Raffles Institution 2021 H1 Prelim
Suggested answer scheme and comments on specific questions

Case Study Question 1

(a) Describe the main changes in the markets for bicycle and e-bikes in Germany from 2015 to 2020 [3]

Mark scheme:

- There was an increase in the quantity of e-bikes sold per year from 2015 to 2020. [1]
- There was a fall in the quantity of bicycles sold per year from 2015 to 2020. [1]
- The combined market for bicycles and e-bikes has grown from 2015 to 2020. [1]
- Others:
  - The quantity of e-bikes increased throughout the years while that of bicycles fluctuated with an overall fall.

Markers' Comments

Most candidates were able to give a general trend and a refinement to score both marks. A handful still insisted on rewriting the year to year data

(b) With the help of a diagram, use supply and demand analysis to explain how the COVID-19 pandemic has been responsible for the changes in the market for bicycles in countries like the USA. [6]

Mark scheme:

- Accurate diagram [1]; correct axis, direction of shifts
- Explain consequence for market for bicycles in countries like the US as a result of the COVID-19 pandemic [5]
  - <u>Increase DD for bicycles</u> [1]
    - Increased interest in cycling as people are avoiding public transport given infection risk
    - Cycling allows people to engage in physical exercise while conforming to social distancing guidelines) → increase in number of avid cyclists
    - With restrictions on dining in and shopping to reduce the risks of infection, there has been a surge in demand for delivery services, including food and online shopping. As such, there is a rise in demand for bicycles by riders who use it to deliver these items.

    Change in tastes and preferences in favour of cycling → consumers want more of bicycles → there are now more buyers willing and able to buy at each price level → increase DD ["Demand has almost tripled" (Extract 2)] → demand curve shifts to the right from Do to D_1.
  - <u>Decrease in SS of bicycles</u> [1]
    - Disruption in bicycle industry's supply chain → due to the coronavirus, many factories in East Asia, the centre of the bike industry's supply chain (Extract 1) were shut down. This led to fall in supply of factor inputs → increase in prices of many of the bicycle components such as drivetrains, derailleurs and brakes (Extract 2 - "prices for pretty much everything – components, replacement parts – are rising").
    - Higher costs of production for bicycle manufacturers and suppliers → decrease SS → supply curve shifts to the left from So to S_1
  - <u>Explain price adjustment process and final effect</u> [3]
    - With the fall in supply and an increase in demand, at the existing market price of P_0, the effect on equilibrium price is determinate as both will cause it to rise eventually to P_1. But the effect on quantity is uncertain.

- However, it is likely that the rise in demand is greater than the fall in supply. This is because many of the bicycle components are manufactured exclusively in Asia such that if these countries shut down, there will be a "national – international even – bike shortage" (Extract 1). At the same time, while some companies have managed to increase production such that there are "lots and lots of bikes flowing into bike shops every day, they are selling even faster".
- The combined effect will be a net shortage, which increases price and quantity eventually to P_1 and Q_1 respectively.

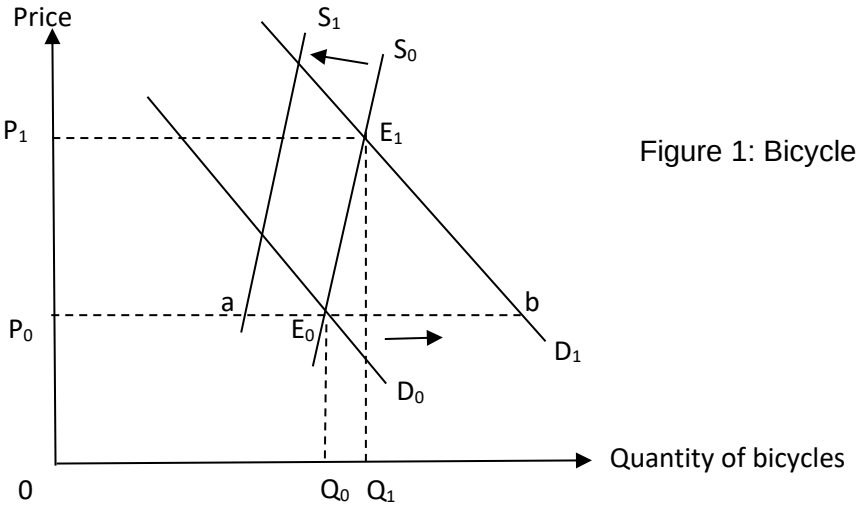


Figure 1: Bicycle market

Markers' Comments:
This question was generally done well by most candidates as they could identify correctly the demand and supply factors in the case material. They then used a well-illustrated diagram to explain the effects on price and quantity with a number of them making an attempt to justify (give reasons) why they felt demand or supply could have changed more.

(c) With reference to Extract 2, explain the link between price elasticity of supply and the increased lead times experienced by bicycle companies. [3]

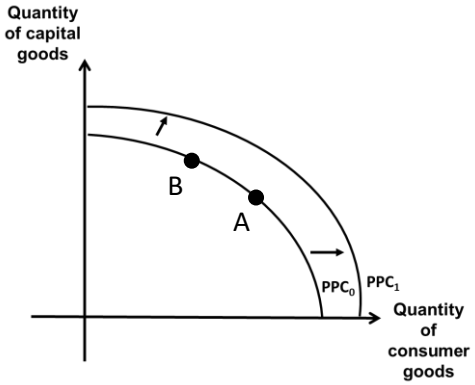
Mark scheme:

- Define price elasticity of supply
- Clarify lead time
- Comment on link between increased lead time and the PES value
  - Increased lead time is due to the <u>more price inelastic supply</u> for bicycles during the pandemic.
  - "Lead times grew to six months, then eight" (Extract 2) because to meet the rising demand for bicycles, bicycle companies would be operating much closer to their full production capacity. [1]
  - Many have "increased production, but there's not enough capacity to fill all orders" (Extract 2) further highlights that most of them would be operating closer to their full production capacity as their current inventories start to run low. With less spare capacity available, companies are less able to respond quickly to the increase in prices of bicycles brought about by the rising demand. [1]
  - This means that the quantity of bicycle supplied increases less than proportionately to the rise in prices resulting in an increased lead time. [1]

Markers' Comments:
Many missed out on the increased lead time and explained why lead time was long. This meant that the idea of a more price inelastic supply of bicycles will not be grasped correctly.

