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# ECONOMICS Higher 2 Syllabus 9757

Examiner's Report

Year 5 Promotion Examination 2021



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# ECONOMICS

## Y5 H2 Promotion Examination 2021



**Case Study** 

# (a) With reference to Table 1, distinguish the trend in retail sales by ecommerce and non-ecommerce in the US from 2019Q1 to 2021Q1. [2]

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## Suggested Answer:

Identify any 2 differences between the trends, including but not limited to:

Ecommerce retail sales increased but non-ecommerce retail sales fell from 2019Q1 to 2020 Q1. [1]

#### AND EITHER

Ecommerce retail sales increase throughout the stated time period but non-ecommerce retail sales increased only from 2019Q1 to 2020Q1. [1]

OR

Ecommerce retail sales peaked in 2021Q1 while that of non-ecommerce retail peaked in 2020Q1. [1]

#### Mark Scheme

- 1m for each difference in trend identified
- Max 1m if no consideration of the trend for overall time period from 2019Q1 to 2021Q1 at all
- Max 1m if no comparative word is used to distinguish between ecommerce sales level and nonecommerce sales level

## Examiners' Comments

- Given the command word "distinguish", students need to provide 2 differences.
- Trend questions require students to pick out distinctive feature(s), hence answers that are too detailed (e.g. responses that provide each year-on-year differences) will not be given credit.
- Read the question carefully. The question is asking for trend in level of sales, not trend in percentage change or growth rate changes in sales.
- To secure the first mark, do not break up the time period but distinguish the trend in level of sales between ecommerce and non-ecommerce across the entire stated time period from 2019Q1 to 2021Q1.

## (b) Use the concept of opportunity cost to explain one effect on Amazon as a result of "prioritizing the stocking of essential, like household staples and medical supplies" as referred to in Extract 2.

#### Suggested Answer:

Define opportunity cost: the (benefits from) next best alternative forgone

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• Application of case material specific to Amazon: The opportunity cost incurred by Amazon when it prioritizes the stocking of essentials is forgoing the revenue (or profits) it could otherwise have received from selling "non-essential goods like flat-screen TVs and toys" (Extract 2).

# Mark Scheme

A response that integrates the concept of opportunity cost into the explanation and uses case evidence to explain what Amazon is giving up by prioritizing the stocking of essential items	2m
Defining or explaining opportunity cost theoretically with no links to the context and/or no links to the benefit that is being forgone (e.g. revenue forgone from sales of essentials), max 1	1m

# Examiners' Comments

- The majority of students secured full credit for this question.
- To secure full credit, students should explain the effect on Amazon using the concept of opportunity costs clearly. Some students explained effects without application of opportunity costs.
- Students are reminded to manage their time properly and not write too much for a response that is worth 2 marks out of 30 marks.
- (c) Discuss the impact the COVID-19 pandemic has on the profits of an ecommerce company in the US. [8]

# Suggested Answer:

Assume that an ecommerce company in the US (like Amazon) is a profit-maximizing firm, operating under an oligopolistic market structure. Profits = total revenue – total cost. The Covid-19 pandemic can affect its profits either positively or negatively due to impacts on demand/revenue and costs.

# Possible **thesis**: Covid-19 has a positive impact on the profits due to rising demand for products sold by US ecommerce companies' because

- <u>Demand</u> for online sales and ecommerce has <u>increased</u> because Covid-19 has caused consumers to <u>switch</u> from purchasing from brick-and-mortar stores to <u>buying online</u>, ceteris paribus
  - Evidence from Extract 1: "Self-imposed social distancing to avoid contagion, together with the strict confinement measures implemented in many countries, have put a large share of traditional, brick-and-mortar street-side retail virtually on hold, at least temporarily. However, sales increased for non-store ecommerce retailer."
  - **Economic analysis:** With consumers' increased preference for online retail and inability to purchase from physical retail stores, the demand for an ecommerce firm will rise, as indicated by the rightward shift of the firm's DD/AR curve from AR1 to AR2 and MR1 shifts to MR2 in Figure 1, cet. par.
  - The PED for the ecommerce firm would also likely become more price inelastic as the physical retail can be deemed to be less of a substitute for online retail due to Covid-19. Hence, the AR and MR curves also become steeper.
  - Ceteris paribus, at the new profit-maximising price P2 and quantity Q2 where MC = MR2, the ecommerce firm will enjoy a higher revenue and a higher supernormal profit of area P2CDAC2 than the original profit of area P1ABAC1, meaning that its profit is positively impacted by Covid-19.



Possible **antithesis 1**: Covid-19, however, could have a negative impact on the demand for products sold by ecommerce companies in the US because

- Falling global income due to the economic recession caused by Covid-19 would lead to a fall in demand for products sold online, assuming that the ecommerce company is selling normal goods with YED > 0, ceteris paribus.
  - **Evidence** from Extract 1: "the global economy predicted to shrink by at least four percent over the year"
  - **Economic analysis:** Falling AR and MR will lead to lower profit-max price and output levels and in turn total revenue, ceteris paribus, profits for the ecommerce firm fall.

Possible **antithesis 2**: The costs of production (fixed and/or variable costs) could have increased during the Covid-19 pandemic due to

- Higher variable costs of production could be incurred due to supply-chain disruption during Covid-19
  - **Evidence** from Extract 1: "Restrictions on movement" of labour "affecting production, distribution and consumption" → fall in supply of labour → increase in wage rates, a variable cost to the company
  - OR Evidence from Extract 2: Walmart "hiring an additional 200,000 people" to "meet growing demand for delivery" or Amazon "hiring 175,000 additional workers to keep up with the heightened demand"
  - Economic analysis: As wage rates increase or as the ecommerce company hires more labour to meet the current as well as anticipated future rise in demand for online purchases, they could incur higher variable costs. Hence the firm's MC and AC curves will shift upwards as shown in Figure 2 below from AC1 to AC2 and from MC1 to MC2 respectively in Figure 2 below. Assuming revenue curves are constant, at the new profitmaximising price P2 and quantity Q2 where MC2 = MR, the ecommerce firm will incur a higher total cost and earn a lower supernormal profit of area P2CDAC2 than the original profit of area P1ABAC1, meaning that its profit is negatively impacted by Covid-19.

Price/Revenue/Cost



Evaluation (Judgement can be in the body paragraphs or in the concluding paragraph)

- Overall, Covid-19 is likely to have a positive impact on profits of an ecommerce company in the US because the effects from the demand increase due to consumers' rising preference for online retail is likely to be greater than the effects due to rising costs of production or falling global income
  - o Evidence from Table 1: large increase in retail sales from ecommerce
  - Evidence from Extract 2: firms like Walmart and Amazon experience increased costs of production because they want to better respond to the rapidly rising demand due to Covid-19. It is likely that Walmart and Amazon would still enjoy an overall rise in profits, despite the higher costs, because otherwise they would not be incentivized to hire more workers and expand their delivery services.
- Covid-19 is likely to positively impact the ecommerce firm's profits both in the short run and in the long run
  - Evidence from Extract 1: "It seems likely that the accelerated trend towards ecommerce seen during the pandemic will be sustained during recovery"
  - Evidence from Extract 2: "Many expect Amazon's jump in sales during the pandemic to lead to significant longer-term gains, with growth driven by the acceleration of consumer adoption of ecommerce across all demographic groups and the company's investments in fulfilment and infrastructure"
- Other possible evaluation points: comparing the profits of ecommerce companies that sell inferior goods with those that sell normal goods; possible new entrants in the future; contestable markets as offline retail giants try to enter the online retail scene; etc.

