of both factors of productions and goods resulting in certainty for producers. Producers will be more willing to take the risk involved with investments as their returns would be more predictable. With mild inflation, prices of the final goods will increase leading to higher profits for firms as factor costs are unlikely to rise as fast in the short term. When returns from investments rise, firms will be encouraged to increase their output leading to an increase in employment and national income. In the long run, with greater investments, there will also be an increase in the productive capacity of the country. Hence, low inflation allows the economy to achieve greater potential economic growth rate.

Price stability improves the export competitiveness of an economy which has a positive impact on actual growth, employment and balance of trade. Low inflation rates cause domestically produced goods of a country to be relatively more price competitive in the global market and this will increase the demand by foreigners leading to a rise in export earnings for the country. At the same time, locals will find these goods relatively cheaper than foreign imports and switch away from imported goods leading to a fall in import expenditure. With an increase in (X-M), there will be an increase in the output of domestically produced goods encouraging firms to hire more workers and thus increasing the economic growth and reducing unemployment in the country. The higher export earnings and lower import expenditure will also lead to improvement in the balance of trade.

Price stability prevents unintended redistribution of income in an economy. High and rising inflation results in redistribution of income as some people will be made better off while others are made worse off. For examples, fixed income earners who receive incomes fixed in nominal terms such as wage earners will find the real value of their incomes being eroded by inflation unless such incomes can be adjusted for price increases. High and rising inflation also causes an unintended redistribution of income from creditors to debtors as the real value of debt payment falls. Thus, a government aims to maintain price stability as it prevents an unintended redistribution of income.

Price stability is an objective of the government because it directly affects the health of the economy. High inflation would be very disruptive for the producers and consumers engaging in any economic activities. Thus, governments should use appropriate policies to ensure that inflation is low and stable.

(b) Assess whether monetary policy centred on exchange rate is considered to be the most appropriate policy in maintaining price stability in Singapore. [15]

Singapore uses monetary policy centred on exchange rate to manage inflation. Being a small and open economy largely reliant on foreign direct investment (FDI) & trade for its growth. Singapore is a price-taker and does not have any influence over global prices. Hence, inflation in Singapore can be caused by domestic and external factors. Whether or not monetary policy centred on exchange rate is the most appropriate policy in maintaining price stability in Singapore depends on several factors.

Gradual appreciation of the Singapore Dollar (monetary policy centred on exchange rate) is the most appropriate policy in maintaining low inflation in Singapore in view of the nature of Singapore economy. As a small and open economy that imports a large amount of our necessities and raw materials (oil / food / inputs), gradual appreciation of the Singapore dollar can reduce the effects of imported inflation. As Singapore dollar appreciates, imports become cheaper in terms of domestic currency, reducing imported cost of production. Assuming firms pass on cost savings to consumers by reducing prices, the AS curve shifts downwards to alleviate cost push inflation as seen in Fig 1 where a downward shift of AS from AS_2 to AS_1 will reduce general price levels from P_2 to P_1.
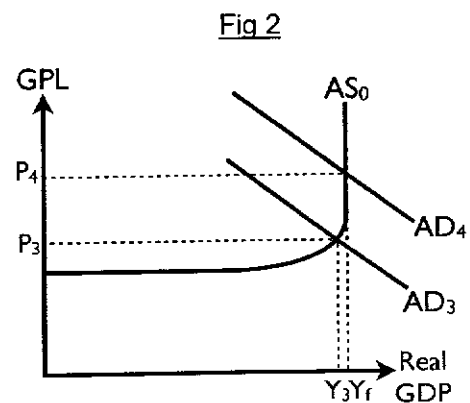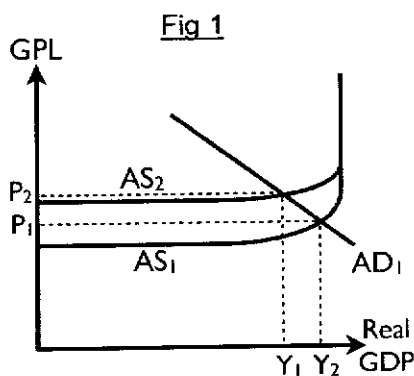
Hence, an appreciation of the Singapore dollar will curb imported cost push inflation due to an increase in import prices of factors of production as well as finished goods and services, helping in maintaining low inflation in Singapore. Currency appreciation can also help dampen the rise in AD to control demand pull inflation as an appreciation of currency causes exports to be more expensive in foreign currencies, causing quantity demanded for exports to fall and imports to be cheaper in domestic currencies, causing quantity demanded for imports to rise. Assume that demand for Singapore exports and demand for imports in Singapore are both price elastic ($PED_x > 1$ and $PED_M > 1$), the appreciation of currency will cause net exports (X-M) to fall, resulting in a fall in AD, controlling the overheating effects in our economy. In Fig 2 above, a fall in AD from AD_4 to AD_3 can reduce the general price levels from P_4 to P_3. Hence, an appreciation of the Singapore Dollar may cause exports to fall and hence reducing demand pull inflation resulting from an excessive AD from exports.