(d) Using a production possibility curve, explain how the investment by Shimano in Osaka and Yamaguchi will impact Japan's economy. [4]

Mark scheme:



- Accurate diagram. [1]
- Investment by Shimano would include "cutting-edge manufacturing equipment and software" and expansion of existing production facilities →. [1]
- Explain that in current period, investment in more capital goods will make Japan having fewer resources available for the production of consumer goods → lead to a fall in production and consumption of consumer goods → represented movement along PPC_0 from point A to B. [1]
- Explain how in the longer term, the rise in investment will increase the amount of capital stock [increase in quality and quantity of resources] available in the economy → increase in the Japanese economy's ability to produce more consumer and capital goods in the future. The increase in productive capacity is represented by an outward shift of the PPC from PPC_0 to PPC_1 → levels of consumer and capital goods that could not be produced previously would be attainable. [1]

Markers' Comments:
Most candidates could only analyse that the increase in investment increases productive capacity for the economy which is only in the future. They were unable to consider that in the short run, there would be reallocation of more of the scarce resources to capital goods hence a tradeoff in terms of consumer goods forgone. PPC diagrams were surprising not well illustrated with poor labelling of axes and skewed shifts of the PPC. Some drew the AD-AS diagram instead which was not fulfilling the question requirement.

(e) Protecting subways against flooding caused by extreme weather is "an enormous undertaking", but "the cost of doing nothing is much more expensive." [Extract 5]

Discuss the factors that a government must consider before spending more money on subways in cities. [10]

Mark scheme:

- Assume government's objective is to maximise social welfare as well as to achieve macro goals of sustained economic growth, low unemployment and price stability.

- Factors to consider are benefits and costs to society, economy, constraints faced by the government, available information to the government and potential unintended consequences.

- Possible arguments <u>for</u> more government spending on subways:
  - Enhance consumer welfare.
    <u>Non- monetary benefits</u>:
    - reduced travelling time due to less disruptions and greater comfort
    - greater accessibility due to improvement in infrastructure so that previously less accessible parts of the cities occupied by those from lower income groups can commute more easily

    ➔ shorter travelling time and better network system improves quality of life
    <u>Monetary benefits</u>:
    - reduce work disruptions faced by commuters from subway floods [repairs mean subways will be closed for a long time] → less potential for loss in income for hourly wage earners who tend to be those from lower income groups.
    - less travelling time improves productivity of workers which can increase productive capacity of the economy → contribute to higher potential economic growth as a result of possible increase in AS / PPC.

  - Addresses negative externalities arising from private car journeys by making subways a more attractive public transport alternative.
    - By spending to prevent flooding in subways, subways become a more attractive public transportation alternative
    - Decrease demand for car journeys → MPB curve shifts → new equilibrium occurs where MPB' = MPC → quantity of car journeys fall to the socially optimal level → third parties in society benefit as external costs (MEC) is reduced [eg. savings on medical costs due to air pollution related health issues].

  - Part of expansionary fiscal policy → impact on actual economic growth and employment; long run impact on potential growth
    - Increase G ceteris paribus → increase AD → spark off the multiplier effect → where there were successive rounds of spending and re-spending based on the principle that one man's spending is another's income → however, each round of income and spending gets smaller due to presence of withdrawals → process stops when no further increase in income is generated.
    - Real national output increases and is a multiplied amount of the initial increase in G → actual EG. To meet the increase in demand for output production by firms affected by increase G → firms need to hire more workers (derived demand for labour) → fall in unemployment of labour in the economy.

- Possible arguments <u>against</u> more government spending on subways:
  - Opportunity costs due to scarce resources diverted from other areas that may also require government spending
    - To effectively protect a city's subway system from flooding costs tens of billions of dollars. All these monies could have been diverted to the provision of other goods and services that require more urgent attention such as transfer payments to those who have lost their jobs due to the ongoing economic recession, providing financial packages to firms, vaccination program that require booster jab. The diversion of scarce resources from these other areas reflect opportunity costs incurred in terms of the next best alternative forgone.

  - Financial ability of the government to proceed with the project → borrowing could contribute to crowding it effects &/or debt issues

- To be able to spend more on subway development will depend on the ability of the government to finance such government expenditure. The government has to consider how this expenditure would worsen the budget deficit both in the short term and in the long term.
- Lack of funds means that the government may have to resort to borrowing. The increased borrowing by the government leads to increase in demand for loans which could drive up interest rates which in turn dampen C and I [the crowding out effect] which in turn dampen the rise in AD from the increase in G. If borrowing is from external sources, this can cause the government to incur a debt problem.

- Negative externalities arising from construction of better subway flood preventive measures, better subway lines and tunnels.
  - Negative externalities are wide ranging and may include local air pollution, noise pollution, light pollution, safety hazards, community severance and congestion.
  - These negative externalities are significant and are often difficult to evaluate quantitatively, making it difficult for the government to weigh the overall benefits and costs.