#### Mark Scheme:

Knowledge, Application, Understanding, Analysis				
L1	<ul> <li>Major conceptual inaccuracies</li> <li>Smattering of points not directly linked to question</li> <li>No reference to case material at all</li> <li>Journalistic explanations, without the use of the firm's MC-MR-AC-AR (profitmax) framework in terms of concepts (specialist language) or incorrect framework used</li> </ul>	1 - 3		
L2	<ul> <li>Good rigour and accurate economic analysis based on MC-MR-AC-AR (profitmax) framework in terms of concepts (specialist language) and/or diagram(s)</li> <li>Explicit and sustained application of case evidence</li> <li>Good scope of coverage: Covers both revenue and cost effects, and TA structure (positive and negative impacts) to score 5-6 marks</li> <li>1 thesis point and 1 AT point can secure full credit L2=6 marks</li> <li>Max 4 if no TA structure, either on positive or negative impacts only</li> <li>Max 4 if only cost or revenue effects, but not both</li> </ul>	4 - 6		
Evaluati	ion/Synthesis (can be in the body and/or in the concluding paragraph)			
E1	<ul> <li>A judgement that seeks to put more weight on either the thesis point(s) or antithesis point(s) but explanation is weak or incomplete</li> <li>Judgement which is purely theoretical without contextual application</li> <li>Om if it's just a statement of judgement without attempt at explaining, e.g. "overall, profit is still likely to increase due to Covid-19"</li> </ul>	1		
E2	<ul> <li>A judgement that is well-reasoned based on case evidence/context and supported by accurate economic analysis.</li> <li>Judgement can be in the form of         <ul> <li>Weighing whether the thesis point(s) or AT point(s) is stronger and explanation of why                 <ul></ul></li></ul></li></ul>	2		

## Examiners' Comments

- For questions that are of a higher weightage, to provide sufficient rigour of economic analysis, students are advised to use the *firm level of analysis diagram* to support their explanation. Given that the key words in the question are "profits" and an "ecommerce company", the relevant economics framework to use for this question is the firm level (MC/MR/AC/AR) framework and not the market level analysis (DD/SS). For students who used the market demand and supply framework, please understand when to use the firm level (MC/MR/AC/AR) framework and when to use the market demand and supply framework. Framework here refers to both concepts and diagram.
- As the question asks about "impact of the COVID-19" on a firm's profit, students are reminded to always link back to case evidence on effects of the pandemic, rather than explaining without context.
- A firm's profit can be affected by changes from both the cost side and the revenue side. A balanced and well-scoped answer considers both.
- To secure evaluation marks, please go beyond providing a summary. Please judge whether the thesis point(s) or AT point(s) that you have raised is likely to be stronger and provide reason(s) based on the given case material and context (ecommerce market in the US during COVID-19) to substantiate your judgement.

- Please provide explicit use of case evidence (quote and then explain your quote).

# (d) Explain why Amazon's personalised pricing strategy might be a form of price discrimination. [4]

# Suggested Answer:

- The personalized pricing strategy by Amazon can be a form of price discrimination (PD) as it "have been seen charging different prices to different customers for the same product", e.g. DVD, (Extract 2) and there might not be any cost differences in selling the same DVD to different consumers. Hence personalized pricing involves selling the same good to each customer at a different price for reasons not associated with cost differences.
- Amazon uses technologies or "cookies" to recognize a customer's browser or device, and collect information about the customer's interests and behavior and in so doing, try to determine the maximum price each consumer is willing to pay for a particular DVD. Consumers with multiple browsing histories on DVDs sold on Amazon could have higher and more sticky interests in buying those DVDs. If the customer is perceived to view DVDs sold by Amazon as lacking in close substitutes, the customer is deemed to have a relatively less price elastic demand. In addition, customers who are perceived to visit Amazon on a more habitual basis are deemed to have a relatively less price elastic domand for DVDs sold by Amazon. Consumers without any previous browsing histories on DVDs sold on Amazon are perceived to be not habitual consumers of Amazon, hence they are perceived to have a relatively more price elastic demand.
- Amazon can hence charge higher prices for the DVDs to consumers who have a relatively less
  price elastic demand to capture their consumer surplus and earn a higher revenue, ceteris paribus,
  profits will increase. By charging lower prices to consumers who have a relatively higher PED,
  Amazon can gain more revenue by selling to consumers who were previously not served at the
  uniform price (meaning that these consumers might not have the willingness to or ability to buy the
  DVDs initially at the uniform price).

## Mark Scheme

- 1m for definition or integrating the definition into the explanation that since the good (e.g. DVD) is the same, there will be no cost difference in selling the good to the different customers
- 1 mark for providing case evidence specific to Amazon (how Amazon identifies which customers have lower and higher PED)
- 1*m* for integrating the determinants of PED into the explanation of how Amazon identifies which customers have lower and higher PED
- 1m for explaining why the lower the PED, the higher the price charged

# Examiners' Comments

- For a question on why the strategy is an example of price discrimination, points related to why Amazon has the ability to price discriminate are not required (e.g. monopoly power and ability to prevent resale).
- Given that the command word is "explain why", not "explain whether", antithesis points are not required, hence marks are not given for these AT points.
- In your H2 syllabus, there is no need to identify which degree of price discrimination the example falls under. Focus more on whether the definition is satisfied (is it the same good, are there cost differences, are the differences in price due to differences in price elasticity of demand?)

- As price discrimination is a strategy employed by a firm, the relative PED between customers or submarkets matters, rather than the absolute PED. When using the MR/MC/AR/AC firm-level framework, the profit-maximising firm can only set price in the elastic segment of its AR curve.
- (e) (i) With reference to Extract 4, explain why, in the absence of government intervention, resources may not be efficiently allocated in the market for ecommerce. [4]

# Suggested Answers:

- When online retailers provide ecommerce services to consumers, they could generate negative production externality in the market for ecommerce.
  - Quote evidence: E.g.
    - "(S)hipments are broken down into individual packages for delivery, leading to more traffic and pollution."
  - o Explain the quote:
    - The complexity in warehousing and delivering online purchases may also lead to more congested roads and greater air pollution. Thus, the online retail services create external costs (MEC > 0) on third parties which are not compensated by the online retailers. For example, commuters not involved in the production and consumption of ecommerce goods and services may face longer travelling time due to the more congested road and incur potential loss in productivity.



- Explain why the negative externality is ignored:
  - In the pursuit of self-interests, online retailers ignore the negative production externality, resulting in a divergence between the MPC incurred by the online retailers themselves and the MSC incurred by the society in Fig. 3 where MPC is lower than the MSC due to MEC > 0.
- o Derivation of free market output and socially desired output level:
  - Assuming no other sources of market failure and a perfectly competitive market, the self-interest, profit-seeking online retailers will only consider its own private costs and the price they receive for the online purchases. Hence the free market output level is Qe quantity of ecommerce purchases where MPB = MPC while the society's optimal level is at Qs where MSC = MSB.
- o Link back to resource allocation and failure to achieve allocative efficiency
  - As Qe > Qs, there's an overproduction and overconsumption of ecommerce services, leading to a deadweight loss of area EE1A. The benefits to society from

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the consumption of QeQs is less than the cost to society. Too much resources are channeled into the production and consumption of ecommerce sales and allocative efficiency is not achieved.