On the other hand, an appreciation of the Singapore dollar is not useful in tackling cost push inflation attributed to higher domestic costs arising from high labour cost and rental. Although a higher exchange rate will work to dampen external demand for Singapore's goods and services, which may help ease domestic demand for labour and land and ease rising domestic costs. However, these secondary effects would take much longer to come through the system. Hence, whether or not monetary policy centred on exchange rate is considered to be the most appropriate policy in maintaining price stability in Singapore depends on the cause of inflation. If inflation arises from rising domestic costs, the Singapore government would have to consider short-term supply-side measures to ease domestic cost-push inflation.

Given Singapore dependence on external trade for its economic growth, a fall in exports due to an appreciation of the Singapore dollar will have significant impact on its economic growth. Hence, to curb demand pull inflation resulting from an excessive AD, supply side policies to increase productivity and productive capacity of the economy is applied instead. Supply-side policies like education, training, subsidies and tax incentives to encourage Research & Development allow the economy to shift the AS curve to the right by increasing the quantity and quality of resources. With an increase in AS, Singapore can better meet the rising demands of the country (rise in AD), yet managing high inflation. These lead to outward shifts in the AS curve as rising labour productivity increases the productive capacity of the economy as shown in Fig 3. This means reduced likelihood of demand-pull inflation since when AS shifts from AS_1 to AS_2, an increase in AD from AD_0 to AD_1 only increases GPL from P_1 to $P_{1.2}$.

Fig 3
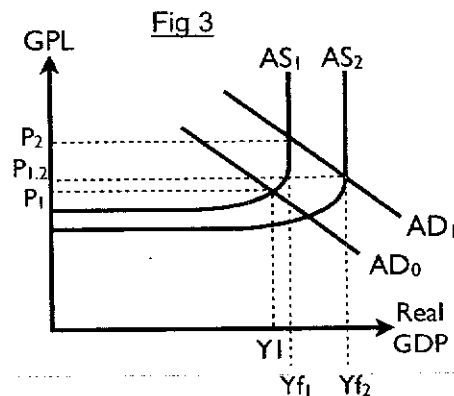
But education and training take time to have an effect, for example, it will take several years before improvements in education result in higher labour productivity.

Moreover, subsidies or tax incentives on R&D are costly, R&D takes a long time to take effect and it is often difficult to predict a definite outcome. That said, supply side policies are important policies to use to help the economy maintain price stability as it boosts competitiveness and attracts FDI, and without increasing AS and focusing only on exchange rate policies to manage AD, the economy will not achieve sustained non-inflationary economic growth.

To sum up, whether or not monetary policy centred on exchange rate is considered to be the most appropriate policy in maintaining price stability in Singapore depends on the cause of inflation and the context of the economy. For Singapore's economy, a gradual appreciation of the Singapore dollar might be the most appropriate policy if inflation experienced is largely caused by external factors. In the event inflation is identified to be caused by both external & domestic triggers, the approach taken will be a combination of monetary policy centred on exchange rate and short-term supply side policies to maintain price stability. For a long-term approach in maintaining price stability, long run supply side policies to raise productive capacity will be required as a stronger SGD can dampen growth and raise unemployment.

COVID-19 has led to sharp fall in real GDP of many countries. Governments around the world have committed large amount of government spending to fight the negative impacts of COVID-19.

(a) Explain the constraints that governments face in the use of expansionary fiscal policy. [10]

(b) Discuss the extent to which the use of expansionary fiscal policy will lead to conflicts in government macroeconomic objectives. [15]

(a) Explain the constraints that governments face in the use of expansionary fiscal policy. [10]

Explain how expansionary fiscal policy works
During a recession, an expansionary fiscal policy is normally implemented to bring the economy out of recession.

Expansionary fiscal policy is where government increase spending and at the same time lower taxes. Lower corporate taxes increase the profit after tax for firms and allows firms to reinvest their profits leading to a rise in investment. Lower individual taxes increase the disposable income of consumers and hence consumption rise. Government will also increase their spending on healthcare, infrastructure or education to create jobs.

With a rise in C, I and G, AD will rise and through the multiplier process, national income will rise by a larger extent. With a rise in demand for goods and services, the demand for workers will rise and unemployment falls. This will bring the economy out of the recession. However, whether expansionary fiscal policy will be successful will depend on the constraints that governments face.