- State of the economy → expansionary fiscal measures can bring about overheating of the economy (inflationary pressures)
  - If the economy is operating near the full employment output level with little spare capacity available [AD curve intersects AS on the rising portion of the AS curve], an increase in G → increase in AD → firms need to increase output production.
  - Due to the limited scarce resources in the economy, firms will compete with one another for the scarce resources → drives up factor prices (eg wages) and unit COP → AS falls, AS curve shifts upwards → higher general price levels and fall in real national income.

Conclusion/Evaluation:

- A government will need to carefully weigh the benefits and cost on society while being cognizant about its own budget constraints before deciding whether to spend more on subways.
- It should spend more if the expected benefits from spending outweighs expected opportunity costs from it.
- However, the government may not always be perfect or complete information on the expected benefits, costs and consequences of its spending. It has to gather information from perspectives of different stakeholders on all relevant benefits and costs and assign a monetary value to them. Some of these benefits and costs are difficult to quantify in reality. Hence the government may make less than socially optimal decisions based on wrong estimations. It will need to constantly correct and review the data on these benefits and costs to adjust its decisions over time.

L3	An answer that explains the arguments for AND against government spending on subways.	6 – 9
L2	An answer that explains either the arguments for OR against government spending on subways, takes a descriptive approach covering both sides.	3 – 5
L1	A vague, descriptive or list-like answer on either the arguments	1 – 2

In addition, up to a **further 3 marks** for valid evaluative comment that considers the 'ought to' elements of the question.

Markers' Comments:
This question was fairly well-attempted by the majority of the candidates. The most difference in the quality of responses lies in the depth and rigour in economic analysis. Weaker responses tended to be journalistic with little use of economic analysis / economic framework or spent time on various policy options that the government could adopt to tackle climate change which caused flooding in subways.
There were also responses that were one-sided i.e. they merely covered the arguments for OR arguments government expenditure on subways in cities, usually the latter case.

(f) Identify and explain the two main characteristics of a 'public good' and comment briefly on whether cycling paths provided by the Urban Redevelopment Agency in Singapore exhibit these characteristics. [7]

Mark scheme:

- Explain the non-excludable characteristic of public good as applied to cycling paths.
  - Once provided, it can be costly to exclude non-payers from consuming and benefitting from these cycling paths once they are provided due to their open nature. Since those who do not pay cannot be excluded, no one has the incentive to help pay for usage of such paths. This is called the 'free rider' problem. Individuals will tend to conceal their preferences to the cycling paths, resulting in a concealed demand in the free market. As such, the free market will not provide cycling paths as it only responds to producing the good where there is a willingness and ability of consumers to pay for it at each price level. Cycling paths are thus directly provided by the government as it is difficult to exclude non-payers from using the paths. [3]
- Explain non-rivalrous characteristic of public good as applied to cycling paths.
  - A good is non-rivalrous when the consumption by one person does not reduce the quantity available to others. When cycling paths are provided, it can be consumed by anyone. If an additional person uses it (below a certain saturation level), that person's usage of the paths does not reduce the amount of space for other cyclists, making it non-rivalrous in consumption. As such, to provide for an additional user, the marginal cost will be equal to zero. To maximise societal welfare, price charged has to be zero. However, this means that the supplier will be making a loss and thus will not be willing to produce and supply it. Hence no resources are allocated to production of cycling paths and the government has to provide it directly. [3]
- Make an overall stand whether cycling paths can be a public good – while cycling paths demonstrate the non-excludable characteristic clearly, the non-rivalrous characteristic is less definite → up to a certain saturation point, an additional cyclist's consumption of the cycling path can cause crowding such that the space available to others may be reduced thus reducing the benefits available to other cyclists on the path. [1]

Markers' Comments:
The objective of this question was to test candidates' understanding that only public goods need to be provided free by the government. It was heartening that most candidates were able to identify non-rivalrous and non-excludability as key characteristics of public goods and hence provided by the government for free. But the quality of analysis varied across answers. Oftentimes, candidates failed to link excludability to the presence of price signals and thus the ability of firms to charge a price while some still made the mistake of non-rivalrous to be marginal cost of providing the good to be zero.
This question drew a vast range of responses especially to the characteristics of non-rivalrous. Some argued that beyond a certain limit, cycling paths are no longer easily accessible to additional cyclists and injuries may happen while others claim that because the paths are very long, as long as cyclists spread themselves out, such congestion of cycling paths will not arise and hence non-rivalrous characteristic is maintained.

(g) Discuss the view that a government decision to subsidise 'green vehicles' is the best policy to improve resource allocation when negative externalities exist. [12]

Mark scheme:

- Clarify the type of negative externalities that is to be addressed → air pollution generated from car journeys / road usage by fuel-powered vehicles.
- Explain how negative externalities due to air pollution from car journeys lead to over-production of car journeys / road usage and hence market failure.