OR

- Consumers buying online may generate negative <u>consumption</u> externality when they do not properly dispose the trash that's generated from their purchases.
  - Quote evidence: E.g.
    - "(T)he amount of unsorted trash is still growing"
  - Explain the quote:
    - Improper disposal of plastic packaging could lead to plastic pollution in waterways and the ocean. Third parties like fishermen may experience lost revenue due to less available fish stocks or choking of sea life in the ocean. Thus, improper disposal of plastic packaging from online purchases create negative external benefits (MEB < 0) on these third parties and these negative external benefits are not compensated by the consumers
  - o Negative externality is ignored because of the pursuit of self-interests
  - Note that the divergence for negative consumption externality is on the consumption curves
     → MPB of consumption > MSB
  - Free market output level (MPB=MPC) is higher than AE output level (MSB=MSC)  $\rightarrow$  DWL

# <u>Mark Scheme</u>

- 1*m* for identifying case evidence that the market for ecommerce generates negative externality from Extract 4
- 2*m* for explaining the following (anything missing, max 1*m*):
  - Providing examples of MEC of production or negative MEB of consumption,
  - AND explaining why the negative spillover effects are ignored  $\rightarrow$  pursuit of self-interests
  - AND explaining the divergence how that leads to a MSC being greater than MPC of production or MSB being lower than MPB of consumption
- 1m for derivation of free market output level (MPB=MPC) and derivation of socially desired output level (MSB=MSC) and linking to free market output level being higher than AE level
- Max 3m if no linkages back to key words in the question (e.g. resource allocation or failure to achieve AE)

## Examiners' Comments

- Students are reminded to read the question carefully. Use examples from Extract 4 only.
- Students are reminded to read the case material carefully. The phrase "consumers turn a blind eye" means that consumers ignore the negative externalities due to the pursuit of self-interests and not because they are not fully aware of the negative spillover effects. "Ignore" has a different meaning from "ignorance".
- As the answer in part (eii) typically builds on answer in part (ei), students are advised to read both parts before attempting (ei).
- Students are reminded to provide explicit use of case evidence. They not only need to quote the case evidence; they also need to explain the quote in the given context. Concepts like third parties need to be contextualized (suggest who they might be in the given context)? What kind of negative effects do these third parties experience as a result of an increase in "traffic and pollution" or "unsorted trash"?

- Students are also reminded to stay focused on market failure in the market for ecommerce, not market for delivery, packaging or essential goods, etc.
- Although the question did not specify the use of a diagram; the externality diagram or MSB/MSC/MPB/MPC diagram is useful in supporting the explanation on why the presence of negative externalities lead to inefficient allocation of resources. Students who did not use the externality diagram tend to end up producing an answer that is journalistic in writing (that is, lacking in economics rigour).
- Note that diagrams are not just pretty pictures, they must be referred to in the textual explanation.

# (e) (ii) Evaluate the policies a government can implement in view of the above source of market failure in the ecommerce market. [10]

# Introduction:

- Clarify the aim of the policies is to correct the market failure caused by the source identified in (e)(i) and max. social welfare
- Identify at least 2 different policies a government can implement

# <u>Problem: Negative production externality ("traffic and pollution") from delivery vans and shipping</u> (MSC > MPC of production)

- Government can implement the following policies (not exhaustive):
  - Indirect tax (tax on ecommerce products),
  - Education and campaigns that seek to not only raise awareness about the negative spillover effects generated from ecommerce market but also to appeal to consumers' sense of social responsibility to care more for the environment and for others → taste and preference away from ecommerce products → reduce MPB (demand) for ecommerce products

# A detailed explanation of how indirect tax works is provided below:

# Thesis: a government can implement an indirect tax on the ecommerce market

- Explain how an indirect tax works to correct the over-production in the ecommerce market
  - Quote evidence:
    - E.g. Extract 4: "countries like the UK have been discussing a tax on all goods bought online"
  - Explain the quote:
    - An imposition of a sales tax on goods purchased online will act as if the costs of production for the ecommerce companies have increased, decreasing their willingness and ability to produce at each price and leading to a fall in supply.
    - Assume a per unit tax of MEC amount at Qs is levied, the supply of ecommerce services will shift upwards from MPC to MPC+tax.
    - The after-tax price that consumers pay will increase from P0 to P2, disincentivizing the consumers from making purchases online and the after-tax price received by the producers will decrease from P0 to P1, incentivizing the profit-seeking firms to produce less quantities.
    - Thus, the private ecommerce companies and consumers will thus produce and consume at quantity Qs where MPC + tax = MPB and the socially optimal level is achieved.

 Overproduction and the associated DWL are eliminated and the market will be allocating resources efficiently at Qs.



# Anti-thesis: However, an indirect tax may be limited in effectiveness in achieving efficient allocation of resources OR may be undesirable from certain perspectives. Some possible points include:

- It is difficult to calculate the value of MEC or negative MEB generated from ecommerce activities because it is difficult to put a monetary value on the harmful effects of "traffic (congestion) and pollution" such as health impairment, reduced agricultural yields, and damage to buildings. If the indirect tax is too low, allocative efficiency will not be achieved, hence limiting the effectiveness of the indirect tax. It is also difficult to decide if the harmful effects are due only to the pollution generated from ecommerce activities or from a combination of ecommerce and other activities.
- "(T)he acceleration of consumer adoption of ecommerce across all demographic groups" (Extract 2) would mean ecommerce is becoming more essential for people from all income levels. This is especially the case during Covid-19 where consumers deem online shopping to be more convenient and less substitutable by traditional brisk-and-mortar stores. Hence, they will have a less price elastic demand for online shopping. As demand becomes relatively more price inelastic than supply, the incidence of taxation will fall more on consumers than ecommerce retailers. This will be deemed undesirable from consumers' point of view. In addition, the indirect sales tax on all online purchases, however, can be highly regressive where the burden of the tax is felt more significantly by the poorer people than by the richer. Hence, during Covid-19 and beyond, it may not be equitable for the government to impose such a tax.

# <u>Problem: Negative consumption externality ("unsorted trash") from improper disposal of plastic</u> packaging and excessive packaging (MPB of consumption >MSB)

- Government can implement the following policies (not exhaustive):
  - Indirect tax (tax on ecommerce products),
  - Education and campaigns that seek to not only raise awareness about the negative spillover effects generated from ecommerce market but also to appeal to consumers' sense of social responsibility to care more for the environment and for others → taste and preference away from ecommerce products → reduce MPB (demand) for ecommerce products
  - Subsidy on green packaging
  - Education and campaigns on encouraging consumers to "sort and recycle their garbage" and "to consume less" (Extract 4)

# <u>A detailed explanation of how a subsidy on green packaging works in the ecommerce market is</u> <u>provided below:</u>

# Thesis: a government can also implement an indirect subsidy on the usage of green packaging by in the ecommerce market

- Explain how an indirect subsidy on green packaging works to correct the over allocation of resources in the ecommerce market
  - Quote evidence: E.g. Extract 4: "In China, the government has been actively promoting green packaging in the delivery industry."
  - Explain quote:
    - A subsidy on green packaging will make it cheaper for ecommerce retailers to adopt more environmentally friendly packaging for their products (e.g. biodegradable packaging). This will incentivize the ecommerce firms to switch away from plastic packaging to greener packaging.
    - The use of greener packaging will generate a lower level of negative spillover effects on third parties and potentially reduce the negative MEB level in the ecommerce market, leading the MSB curve to shift right towards the MPB curve as the negative MEB is reduced
    - Hence there will be an increase in socially optimal quantity, making the free market output level the new socially optimal level of production and consumption, eliminating the market failure

# Anti-thesis: However, such an indirect subsidy has its limitations or may not be sustainable in the long run or may not be feasible or may not be desirable from certain perspectives. Some possible points include:

Subsidies can be expensive and the government may not have enough budget to subsidise the
adoption of green packaging, especially given the rapid and large increase in volumes of online
shopping since Covid-19. Governments have other priorities during Covid-19 like allocating funds
to the increase in number of unemployed workers, hence they may not be able to allocate sufficient
funds to subsidizing green packaging. If the subsidies on green packaging are not attractive enough,
the ecommerce firms may not want to readily switch to the use of green packaging and instead
continue with cheaper but less environmentally friendly packaging.

# <u>A detailed explanation of how •education and campaigns on encouraging consumers to "sort and recycle their garbage" and "to consume less" (Extract 4) works in the ecommerce market is provided below:</u>

 As consumers "turn a blind eye" to environment pollution from plastic packaging, campaigns must not only equip consumers with knowledge about the detrimental environmental effects that plastic packaging from online shopping have and how to how to better dispose and recycle their garbage, campaigns must also seek to change the mindsets and attitudes of consumers so that they care more for the environment and for others. By becoming more socially and environmentally responsible, consumers taste and preference will change and they will be more willing to do their part to "sort and recycle their garbage" or "to consume less". By sorting and recycling garbage, the negative MEB from the consumers' improper disposal of trash from online shopping can be reduced, moving MSB closer to MPB level and reducing overconsumption. This is reflected by the MSB curve shifting closer to the MPB curve, hence socially desired output level increases closer to free market output level.