1. Budget constraint – If the government is already running budget deficit, it may have difficulty in increasing G and reducing T further as it will worsen the budget deficit. This may lead to the need to borrow to finance the deficit which will lead to rising national debt burden. A rising national debt has many negative effects such as imposing a burden on the future generation to repay the debt and deterring foreign investment. Hence, this may be a constraint to the government in implementing an expansionary FP.
2. Multiplier – for countries with high marginal propensity to withdraw due to a high mpm, mps or mpt, the size of multiplier is small. Thus, given a rise in G, the extent to which real national income will be smaller. This may be a constraint to the use of expansionary FP to stimulate the economy.
3. Expectation of consumers and firms. If consumers and firms are pessimistic in their future outlook on the economy, they will not increase C and I by a large extent when there is a change in income tax rate and corporate tax rate respectively. For example, when income tax rate falls causing disposable income to rise, households will save their additional income for the future rather than increase their consumption if they are pessimistic. Thus, AD and real GDP will not rise by a large extent.
4. Crowding out effect – In the event that government needs to borrow from the private sector to finance their spending, given limited supply of funds in the banks, this may lead to a rise in interest rate. Thus, investment will fall due to a fall in profitability with the same expected returns. This is known as the crowding out effect which will limit the extent to which AD will rise when G rises.

5. Time lag – there may be long implementation time lag of expansionary FP as government may have difficulty in getting the parliament or congress to approve the budget especially if the government is a bipartisan government. This may be a constraint to the effectiveness in which expansionary FP can effectively solve the economic problems.

(b) Discuss the extent to which the use of expansionary fiscal policy will lead to conflicts in government macroeconomic objectives. [15]

1) Higher G and Lower T can be used to increase AD leading to higher real GDP, higher demand for labour and lower unemployment. However, near full employment, there will be competition for scarce resources, leading to higher prices of resources and higher prices of final goods. The economy experiences higher demand-pull inflation. Thus, expansionary fiscal policy achieves higher economic growth and lower unemployment but conflicts with price stability.

Evaluation: Extent depends the degree of resource utilization. The nearer that the economy is close to full employment, the greater will be the conflict with price stability. However, in times of Covid, this may not be a concern as the economy is likely to operate very far below the full employment due to the sharp fall in real GDP. Hence, rising G is unlikely to bring about conflict with price stability.

2) A rise in national income will increase imports and hence may worsen balance of trade and lead to a fall in the exchange rate which may in turn have an adverse impact on inflation.

Evaluation: Extent depends on whether the rise in exports is greater than the rise in imports. For example, Singapore's exports continue to rise during the COVID-19 crisis because it exports biomedical goods and electronics which are in higher demand due to health concerns and work-from-home arrangements. Hence, when X rises faster than M, BOT did not worsen.

3) A rise in G to raise GDP → if government has to borrow to finance spending – lead to higher interest rate → lower I due to crowding out effect → lower I can affect productivity, AS and long run economic growth.

Evaluation: Extent depends on whether the government has sufficient reserves which affects the need to borrow. In the case of Singapore, given her healthy reserves, government does not have to resort to borrow, thus this will minimize the crowding out effect and the conflict with long run economic growth.

4) A rise in G to raise GDP → if government has to borrow – lead to higher national debt – future generation has to bear higher burden of paying back the debt – tax rate may rise in the future which affects economic growth in the future and SOL

Evaluation: Extent depends on what the government spend on and whether it can bring about higher growth to generate higher tax revenue to repay the debt. For example, if the government spends on funding R&D efforts by firms, this will increase the productivity and AS, leading to higher potential growth. The higher income will lead to higher tax revenue to repay the debt, thus minimizing the conflict to economic growth in the future.

A rise in government spending may not necessarily lead to conflicts of aims depending on the assumptions that are discussed above such as the degree of resource utilization, health of government's reserves and what the government spent on.

If the government chooses to increase spending on training and R&D, AS can increase and this will help to reduce possible conflicts such as higher inflation and slower long term growth in the long run. In addition, the government can also complement policies to minimize conflicts of aims. According to the Tinbergen's rule, the number of policy instruments should be at least equal to the number of objectives to be achieved. For example, if fiscal policy is used to solve unemployment problem and may potentially lead to demand pull inflation, a second policy like supply side policy may be used to increase the productive capacity of the country so as to reduce the pressure on demand pull inflation.

The extent to which conflicts of aims may arise also depends on the current state of economy and the government's priority. For example, during a recession when the economy is likely to lie below full employment, a rise in G leading to a rise in AD is less likely to lead to conflict of higher inflation. Even if it does, this may not be a concern to the government as unemployment could be a more pressing issue in times of recession and the government may choose to focus on reducing unemployment and is prepared to allow for a small increase in inflation.