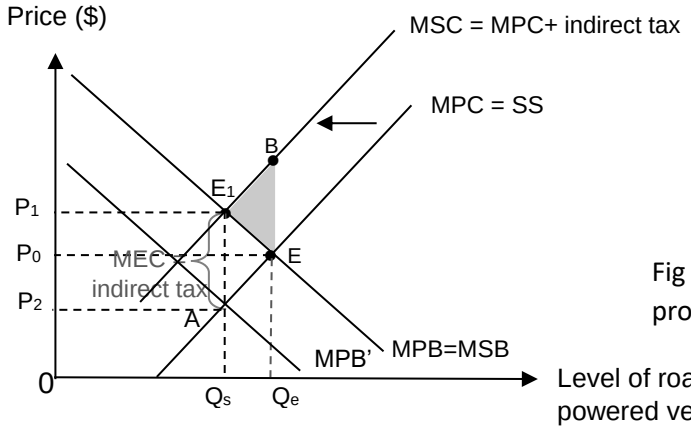


Fig 2: Negative externalities in production by fuel powered vehicles

  - Car usage generates significant negative externalities. However, in the pursuit of self-interest, car users ignore the negative externalities that are generated. For instance, when people use their cars, not only do they incur private costs like the cost of petrol, oil, wear and tear and so on, they also cause third party effects. These negative externalities include pedestrians suffering from exhaust fumes, other car uses caught in traffic congestion, noise pollution to homes located along congested roads. These negative externalities translate into external costs like higher medical costs and loss of productivity of third parties. Hence there is a divergence between MPC and MSC where MSC = MPC + MEC.
  - As shown in Figure 2, under free market forces, the amount of road usage by fuel-powered vehicles will be at 0Qe where MPB=MPC. On the other hand, the allocative efficient level of road usage is 0Qs where MSB=MSC. A deadweight loss of EE_1B is generated due to the over-usage of roads by drivers of fuel-powered vehicles if left to free market forces.
- Explain how subsidies (indirect) on 'green vehicles' lead to a fall in cost of producing green vehicles and hence a fall in after-subsidy market price → this means that 'green vehicles' is now a more <u>attractive substitute</u> to fuel powered vehicles → increase in the quantity produced and consumed of 'green vehicles' → <u>demand for fuel-powered vehicles fall</u> → Referring to Figure 2, MPB = MSB curve of fuel-powered cars will shift to the left → at new equilibrium where MPB' = MPC → amount of road usage produced by fuel powered vehicles fall to $0Q_s$.
- Explain how subsidies may not be the best policy due to its limitations:
  - Incurs high opportunity cost for the government
  - Government lacks information about the amount of subsidies required to increase demand for 'green vehicles' and thus achieve the socially optimal level of car journeys by fuel-powered vehicles.
  - Fall in demand for fuel-powered vehicles depends on the substitutability between 'green vehicles' and fuel-powered vehicles.
- Explain how other policies can help to reduce negative externalities

- Government can tax the production of road usage by fuel-powered vehicles → unit tax equal to the MEC generated (refer to Fig 2) → increases MPC of car journeys → MPC curve shifts left to MPC + unit tax = MSC→ price of car journeys increase from P_0 to P_1→ reduces amount of road usage to the socially optimal output level $0Q_s$.
- Government could subsidise R&D efforts to produce cleaner energy [reduce amount of pollutants discharged per car journey]. This will lower the extent of costs incurred by the third parties, including the medical bills. As such, the MSC will shift closer to the MPC as the MEC falls. This will ensure a socially efficient level of car usage.
- Rules to legislate that fuel-powered vehicles be fitted with a catalytic converter to reduce carbon emissions. This will increase the MPC of a car journey, causing it to shift left until it coincides with the MSC at the socially efficient level of output at Q_S.

- Limitations of alternative policies
  - Ability to measure MEC accurately so that unit tax equals the value of MEC accurately.
  - Political unpopularity of indirect tax.
  - Risks and uncertainties of R&D; takes a long time to see results
  - Monitoring costs to ensure that all cars have been fitted with the correct converter.

[Please refer to your lecture notes for the further elaboration of other relevant policies and their limitations]

Conclusion/Evaluation:
The government needs to decide which policy is the most effective / feasible depending on:

- the degree of substitutability between 'green vehicles' and fuel powered vehicles as well as other alternative public transportation methods such as subways.
- the degree of accurate information which the government possess.
- the need to ensure fiscal prudence → both unit tax on fuel-powered vehicles and subsidies for 'green vehicles' can be implemented.

Other comments [**useful insight** as the question did not confine negative externalities to air pollution only]:
Government subsidising 'green vehicles' may not be a good policy as **negative externalities can also arise from traffic congestion which could cause lost productivities and revenues for companies relying on SS chain based on road systems**. This is because subsidy on 'green vehicles' may increase the overall number of cars on the road, aggravating traffic congestion. Thus, whether the subsidy is the best policy depends on the most significant cause of negative externalities. Alternative policies like COEs which limit the number of cars on the road may be better.

L1	Maximum 2 if: • Listing throughout or glaring conceptual errors throughout • Journalistic with no application of economics tools of analysis.	1-2
L2	Some attempt to use economic analysis with contextual application (case evidence), explain how negative externalities arise from car journeys generated by fuel-powered cars and how subsidies to green vehicles can help address such negative externalities. • Policy does not link back to address negative externalities: **max 4**	3-5
L3	• Rigour in economic analysis (MSB/MSC framework) with contextual application (case evidence) AND 2 policies with pros and cons, addressing the negative externalities o If provides 2 or more policies, but only 1 policy with pros and cons, **max 7** o A mix of short run and long run policies is expected.	6-9
E2	• Judgement that is well-explained and anchored in economic analysis (in the body) and set in the context given (negative externalities) • AND a reasoned conclusion is provided.	2-3
E1	• Judgement that is a summary of earlier points	1

Markers' Comments:
There are 2 parts to the thesis of this question – the first was correctly interpreted by most candidates of a need to explain market failure with respect to negative externalities arising from road usage of fuel powered vehicles. However, the quality of explanation was varied with respect to the divergence between free market equilibrium and social optimal equilibrium. The second part required the candidates to link to how encouraging consumption of 'green vehicles' can contribute to reducing demand for fuel powered vehicles and hence reduce negative externalities (air pollution) generated by the latter. Many candidates focused indirectly instead on how increase in quantity demanded of 'green vehicles' will generate more positive externalities and address its under-consumption, thus missing the question requirement. In the anti-thesis, while candidates recognised the need to consider other policies to address negative externalities due to air pollution from over usage of fuel-powered vehicles, the policies for intervention were not well-discussed [lack rigour] and answers were limited to taxes. Evaluation was also cursory and almost all failed to see that negative externalities could be broader to encompass road congestion which is not solved by green vehicles but rather to limit quantity of vehicles on the road and to move to the long term solution of public transport which can address both examples of negative externalities.