- Potentially, the more environmentally conscious consumers may also be disincentivized to continue online shopping at their original frequency if they are now more educated on the detriments on society. As a result, MPB may also fall and the MPB curve will shift closer to the MSB curve and lead to a reduction in overconsumption.
- Limitations could be on the receptiveness of consumers about such campaigns and if recycling facilities are fully developed to accommodate consumers' proper disposal of trash, etc.

# Evaluation (can be in the body paragraphs and/or concluding paragraph):

- Make a judgement on which policy is more effective or more desirable or more feasible in the market for ecommerce and/or given the Covid-19 situation.
- Make a judgement on why a mixture of the policies that you raised should be used by the government in the market for ecommerce. Explain how the different policies that you raise may complement one another in the market for ecommerce, both in the short run and long run, especially during the Covid-19 situation.
- Make a judgement that it can be beneficial for the policies to target both the ecommerce retailers and consumers together.
  - E.g. The rise in online shopping since Covid-19 is more attributable to the huge rise in consumer preference and demand. Without fundamental changes in consumers' consumption and recycling behaviours, any price increases passed on to them from the retailers may not be enough to incentivize them to reduce consumption too much.

# Mark Scheme:

Knowl	edge, Application, Understanding, Analysis	
L1	<ul> <li>Listing rather than explaining how policies work and what limitations they have</li> <li>Glaring conceptual errors throughout</li> <li>Journalistic explanation throughout - lack of links to economic framework</li> <li>Explanation of thesis and AT points of all the policies are purely theoretical</li> <li>Max 4m if student provides only one policy</li> <li>Max 4m if no TA structure (one-sided for all the policies without limitations)</li> <li>No double-penalty</li> </ul>	1-4
L2	<ul> <li>Sufficient scope of coverage and TAS structure is present         <ul> <li>Provides at least two possible policies the government can implement.</li> <li>2 policies with TAS (how the policies work and limitations) for both policies are sufficient to secure full L2 credit of 7 marks</li> </ul> </li> <li>Rigour in economic analysis is present. This means that student's response shows depth of explanation/elaboration, involving the usage of economic theory/framework in explanation             <ul> <li>That is, details regarding how each policy reduces overproduction and overconsumption from the source of market failure are provided</li> <li>Students can refer to diagram in (ei) when addressing policies in (eii)</li> </ul> </li> <li>Contextual application – explicit use of case evidence and application specific to ecommerce market and/or covid-19 situation.</li> </ul>	5-7

Evalua	Evaluation/Synthesis (can be in the body and/or in the concluding paragraph)			
E1	<ul> <li>Judgement which is purely theoretical without contextual application</li> <li>Judgement that seeks to put more weight on either the thesis point(s) or antithesis point(s) but explanation is weak or incomplete</li> </ul>	1		
E2	<ul> <li>Judgement that is well-reasoned based on case evidence and supported by strong economic analysis. Judgement can be in the form of         <ul> <li>Weighing whether the thesis point or AT point is stronger and explanation of why</li> <li>A new insight based on the T &amp; AT in the body paragraphs and after directly addressing the question</li> </ul> </li> <li>No concluding paragraph, max 2m</li> </ul>	2-3		

# Examiners' Comments

- Students are reminded to provide explicit use of case evidence. They not only need to quote the case evidence; they also need to explain the quote in the given context. Students also need to engage in application specific to the ecommerce market, and not any other market(s).
- There should be better link between explanation of policies and application of the context. Most of the analysis are just pure regurgitation from notes, resulting in it being generic which could be cut and paste across all types of market failure questions. The failure to contextualize concepts would result in loss of marks.
- There were also policies suggested which were undeveloped. For instance, some students suggested educating the consumers on the use of green packaging, but in the first place, consumers were not the ones engaged in wasteful packaging. A more developed explanation will include how changing taste and preferences of consumers may encourage them to buy from sellers who use green packaging, which in turn might incentivize sellers to move towards green packaging.
- Policies raised must address the problem raised in (ei). There were some responses where the problem was due to "traffic and pollution", but the policies raised to tackle "traffic and pollution" included sorting and recycling garbage, which would not address the problem at all.
- Many students suggested education and campaign as a possible policy. However, some students subsequently explained how providing consumers with full information will solve imperfect information, rather than negative externality, in the market for ecommerce. Students are reminded that since consumers are self-interested, simply knowing external costs on third parties will not incentivise them to change their own MPB/DD in solving externality problems.
- Although the question did not specify the use of a diagram, the externality diagram or MSB/MSC/MPB/MPC diagram is useful in supporting the explanation on how different policies can help to achieve efficient allocation of resources in the presence of negative externalities. Students who did not integrate the policies into the externality diagram tend to end up producing an answer lacking in economics rigour.
- For those that use the simple market demand and supply diagram, they were not able to explain adequately how resource allocation is initially inefficient prior to the policy and how allocative efficiency is achieved after the policy is implemented. Note that diagrams are not just pretty pictures, they need to be referred to in the textual explanation.

# Paper 2: Essay Questions

**Q1:** Online purchases from overseas retailers have grown as consumers enjoy the convenience and lower prices of shopping for different types of goods from small-ticket items like mobile phone accessories to big-ticket items such as furniture. However, domestic brick and mortar retailers have been hit hard in recent years. To level the playing field for domestic retailers, the government will charge GST on all online purchases from overseas into Singapore.

Explain the differing effects from the imposition of GST on the market for various types of goods purchased from overseas retailers and discuss the effectiveness and desirability of such a policy. [25]

[Students are expected to address all three-parts of the question (underlined below) as follows:

- Explain the <u>effects of GST</u> on the market for various types of goods bought from overseas retailers. Students will need to consider goods whose price elasticity of demand differs and go on to analyse the different effects it may have on P, Q and TE/TR on the market for such goods.
- Discuss the <u>effectiveness</u> of imposing GST on online retailers and the <u>desirability</u> of doing so on different economic agents - consumers, producers comprising overseas online retailers, domestic brick and mortar retailers, government, and society on the overall.]

# Suggested Answer Outline

# Introduction

- Clarify GST
  - An indirect tax collected from producers for goods and services transacted.
  - An ad-valorem tax set at 7% of selling price of the goods and services. As price increases, the GST amount increases.
  - Incidence of GST is shared by producers and consumers.
- Clarify the objective of the government for imposing GST on overseas purchases
  - To help domestic retailers better compete with overseas retailers.
  - State the effects on the different goods markets to be analysed
    - Changes in P, Q, TE, TR.
- State that the effects of GST on different goods markets depends on the price elasticity of demand of the good.

## Body

- Explain how GST works
  - GST is indirect tax which is collected from overseas online retailers. It has the effects of increasing COP of firms, reducing profitability, causing a fall in SS. Given that GST is an ad valorem tax of 7% of selling price of goods where tax amount increases as price of good increases, it is represented as a pivotal/non-parallel upward shift of the market SS curve from S<sub>0</sub> to S<sub>GST</sub> as illustrated in Fig 1



- With a fall in market SS, at prevailing market price P<sub>0</sub>, a shortage is created, which causes an upward pressure on prices. This increase in P causes Qd to fall due to the income and substitution effect, and Qs to increase as profitability increases. Consequently, shortage is reduced. Price continues to adjust upwards until equilibrium price rises to P<sub>1</sub> while equilibrium quantity falls to Q<sub>1</sub>, such that Qd=Qs. The extent to which equilibrium quantity falls and the consequent effect on TE depends on the price elasticity of demand for the good.
- Explain the effects on the market for goods whose <u>demand is price inelastic</u>
  - For goods whose PED <1, e.g. small ticket items like mobile phone accessories such as mobile phone screen protectors, the proportion of income spent is likely to be low, hence an increase in price from P<sub>0</sub> to P<sub>1</sub> due to the fall in SS from S<sub>0</sub> to S<sub>GST</sub> from the GST imposed, results in a less than proportionate fall in quantity demanded Q<sub>0</sub> to Q<sub>1</sub> in Fig 2.
  - From Fig 2, the rise in TE due to an increase in price represented by area P<sub>1</sub>abP<sub>0</sub> > fall in TE due to a fall in Q<sub>d</sub>, represented by area Q<sub>1</sub>bcQ<sub>0</sub>. Hence, there is an overall increase in TE for the market of small ticket items to P<sub>1</sub>aQ<sub>1</sub>0.
  - TR received by producers after paying GST to Singapore government will fall to P<sub>2</sub>dQ<sub>1</sub>0. Although P<sub>1</sub>aQ<sub>1</sub>0 is received from consumers, P<sub>1</sub>adP<sub>2</sub> has to be paid to Singapore Government as GST, leaving a post-tax revenue of P<sub>2</sub>dQ<sub>1</sub>0.



- Explain the effect on the market for overseas goods whose <u>demand is price elastic</u>:
  - For goods whose PED > 1, e.g. big ticket items like furniture, the proportion of income spent is higher, hence an increase in price from P<sub>0</sub> to P<sub>1</sub> due to the fall in SS from S<sub>0</sub> to S<sub>GST</sub> from the GST imposed, results in a more than proportionate fall in quantity demanded Q<sub>0</sub> to Q<sub>1</sub>.
  - From Fig 3, the rise in TE due to an increase in price represented by area P<sub>1</sub>abP<sub>0</sub> < fall in TE due to a decrease in Qty dd represented by area Q<sub>1</sub>bcQ<sub>0</sub>, hence there is a decrease in TE to P<sub>1</sub>aQ<sub>1</sub>0.
  - TR received by producers after paying GST to the Singapore government will fall by an even greater extent. As analysed in previous point, TE has decreased to P<sub>1</sub>AQ<sub>1</sub>0. Given that overseas online retailers now have to pay GST of P<sub>1</sub>adP<sub>2</sub> to the Singapore government, post-tax revenue received by producers will fall even more (compared to the small ticket items retailers) to P<sub>2</sub>dQ<sub>1</sub>0.



[Responses which explained differences in tax incidence of GST depending on different types of goods markets were also credited.]

- Clarify criterion for effectiveness of GST policy
  - Effectiveness → to level the playing field for domestic brick and mortar retailers by increasing price of overseas retailed goods, causing consumers to switch to goods from domestic brick and mortar retailers which are deemed as substitutes. This mitigates the initial fall in demand and TR for domestic brick and mortar retail market.
- Thesis: GST policy is effective
  - An increase in price of overseas retail goods due to the GST imposed, encourages consumers to switch to <u>relatively</u> cheaper domestic brick and mortar retailers. The market for such goods is expected to experience an increase in demand as illustrated by the rightward shift of DD curve from D<sub>0</sub> to D<sub>1</sub> in Fig 4. This results in an increase in equilibrium price from P<sub>0</sub> to P<sub>1</sub>, and an increase in equilibrium quantity from Q<sub>0</sub> to Q<sub>1</sub>. Due to the increase in equilibrium P and equilibrium Q, TR increases. Ceteris paribus, profits of firms will increase. Hence by increasing the demand and TR, GST as a policy measure is effective in mitigating the initial fall in DD and TR for domestic brick and mortar retailers.



- Anti-thesis: GST as a policy measure may be ineffective
  - If the degree of substitutability between the goods is low (CED<1), there is a limit to how much a narrowing of price difference can entice consumers to switch away from overseas purchases. E.g. much sought after Japanese savoury snacks that can only be purchased from overseas Japanese retailers. As such, the increase in demand for domestic brick and mortar retailers will not increase much, limiting the effectiveness of GST policy in such instances.
  - GST as a policy measure does not address the root cause of decline in demand for domestic brick and mortar retail goods if the loss of competitiveness is due mainly to nonprice reasons such as the ease, convenience and variety of goods by online shopping platforms like Shopee, Lazada and Amazon.
- Clarify criterion of desirability
  - Effect on consumer welfare analysed by changes in consumer surplus and choice
  - Effect on producer welfare analysed by changes in producer surplus
  - o Effect on government analysed by changes in government tax revenue
  - Effect on society analysed by examining DWL and equity issues
- Effect on consumer welfare
  - In the market for overseas retail goods, with the imposition of GST, the increase in equilibrium price and fall in equilibrium quantity will result in a fall in consumer surplus. With reference to Fig 1, consumer surplus falls from area 1+2+3 to area 3 as consumers now enjoy less goods from overseas online retailers and pay a higher price.
- Effect on producer welfare
  - In the market for overseas retail goods, producer surplus of overseas online retailers will fall as overseas online retailers will have to pay GST to the Singapore government. Referring to Fig 1, producer's surplus falls from area 4+5+6+7 to area 7.

 In the market for domestic brick and mortar retail goods, when demand increases due to more consumers switching to purchasing more domestic retail goods with the narrowing of the price difference with that of overseas retail goods, producer surplus increases due to the increase in both equilibrium price and qty traded. With reference to Fig 4, the producer surplus increases from area P<sub>0</sub>ce to area P<sub>1</sub>be as domestic brick and mortar retailers are selling more and at higher prices.

[Responses which discussed the undesirability of GST to producers and consumers using the tax incidence approach were also credited.]

- Effect on government revenue
  - The imposition of the GST on purchases from overseas online retailers allows the SG government to earn tax revenue. Diagrammatically, this is illustrated in Fig 1. With the upward shift of the market SS curve to S<sub>GST</sub>, consumers with now pay price P<sub>1</sub> at qty traded Q<sub>1</sub>. However, producers with receive a post-tax price of P<sub>2</sub>. Hence P<sub>1</sub>P<sub>2</sub> is the amount of tax paid to the government at Q<sub>1</sub>. The government will hence receive tax revenue of P1edP2. The government is better-off as GST revenue collected can be used for various government expenditures.
- Effect on social welfare:
  - The implementation of GST on the market for overseas retailed goods is undesirable as it creates a deadweight loss to society as illustrated by area cde in Fig 1, generated from the loss of both consumers' and producer's surplus as a result of the fall in qty traded arising from the imposition of GST.

## Conclusion

- While the intent of the GST policy is to help level the playing field for domestic brick and mortar retailers, in the long-run it is insufficient to just rely on GST as a policy but also to consider supplementary measures to improve the competitiveness of domestic brick and mortar retailers.
  - e.g. government subsidies to encourage domestic brick and mortar retailers to go digital and embrace online shopping → so as to enable such retailers to compete better by improving their outreach to capture more consumers who are increasingly digital savvy and discerning in their shopping experiences → increase TR or better able to mitigate fall in TR in LR.
  - e.g. SS-side measures → disburse productivity related grants to help brick and mortar retailers improve processes and productivity to lower their COP (e.g. Productivity Solutions Grants. As announced in Budget 2021, the enhanced maximum support level of up to 80% will be extended from 30 September 2021 to 31 March 2022 → pass on cost savings to consumers → ability to price their products more competitively → increase TR especially for goods which are price elastic in demand to better mitigate fall in TR in LR.
- Weigh the relative importance of the different stakeholders when it comes to passing a judgment on desirability of the GST policy.
  - e.g. Given that domestic retailers also contribute to domestic employment<sup>1</sup>, it is an important consideration for the SG government to ensure that such domestic retailers are given as much help to compete better so as to safeguard jobs moving forward, while buying time, for new jobs to be created in other sectors.