Case Study Question 2

a. (i) Describe the trend in crude oil prices between 2012 and 2020. [2]

Overall trend: **<u>On the whole</u>**, crude oil prices fell.

Anomaly: **<u>However,</u>** prices rose between 2016 and 2018.

1 m for overall trend
1 m for anomaly

Examiners' Comments:
*Most candidates knew how to interpret trends and were able to offer **<u>concise and precise answers</u>** that succinctly described the overall trend and anomaly. However, a handful of candidates still did a period-by-period description that stretched the entire period. Such answers certainly did not earn the full range of marks. There were also a few scripts that did not use connectors such as 'On the whole', 'Generally' and connectors to highlight contrast such as 'However'.*

(a) (ii) Explain how the balance of trade of the Gulf states may be affected by the above trend. [2]

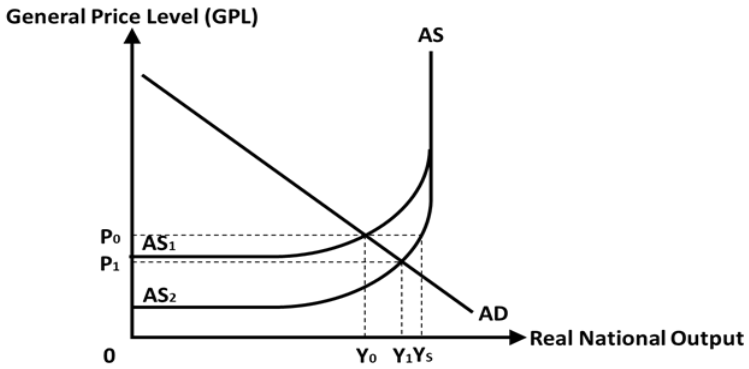
- Balance of trade = Value of X – Value of M (or total revenue from X – total expenditure on imports); Value = Price X Quantity
- The overall trend is a fall in prices.
- Effect on TRx depends on PED
- *<u>Applying PED</u>*: Since demand for oil is price-inelastic as it is an all-important input for production processes, the fall in price leads to a less than proportionate rise in quantity demanded
- As a result, TRx falls since % rise in quantity demanded is less than % fall in price
- Thus assuming TEm remains the same, the balance of trade is likely to worsen.

1 m for explaining PED
1 m for analysing effect on TRx and thus BOT

Examiners' Comments:
This was the question that candidates fared most poorly in. Most did not understand the term 'balance of trade' nor the fact that the value is a multiplication of price & quantity. Based on that correct understanding, they could then proceed to apply the concept of PED which measures the extent of change in quantity demanded due to a change in price. Whilst there were a few candidates who did apply PED to the question, they however did not explain the reason for their stated PED value.

(a) (iii) Using an AD-AS diagram, explain how the trend in oil prices is likely to affect the inflation rate of an oil-importing country such as Singapore. [3]

- Inflation rate is measured by changes in the general price level.
- Given that oil is an important input, the fall in price is likely to significantly reduce the production cost of goods and services in Singapore. This increases the aggregate supply of goods and services, and the AS curve shifts from AS_1 to AS_2 as shown in Figure 1. The resultant effect is a lower general price level of P_1. This means that the imported cost-push inflation has been reduced.



Examiners' Comments:
Many candidates erroneously linked a fall in oil price to a change in M. (Some said M falls, while others said M rises) Based on their premise that M fell, they then argued that X-M would have risen, thereby causing a rise in AD. This is flawed since AD = C+I+G+X-M. A fall in M would have caused the C component to fall as well since C includes both domestic C and C on imports. The fall in C thus cancels off the effect and AD is not likely to rise.
Candidates need to bear in mind that ***<u>when it is the price of an input such as oil that changes, the direct effect should be on COP and thus AS.</u>***

(b) (i) Account for the difference in total labour force participation between Saudi Arabia and Singapore. [4]

Suggested Answer:

- With reference to Table 1, Singapore's total labour force participation is higher than that of Saudi Arabia. Whilst the male participation rate is not markedly different, Singapore' female participation is about 3 times that of Saudi Arabia and that could be the cause of the high total labour force participation.
- The difference is likely, as seen from Extract 8, due to Saudi Arabia's gender segregation and strict laws governing males and females working together. This discourages females from working and disincentives firms from employing them as creating separate work spaces adds to their production cost.

- *Or any coherent argument such as deeply entrenched culture and tradition in Saudi Arabia where women's role is perceived to be that of a house-maker.*
- Conversely, the cultural and social norms in Singapore do not discourage females from working nor lead to any gender segregation at work. It could also be due to the Singapore government encouraging female labour participation – given an ageing and small population.
- *Or any coherent argument such as the high cost of living in Singapore, causing females to seek employment to supplement the family income.*