<sup>&</sup>lt;sup>1</sup> As a proxy, Small and Medium-sized Enterprises or SMEs (generally defined as companies with annual turnover <S\$100m, or employ <200 workers) are a key pillar of Singapore's economy, contributing **48% of its GDP**, employing about 65% of its workforce. © RI 2021 Y5/9757/Promos/2021 **[Turn Over**]

## **Mark Scheme**

	Knowledge, Application, Understanding, Analysis	
L1	<ul> <li>Journalistic response, no economic framework</li> <li>Inappropriate economic framework</li> <li>Descriptive answer, stating concepts</li> <li>Listing of points</li> <li>Gross conceptual errors</li> </ul>	1-8
L2	<ul> <li>Use of appropriate economic framework</li> <li>Conceptually sound analyses with some gaps/errors</li> <li>Not all 3 key issues addressed or addressed with insufficient scope:         <ul> <li>Effects of GST on different types of goods market</li> <li>Effectiveness of GST</li> <li>Desirability of GST</li> </ul> </li> </ul>	9-14
L3	<ul> <li>Conceptually sound and well elaborated analyses</li> <li>All 3 key issues addressed with sufficient scope:         <ul> <li>Effects of GST on different types of goods market</li> <li>Effectiveness of GST</li> <li>Desirability of GST</li> </ul> </li> </ul>	15-20
	Evaluation	
E1	Summative conclusion or inadequately explained judgement.	1
E2	• Explained judgement which is appropriate to the context of question.	2-3
E3	• Insightful and explained judgment which is appropriate to the context of question.	4-5

## Marker's Comments

- Interpretation of question
  - Essay 1 is the least popular question out of the 3 essays. There are 3 parts to this question and students are expected to address all parts of the question. However, quite a number of students only addressed 1 or 2 parts of the question.
  - Some candidates did not address the requirement to explain markets for different types of goods, specifically small-ticket vs large-ticket items.
  - Effects on markets typically require candidates to analyse changes in equilibrium P, Q, Total Expenditure/Total Revenue.
  - Quite a number of candidates could not clearly distinguish effectiveness and desirability. These candidates either interpreted effectiveness and desirability to be the same, or attributed effectiveness arguments as desirability ones, and/or vice versa. Please refer to the suggested answer outline for what is meant by effectiveness and desirability.
  - Quite a few candidates also missed out the requirement to discuss effectiveness and desirability issues, that is to present a balanced view of the effectiveness and desirability of the GST policy. Such responses presented only one-sided arguments regarding the effectiveness and desirability of the GST policy.

- Some responses regurgitated the response to GST policy question in the remedial worksheet. Candidates should not regurgitate responses as it is unlikely economics essay questions are identical. Candidates should read each question carefully and plan their responses accordingly. While it is ok to "recycle" relevant analyses and arguments from questions which you might have practiced, please refrain from thoughtlessly regurgitating answers.
- Some candidates interpreted this question as a market failure question. It is an unconventional interpretation of the question and such an approach is unlikely to do well as responses to be too narrow in nature.
- There were responses which treated this question as a standard "policy" type of question. Basically, these responses analysed the workings of GST policy and discussed the strengths and weaknesses of the policy. While some points raised would be relevant in addressing this question, such a response would not score the high end marks as it failed to directly address the question.
- Depth of Analysis
  - Some candidates did not use the DD/SS framework to analyse how GST resulted in an increase in equilibrium price. These responses merely asserted that GST caused prices to increase.
  - Quite a few responses merely stated that a fall in supply caused equilibrium P to increase and equilibrium Q to decrease, without any attempt to explain the price adjustment process in the free market which brought about these changes in equilibrium price and quantity.
  - At the other end of the spectrum, there were responses which repeatedly elaborated the price adjustment process whenever changes in equilibrium P and Q were observed. The price adjustment should be explained well once. Repetitions of the same content are not credited.
  - Changes in CS, PS and DWL have to be explained. It cannot be merely stated that the diagram shows a change in CS. For example, candidates should explain that CS has fallen because consumers are paying more and yet consuming less of a good. As a result, the difference between what consumers are able and willing to pay vs what they actually pay has decreased, causing CS to fall.
- Conceptual issues
  - Effects of Indirect Tax on TE/TR and Producers
    - There are many candidates who are not aware that:
      - Total expenditure and After-tax revenue collected by overseas online retailers are different
      - Overseas online retailers' after-tax revenue and profits will fall with the imposition of GST.
        - GST is collected from producers. Referring to Fig 1, after receiving P1 for each unit of good sold to consumers, online producers will have to pay P1P2 to the government. Producers will be left with a post-tax amount of P2.
        - With the imposition of GST, total expenditure by consumers can increase or fall depending on PED of goods in different markets.
        - However, the post-tax revenue of online producers will always fall given that it has to pay GST to the government. The only exception is when it is able to pass the entire GST to consumers in the situation where demand is perfectly price inelastic.
        - Accordingly, producer surplus and profits of overseas online retailers will fall with the imposition of GST.

- As the questions asked about effects on the market, DD/SS framework/diagrams, should be used. Firm level analysis/diagrams are used for questions which ask about effects on firms.
- GST is analysed as an indirect tax which reduces SS in a market. GST is not a direct tax, and it does not affect DD. This is a critical conceptual error which should not be made.
- As GST is an ad valorem tax, it should result in a non-parallel shift of the SS curve.
- A significant number of responses are confused about PED and YED concepts, resulting in critical errors in analyses
  - PED is used when there is a change in P (arising from a change in SS). It is the appropriate elasticity concept to use to explain the effects of GST on different types of goods since GST causes SS to decrease which in turn causes price to increase.
  - A worrying number of students used the YED concept to explain how GST affected different goods market. This is conceptually flawed. GST does not cause the income of consumers to change. Hence, YED cannot be applied to analyse the effects of GST,
  - Quite a number of candidates also incorrectly/confusingly used YED-related terms in PED analyses. For example, some responses wrote ".... as furniture is a luxury good, its PED value is less than one". Please refrain from writing such a statement. A luxury good is defined as a good with YED value of more than 1. The terms "luxury good", "normal good", "necessity" and "inferior good" refer to the YED, and not PED characteristics of these goods.
- It is worrying that many students cannot distinguish the technical terms "Demand" vs "Quantity Demanded" and "Supply" vs "Quantity Supplied". Demand refers to the "collection" of Quantity Demanded at every Price level. It basically refers to the Demand Curve. Quantity Demanded refers to one point on the Demand curve. When price changes, it results in a change in Quantity Demanded. We are basically moving from one point on the Demand curve to another point on the same Demand curve. When a nonprice determinant such as taste and preference changes, it will result in a change in Demand, the entire Demand curve shifts. It is critical to distinguish and master the use of these terminologies when doing DD/SS questions.
- Structure/Phrasing
  - Some responses were poorly organized in structure which hindered the flow of ideas. For example, some responses oscillated between addressing effectiveness and desirability issues. It is important that students spend some time planning their essays before writing to ensure a coherent essay.
  - There were also many responses with poor expressed points. For instance, "overseas goods are inelastic" and "PED is inelastic". The correct expression should be "demand for overseas goods is price inelastic" and "PED value is low".

**Q2.** The original electric vehicle (EV), the Nissan Leaf, has lost its market share despite growing demand for environmentally friendly products. Newer car manufacturers such as Tesla (USA) and BYD (China) have toppled Nissan's lead, and the global computer chip shortage has also created cost concerns given its use in the dashboards of the Nissan Leaf. Source: CNA.com, 17 July 2021

- a) Explain the effect of the above developments on the price and output of an incumbent EV firm such as Nissan. [10]
- b) Discuss the factors that Nissan is likely to consider in merging with another car manufacturer. [15]

# Suggested answer (a)

# Introduction

- Identify that Nissan has market power → imperfect competition has a downward sloping demand curve
   → Nissan cannot control both output and price → will need to reduce price to sell more according to the law of demand
- Nissan is operating in an oligopolistic market structure and likely to still maintain a large market share in the electric vehicle market (FYI, in the US market, it is still regularly the top 2 selling EV model).

# Impact on cost

- Cost increase global chip shortage due to Covid-19 → supply of chips fall → prices increase → variable cost of producing cars increases
- Define variable cost: cost that varies directly with output, costs such as computer chips need not be incurred when there is no production. When production levels increase, more computer chips are needed and thus cost increases.
- Marginal Cost increases: cost incurred when producing one additional unit of output → MC shifts from MC<sub>1</sub> to MC<sub>2</sub>

# Impact on revenue

- Demand fall (shifts left) as new firms such as Tesla and BYD enter the market → compete away market share from Nissan → AR and MR falls
- Furthermore, more substitutes (other car brands and their models) also mean that demand becomes more price elastic → shown by a gentler AR and MR curve → P fall, Q fall
- Despite consumers preferring to go green (taste and preferences) → choose EV over traditional cars
   → AR and MR should increase → P, Q should increase
- However, given that market share falls (thus quantity is likely to show a reduction), overall impact is a fall in AR and MR, but likely to a smaller extent.
- AR and MR fall from  $AR_1 = DD_1$  and  $MR_1$  to  $AR_2 = DD_2$  and  $MR_2$

# Combined impact

- Explain MC = MR point
- Firms produce at the output where MC = MR to maximise profits
- Below this quantity, the revenue gained from the additional unit sold is more than the cost incurred → increases profit, thus firm should produce an additional unit, increasing quantity.
- After this quantity, the opposite is true; the revenue gained from the additional unit sold is less than the cost incurred thus, this reduces the profits. The firm should not have produced this unit and thus should reduce quantity produced.
- Outcome: firms have no incentive to change their quantity when MC = MR.
- Overall impact on Q: falls, as fall in AR and increase in MC both reduces Q from Q1 to Q2
- Overall impact on P: depends on extent of change in MC vs AR



 Likely that the rise in cost is smaller than the fall in AR, as many industries are affected by supply chain disruptions due to Covid-19, plus the shift in taste and preferences for EV vehicles → overall decrease in price from P<sub>1</sub> to P<sub>2</sub> and fall in output.

#### Mark scheme

Level	Descriptor			
L3	• Well developed answer that explains the impact of both factors and the combined impact			
	Uses a diagram to explain the combined impact of both factors			
8-10m	Detailed explanation of price and output decision of a firm in imperfect competition			
L2	<ul> <li>Under-developed answer that explains:</li> <li>the impact of 1 of the factors only (either cost or revenue); or</li> </ul>			
5-7m	<ul> <li>the impact of both factors but lacks depth</li> </ul>			
	<ul> <li>Some details lacking in price and output determination</li> </ul>			
L1	Major errors in analysis			
	Answer lacks economic analysis / journalistic answer			
1-4m				

## Examiner's Comments

- This question was generally not well done, as a large proportion of responses chose to use marketlevel analysis rather than firm-level analysis, despite the question clearly asking for firm-level pricing and output decision.
- While most candidates were able to correctly identify the direction of change in cost and demand, details were generally missing, e.g.:
  - Explaining why computer chips is a variable cost to an EV firm: not just stating that it is a variable cost, but illustrating why
  - Explaining why demand falls and PED increases
  - Explaining the firm's output level at the point where MC = MR not just stating it, but explaining why other points are not profit-maximising
  - Explaining the extent of shifts to obtain the final outcomes on P and Q

- Weaker responses chose to include mutual interdependence without realizing that this must be based on the starting point of profit-maximising P and Q first.
- Bad habits that need to be changed:
  - Lack of planning for the question resulting in messy structure and/or repetition in the answer
  - Using unaccepted short forms
  - Not using pencil and ruler for diagrams
  - Not labelling diagrams fully, and explaining diagrams fully
  - Use of first-person phrases such as "I believe", "I will"
  - Use of phrases such as "firstly", "lastly" such phrases indicate some form of sequencing, which we do not have any evidence of

# Suggested answer (b)

## Introduction

In light of the cost and revenue concerns, Nissan can consider a horizontal merger to address them. Horizontal integration occurs when Nissan combines with or takes over a similar firm at the same stage of production, such as Toyota, another car manufacturer, to form a single entity. In doing so, Nissan has to consider the internal cost and external revenue factors in doing so.

# Cost factors to consider

- A merger can help Nissan reap internal economies of scale (iEOS): cost savings that occur as a result of the firm's expansion / increasing the scale of production, represented by the falling part of the LRAC curve → minimize average cost by producing at minimum efficient scale (MES), incurring an average cost of C<sub>m</sub> instead of C<sub>1</sub> at the lower output level of Q<sub>1</sub>.
- Any one of the following internal EOS, well explained, will suffice:
  - Technical EOS: Some inputs are of a minimum size and cannot be divided into smaller units i.e. they are indivisible. Purchasing such factors of production may not be feasible if a firm's output is small as it means operating below the factor's maximum capacity. For example, a larger car manufacturer might be able to invest in database technology that improves stock control (e.g. tyres, computer chips) and reduces transportation and distribution costs that can spread the equipment cost over a larger output.
  - Financial EOS: can enjoy lower interest rates and larger loans because of better credit ratings and greater collateral; can also raise capital cheaper through the issuance of bonds (debt securities issued by borrowers such as firms seeking to raise funds from the financial markets) to the public.
  - Managerial EOS: increase productivity by employing specialists to supervise production systems (e.g. car assembly line), better management and increased investment in training managers and the use of specialist equipment, such as networked computers can improve communication (e.g. across different departments within the assembly line or between their factories globally), raise productivity and thereby reduce unit costs.
- However, potential diseconomies of scale may arise due to the merger. The merger will result in a larger firm, hence may cause an increase in costs (particularly average costs), shown diagrammatically as the firm operating at a point beyond the MES, along the upward sloping portion of the LRAC curve
- Incur a higher average cost of C<sub>2</sub> at output level Q<sub>2</sub> instead of C<sub>m</sub>
- This is due to the higher average cost of monitoring and management in a larger firm: (any 1 of the following reasons for diseconomies of scale, well explained, will suffice)
  - Monitoring the productivity and the quality of output from thousands of employees in big, complex corporations is imperfect and expensive this links to the concept of the *principal-agent problem* i.e. the difficulties of shareholders monitoring the performance of managers. Management problems of co-ordination may increase as the firm becomes larger and more complex. Larger firms often suffer poor communication because they find it difficult to maintain an effective flow of information between departments, divisions or between the head office and its subsidiaries.

Transportation costs for staff who need to travel between the subsidiaries and the headquarters will also tend to be higher, thus increasing average costs.

- Time lags in the flow of information can also create problems in terms of the speed of response to changing market conditions. For example, Nissan may become less responsive to changing tastes and fashions compared to a smaller car manufacturer and thus, may incur more costs to make the change.
- Low moral of employees may also increase average costs: Workers in large firms may develop a sense of alienation and loss of morale. The relationship between management and employees is important for maintaining productivity and efficiency. A long chain of authority in large firms may lead workers to feel that they are 'only a small cog in a very large machine', and therefore do not consider themselves to be an integral part of the business. Their productivity may fall leading to wastage of factor inputs and higher costs
- A larger firm may also become X-inefficient, where Nissan becomes more complacent with their larger market share, and hence produce at a point above the LRAC, thus incurring higher costs (C<sub>X</sub> instead of C<sub>m</sub>) and lower profits.
- Nissan will also have to consider the monetary costs of the merger, assuming that Nissan is the company acquiring another car manufacturer especially given that it is currently losing market share, it may have less supernormal profits to tap on for the acquisition

#### Intermediate evaluation (costs)

- Since Nissan is already a large firm (FYI, in 2019 Nissan has 136,000 workers globally), it is likely already reaping significant iEOS, thus further expansion is likely to reduce average costs to a small extent. In contrast the extent to which higher average cost of monitoring and management in a larger firm and X-inefficiency increases is likely to be relatively large.
- The negative impacts on cost is likely to be more significant when there are different cultures across the different companies that are merging, such as when Nissan (a Japanese car manufacturer) has to merge with a European or Chinese car manufacturer such as Renault or BYD.
- Thus overall: cost is likely to have a negative impact, worsening the current situation it is facing (computer chip shortage)