1 m for interpreting data
3 m for reasons – need a reason for each country

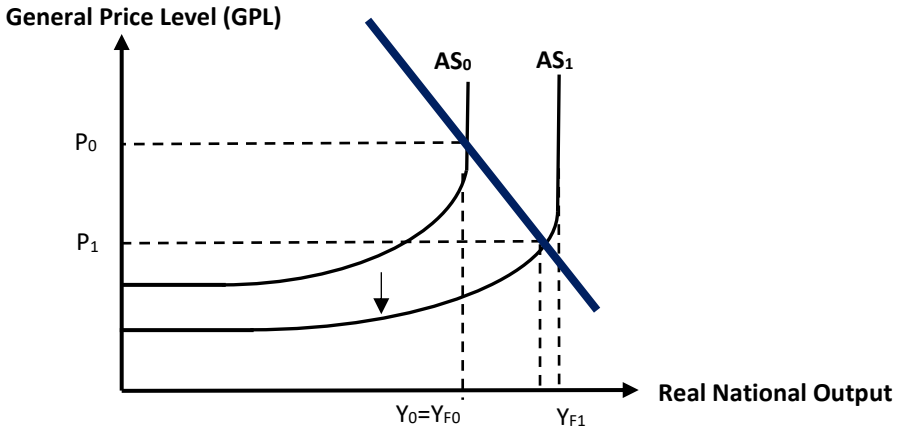
Examiners' Comments
Most candidates understood the requirements of this question and sought to unravel the reasons behind why there were more people in Saudi Arabia who were ***'not actively looking for a job'.*** *However, there were a handful of candidates who could not understand such a requirement and ended with very confusing and unfocused responses.*
Those with the correct interpretation then surmised that this was likely due to the difference in female labour force participation. With that, they could offer credible reasons – based on both case material and their own observations of different cultures and needs. Such responses often earned the full range of marks.
One slight glitch was there were many scripts that did not offer a reason for the case of why Singapore has a higher female participation rate.

(b) (ii) Explain the link between productivity and long-term growth, and comment on whether an increase in female labour force participation can solve the problems of stagnant productivity and weak long-term growth in Saudi Arabia. [6]

Suggested Answer:

Link between productivity and long-term growth:

- Rise in productivity is measured by a rise in output per man hour. With a rise in output, the productive capacity of an economy rises.
- In addition, if wages remain constant, the rise in output per man hour reduces the average cost of production. Thus, production cost also falls.
- As shown in Figure 2, the resultant rise in AS leads to the AS curve shifting from AS_0 to AS_1. The full employment frontier rises from Yf_0 to Yf_1.
- Moreover, the outward shift of the AS curve allows for sustained rise in real GDP with inflation moderated.



Effect of an increase in female labour force participation:

- A rise in female labour force participation has the effect of increasing the quantity of labour.
- As seen in Extract 8, women are also deemed to be 'more disciplined, more punctual and produce higher quality work'.
- So, a rise in quantity and improvement in quality increase AS, with the positive impact on long-term growth as explained.

Further comments:

- However, much depends on whether these new additions to the labour force have the skills for the jobs.
- The problem might be compounded by the possibility of discrimination against women at work, which affects the latter's morale and productivity.

Examiners' Comments:
There were 2 parts to this question. Most candidates were able to apply the AD-AS framework to link productivity to potential growth. Good responses even linked this to the ability of the economy to achieve sustained increases in real GDP – with inflation moderated.
*The glitch in some responses was that they failed to pay heed to cue word 'Comment **whether**' and did not offer an anti-thesis in their responses. Yet again, the weaker responses gave a very general description of growth without linking to the AD-AS framework and the effects on AS.*

(c) To what extent do the data in Tables 1 and 2 allow you to conclude that Singapore has a higher standard of living than Saudi Arabia? [8]

SOL refers to the material and non-material welfare of each citizen in a country.

Thesis: Indicators do show Singapore has a higher SOL

Indicator 1: GDP per capita based on PPP exchange rate
Singapore's GDP per capita based on PPP exchange rate is 2 times that of Saudi Arabia. In other words, it indicates that on average, each Singaporean can consume more goods and services, pointing to a higher material SOL.
GDP per head is a better measure than mere GDP values. This is because a country with a significantly larger population may have a much larger GDP value, ceteris paribus. On the other hand, GDP divided by the total population yields an average value, and this allows for a more accurate comparison of the material welfare of each citizen.

Moreover, comparison based on Purchasing Power Parity is better than comparison based on market exchange rates since the latter does not reflect the relative cost of living in respective countries. GDP based on PPP averts this problem since the exchange rate is based on the **purchasing power for the same basket of goods and services.** This further enhances the accuracy of the comparison.

Indicator 2: Unemployment rate can be a rough measure of the SOL as it can be argued that a person with gainful employment will have the means to consume goods

and services. In this regard, Singapore's unemployment rate is half that of Saudi Arabia. So it may imply a higher material SOL.

However, the problem with employment data is that it does not include dependants and retirees. Therefore, GDP per head is sufficient and is better as an indicator since it is a rough gauge of the material SOL on average.

Indicator 3: **Labour force participation rate**

Singapore has a higher total labour force participation rate and a female participation rate that is 3 times that of Saudi Arabia. While a higher quantity can again to be linked to effects on real GDP, such an interpretation is less useful since the GDP figures are already available.

The comparison can perhaps be linked to work leading to less leisure time. A more constructive comparison can also be on how females staying at home vs having a job can affect the quality of life of the family.

Antithesis: Need more indicators (not in the Case) for a more definite conclusion

1. Gini coefficient: GDP per capita is an average and does not reflect the actual income distribution. With higher GDP due to economic growth, it is very likely that the income gap has widened.
   - This is because the rich have the resources to enhance their wealth, whilst the poor stay stuck in a vicious cycle of poverty, especially with the lack of access to education.
   - Usually, a Gini coefficient of 0.3 is a cause for concern, and Singapore has a Gini coefficient of more than 0.4. Based on the data, while we do not have information on Saudi Arabia's Gini coefficient, in Extract 8, the country subsidies fuel, electricity and water and even university education. Moreover, there are no income taxes. Comparatively, that may in some ways reduce the gap between the rich and the poor.

2. Pollution Index
   Pollution creates a negative externality that affects society's welfare and quality of life. It is often a by-product of economic growth. With growth and higher GDP, the industrial output and increased car usage lead to air pollution which affects people's health.

3. Need data on the composition of spending by households and governments
   - For households, spending on education and healthcare vs spending on demerit goods will have a differing impact on the quality of life.
   - For the government, spending on financing wars may not have a direct impact on increasing the quality of life unlike spending one education and healthcare. And the money may have been siphoned off due to corruption or other unnecessary government expenditure.

Sythesised Conclusion

- Based on the given data, one cannot draw a definite conclusion about SOL since GDP figures are more likely to paint a picture only on the material welfare.

- Although some inference can be made about stress level and leisure time from employment and labour force participation, there is a need for more concrete data such as the number of working hours.
- In addition, other than Tables 1 and 2, Extract 9 does shed some light into how government intervention in the form of subsidies can help improve the quality of life in Saudi Arabia.
- All things considered, there is a need for more data including Gini coefficient as well as indicators that impact on non-material welfare such as pollution index.

L1 1-3	▪ Answer not linked to key indicators for SOL especially GDP per capita based on PPP exchange rate ▪ Indicators not elaborated and linked to impact on SOL ▪ Only material or only non-material welfare discussed ▪ Only thesis or only anti-thesis
L3 4-6	▪ At least 3 indicators well discussed and well-linked to impact on SOL ▪ Both material and non-material welfare discussed ▪ Thesis and antithesis with clear reference to at least one indicator not in the case
E1 1 m	Assertion without substantiation
E2 2 m	Judgment with substantiation

Examiners' Comments

- *Many responses suffered from lack of a clear structure, poor organisation and random writing. Such answers did a cursory description of the indicators in the tables without clearly linking these to the impact on living standards.*
- *Candidates need to learn they should always begin with the most important indicator i.e. GDP per head for good organisation and structure.*
- *Oftentimes, even in the better scripts, there was no elaboration on why PPP was chosen.*
- *Table 1 was often omitted in the analysis.*
- *Most usually, candidates did not see that an antithesis for such a question is to surface other indicators that are not given in the case material.*

(d) Explain how an expansionary fiscal budget can help stimulate the Singapore economy,

and comment on the difficulties the government is likely to face in ensuring the most desirable outcome. [8]

Explain how an expansionary fiscal budget works:

- An expansionary fiscal budget refers to an increase in government spending and decrease in direct taxes.
- With a fall in income taxes, the resultant rise in household disposable income may lead them to spend more, thereby causing an increase in C. At the same time, firms may increase I (on plants and machines) when the corporate tax cut increases their post-tax profits.

- As a whole, the increase in G, C and I lead to the AD for goods and services rising. As shown in Figure 3, as the AD curve shifts from AD_0 to AD_1, the real GDP rises more than proportionately from Y_0 to Y_1.

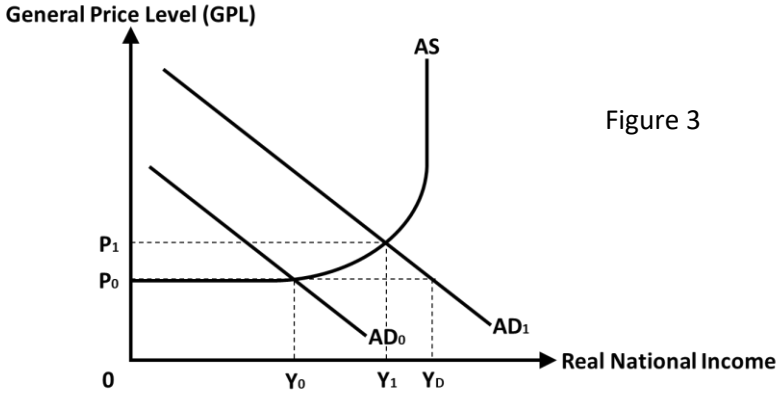


Figure 3

- The increase in AD has kick-started the multiplier process where an initial increase in AD had led to more rounds of increase in AD through induced consumption by households.
- The most desirable outcome will be an effective policy that pulls the country out of a recession and creates jobs, thereby reducing cyclical unemployment.

Difficulties the government is likely to face:

Difficulties can be couched in terms of ineffectiveness or repercussions faced

1. Issue of financing:
   Extract 9: Uncertainty and fear of resurgence of the virus may result in a continued need to finance the increase in G. And financing the increase in G, together with a fall in direct taxes, brings about the difficulty of how to finance the fiscal deficit.
   - Although the Singapore government has reserves to finance the spending, there is no guarantee that reserves will not be depleted.
     - Theoretically, if a government finances a deficit by borrowing from the public through the issuance of bonds, the competition for scarce loanable funds can lead to a rise in interest rates. This increases the cost of borrowing, and thus crowds out C and I. The fall in AD is likely to mitigate the expansionary effects of a rise in G.
     - In Extract 9, it is stated that it is a matter of time before the need to increase income tax and corporate tax or even GST arises. The timing is indeed very important.
       - If the government were to raise such taxes now, it is incongruent with the use of expansionary FP (reducing direct taxes) in a recession.
       - If taxes were to be raised at a later time, it is likely to reduce the spending ability of future generations for income tax raises and deter I and FDI if corporate tax rates were to rise.
       - Moreover, a rise in GST indirectly increases production costs of firms, reducing AS and causing cost-push inflation. This has the adverse effect of raising the COL especially for the lower-income.

2. Issue of pessimism: Due to the virus and weak global economic conditions, households and firms are likely to be pessimistic. Thus the difficulty created might be that cut in direct taxes are not be going to be effective in stimulating C and I as households expect fall in incomes or to lose their jobs whilst firms expect continued fall in demand and profits.

3. Issue 3: Singapore has a small multiplier size. The multiplier size has an inverse relationship with the marginal propensity to withdraw.
   - Singapore has a high MPS due to its compulsory CPF savings and a high MPM due to its need to import – a result of its lack of resources and small production base. Thus, the effect of an increase in AD on national income is significantly reduced.

4. Issue 4: Singapore's X-reliance. FP is often used as an interim measure as Singapore is X-reliant with X accounting for 200% of our GDP. A recession In Singapore is most usually caused by a fall in X- with no exception this time as Covid reduces significantly world demand due to lockdowns. Therefore, an expansionary FP can only be a short-term measure and we are likely to recover only when the world economy recovers.

4m for AD-AS analysis
4 m for 2 difficulties explained
Max 6 – if difficulties not linked to case material

Examiner's Comments

- *Most did well especially for the first part of the question –showing solid knowledge on how fiscal policies work. In some scripts, the effect of tax cuts was not discussed, making for an incomplete analysis.*
- *The quality of answer for the second part of question varied across scripts. Those who fared poorly tended to be those who 'cut and paste' case material without linking to economic analysis.*

(e) Discuss the challenges that Saudi Arabia and Singapore are likely to face in trying to achieve inclusive and sustainable growth. [12]

- To achieve inclusive and sustainable growth, there is a need to first attain sustained economic growth
- both actual growth (through a rise in AD) and potential growth (through a rise in AS)
- Inclusive growth: how to redistribute the fruits of growth/success to the masses ie.e to reduce income gap
- Sustainable growth
- how to keep pollution in check (which can affect future growth such as less arable land and lack of clean water)
- ensure resources are not rapidly depleted (which affects productive capacity and potential or future growth)

❖ **Key Opinion: Measures for inclusivity and sustainability can often conflict with growth**

1. Challenges linked to Sustained Economic Growth (any one)
   a. Policies to increase AD: expansionary FP
      - Need reserves to finance
      - Singapore's ageing population results in less tax revenue received as size of labour force reduces

   b. Policies to increase AS: education and training
      - Education and training bring about inclusivity as it equips the lower-income workers with skills and allow them to keep their jobs and remain relevant
      - Challenge: long time lag and lack of receptivity
        - Singapore: ageing population and steep learning curve
        - Saudi Arabia: men – poor work ethics/ women face discrimination

   c. Increasing AD over the long term can prove to be challenging - resulting in less funds to pursue policies for redistribution
      - Saudi Arabia- over-reliance on oil and Singapore - X-reliance
      - These make both countries' growth susceptible to fluctuations in oil prices and world demand respectively

2. Challenge linked to Sustainability:
   a. Depletion of resources
      - Development of renewable sources of energy is a challenge for Singapore as these sources may be land-intensive eg. solar power, windmass
      - Moreover, depletion of resources eg. raw materials is beyond Singapore's control since most of these are imported

   b. Keeping pollution in check
      - A government may impose carbon taxes or taxes on goods and services to reduce the negative externality caused by pollution.
      - This has the effect of reducing industrial output and affecting employment especially if the industry is an important contributor to GDP.

3. Challenges linked to Inclusivity: measures can conflict with growth
   a. use of minimum wage – the challenge created is that it increases production cost and reduces AS. The adverse effect is a rise in cost-push inflation that increases the cost of living. This has an impact on the lower-income groups. Moreover, a higher inflation affects export competiveness and affects the country's balance of trade position.
   b. use of progressive income tax. Usually taxes are increased at the higher tier. Faced with higher taxes, the higher-income group reduce their consumption and this affects AD. Moreover, a highly progressive income tax results in brain drain and deters foreign talent from coming into the country. The fall in quantity and quality of human capital affects potential growth through a fall in AS.
   c. Subsidies by Saudi Arabia can breed inefficiency. One example is the men having poor work ethics.

Sythesised Conclusion:

- In comparison, both countries have different circumstances and different polices that may lead to different challenges.

Some pointers:

- Where sustained growth is concerned, Singapore faces the issue of ageing population whilst Saudi faces an issue of poor work ethics and low female labour force participation.
- Where resources are concerned, Singapore is dependent on imports while Saudi Arabia has oil reserves (though that can be depleted). Thus a difference in challenge since resource depletion is an issue beyond Singapore's control.
- Where inclusivity is concerned, Saudi seems to be subsidising too much while Singapore fear is about minimum wage impinging on growth
- On the issue of budget constraints, both countries may currently not face the problem of depletion of reserves
    - Singapore has budget surpluses while Saudi has massive oil revenue
- **Key challenge: Need to be mindful that policies for inclusivity and sustainability can conflict with growth.**

L1 1-3	▪ Answer not linked to theoretical framework ▪ Mere 'cut and paste' of case material without linking to economic analysis ▪ Did not understand the terms 'inclusive and sustainable'
L2 4-6	▪ Only 2 challenges discussed ▪ Gaps in analysis ▪ Failed to recognise that there must first be sustained economic growth before inclusivity and sustainability can be attained
L3 7-9	3 challenges well-discussed and with appropriate reference to case evidence
E1 1 m	Assertion w/o substantiation
E2 2-3m	▪ Judgment with substantiation ▪ An attempt to compare both countries

Examiners' Comments

- The best approach to this question is to surface the policies that can achieve such growth, before linking to the challenges that arise. For example, if the response recognises that education and training is a way for inclusivity, then the challenge that arises will be the lack of receptivity.
- In some scripts, the focus of the response was only on AD & AS without link to issues of sustainability and inclusivity. A quality response should have surfaced measures such as minimum wage and progressive income tax. Candidates need to be aware that apart from the use of case material, they need to think beyond the case and surface issues or measures that are relevant to the context of inclusivity and sustainability.

There was also too much 'cut and paste' of case material without much link to economic analysis.