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Revenue factors to consider

- Nissan needs to consider the extent to which a merger can increase its market share and revenue
  - Given that the merger will be horizontal integration, there is clearly a reduction in competition and hence, it will enjoy an increase in demand which increases its market share. It will also increase its market power which makes its demand less price elastic, hence increasing its ability to raise price over its marginal costs of production.
  - AR and MR increases from  $AR_1 = DD_1$  and  $MR_1$  to  $AR_2 = DD_2$  and  $MR_2$
  - Ceteris paribus, price and output increase from Q1 to Q2 and P1 to P2 respectively
  - This will lead to an increase in its total revenue and in turn its profits.
- E.g. Nissan can increase revenue by increasing market share in a niche or sub-market (such as in sports cars) in which it previously did not have a presence → by merging with a car manufacturer that produces sports cars, it gains market share and revenue in this market.
- E.g. Nissan can increase revenue by increasing market share in a different geographical region in which it previously did not have a presence → by merging with a car manufacturer that has a sizable presence in Europe or China, it gains market share and revenue in that region's market.
- However, the extent to which this occurs will depend on the reasons for Nissan's loss of market share, and the firm that Nissan intends to merge with → merger with no change in product quality and marketing may not make any change to its market share and revenue; other firm that it intends to merge with needs to have significant market share to enable it to increase revenue again after the merger



## Intermediate evaluation (revenue)

- Additional advantage of such a merger can also spread risk for Nissan: less susceptible to fall in demand from a particular market, can still maintain revenue from other sources.
- Impact on revenue likely to be significant, as Nissan is more likely to merge with a car manufacturer that has a different market, whether geographically or in terms of product type.

## Other factors / consideration

Other factors or considerations that are relevant are also accepted, including:

• Other benefits such as more resources to conduct advertising; stronger R&D capabilities to address their falling market share: Combining resources with another car manufacturer can give Nissan a boost in these areas:

- More resources poured into product innovation can help Nissan create better products with more features, such as autonomous driving etc., to increase demand further and reduce substitutability of their products → AR and MR increases, TR increases ceteris paribus.
- Process innovation can help Nissan find more efficient ways of producing their automobiles (EVs and other vehicles)  $\rightarrow$  reduce costs resulting in an increase in profits ceteris paribus.
- Government intervention: government may impose penalties or other policies if they view the merger as anti-competitive → lump sum taxes or fines will increase the costs for the firm, whether the firm successfully merges or not, thus reducing profits.
  - However, likelihood of this happening is unlikely, as Nissan is no longer a dominant firm in the industry, and there is lack of evidence of the firm abusing its market power

# Evaluation & Conclusion

Given the challenges faced by Nissan, a horizontal merger is more likely to address their revenue concerns and help Nissan regain the market share that was lost over time, as it is likely that revenue factors have a greater significance in the current situation. Yet, there are more cost considerations that Nissan should be concerned about, especially since Nissan is already a firm with significant size, hence already reaps significant internal economies of scale. Further expansion of the firm is likely to introduce diseconomies of scale instead.

Thus, Nissan can consider a horizontal merger, probably with a smaller firm with strong R&D capabilities to address the issues it is facing. However, this should be a long-term strategy – they can rely on their past supernormal profits to ride out the Covid-19 recession and assess how demand recovers before opting for a merger. In the shorter run, Nissan can consider other different strategies, branding and joint ventures as these have significantly lower risk and may help Nissan regain its reputation amongst consumers and hence market share.

In the medium to long term, Nissan can consider how other acquisitions, in particular backward integration, is more likely to help address their cost challenges, and reduce the uncertainty regarding computer chip supplies. Other than vertical and horizontal mergers, Nissan can consider a conglomerate merger in the much longer term, to spread risk and leverage on the growth in industries such as healthcare and medical technology, provided they are able to prevent the diseconomies of scale from setting in.

Level	Descriptor
L3	<ul> <li>Well-developed answer that explains both cost and revenue factors</li> </ul>
8-10m	<ul> <li>Detailed explanation of a horizontal merger (within the context of car manufacturers) and its objective</li> </ul>
L2	Attempt at a balanced answer
5-7m	<ul> <li>Some discussion of both cost and revenue considerations, but under-developed</li> </ul>
	Limited scope in cost and revenue considerations
L1	Major errors in analysis
1-4m	Answer lacks economic analysis / journalistic answer
Evaluation	
E1: 1	Judgement that is not explained / elaborated
E2: 2-3	<ul> <li>Judgement with some but limited justification and elaboration</li> </ul>
E3: 4-5	• Judgement that is well justified and elaborated from different perspectives / considerations

## Mark scheme

# Examiner's Comments

- This question was generally not well done, as a large proportion of responses failed to offer a wellbalanced answer that explains in detail both the cost and revenue considerations in a merger.
- While most candidates were able to correctly identify both cost and revenue factors, details were generally missing, e.g.:
  - Not explaining that the higher demand for the merged firm was due to a combining of consumer bases, instead of just stating or describing the diagram.
  - Not explaining the most pertinent EOS in the context e.g. marketing EOS in the purchase of computer chips, given the rise in the price of this factor of production
  - Not explaining how different EOS reduces average cost it is insufficient to state that there is
    preferential treatment from supplies for marketing EOS, there has to be an indication that prices
    are now lower
  - Not explaining the various reasons why diseconomies of scale occur.
  - Not explaining the links to MES: EOS are reaped fully up to the MES, while beyond MES, diseconomies of scale start to set in
  - Not explaining the links to LRAC: EOS and diseconomies of scale are a movement along the LRAC, which are reflected as a shift in the SRAC downwards and rightwards OR upwards and rightwards
- Weaker responses failed to do proper question analysis, and chose to include a multitude of irrelevant points:
  - Considering allocative efficiency, without realizing that AE is a governmental or societal consideration, not a firm's consideration.
  - Considering Nissan's ability to conduct a price war, limit or predatory pricing this is often a strategy of last resort and there are other more important factors to consider when merging
  - Suggesting strategies for Nissan
- Evaluation for this question was even weaker whether it is due to poor time management, or not fully understanding the context and question
  - Lack of judgment of the key consideration in the given context
  - o Lack of consideration of the extent of impacts, given that Nissan is already a large firm
  - Lack of discussion of short-term and long-term strategies
  - Many responses simply stated concepts such as alternative objectives, without explaining how that affects the decision to merge
- Bad habits that need to be changed:
  - Lack of planning for the question resulting in messy structure and/or repetition in the answer
  - Poor time management shown as incomplete or rushed responses
  - No proper introduction
  - Using unaccepted short forms
  - Not using pencil and ruler for diagrams
  - Not labelling diagrams fully, and explaining diagrams fully
  - Use of first-person phrases such as "I believe", "I will"
  - Use of phrases such as "firstly", "lastly" such phrases indicate some form of sequencing, which we do not have any evidence of

# Question 3:

(a) Explain why governments intervene in the market for health screening services. [10]

(b) Discuss the effectiveness of various government policies to address the market failure in the market for health screening services. [15]

# Part (a)

1) Introduction: Clarify concepts, introduce key aspects of the essay to the reader.

Clarify what is meant by market failure

- Failure of the free market to achieve efficient allocation of resources and other social goals like equity.
- Concept of market failure as resource allocated in an inefficient manner in the market for alcohol (society's welfare is not maximized)

Define allocative efficiency

 Achieved when society produces the combination of goods and services that maximises society's welfare.

*Identify that health screening is a merit good* – deemed socially desirable by the government, and if left to the free market, will be under-consumed because of the following reasons:

- a) The potential positive impact receiving health screening has on the consumers' personal well-being which is not maximized due to imperfect information;
- b) The significant positive externalities in consumption arising from receiving healthcare screening which consumers ignore in their pursuit of self-interest; and
- c) The excessive income inequality resulting in inability to afford health screening.

When left to the free market, health screening services will be under-consumed and under-provided from society's point of view. Too little resources are allocated to the production and consumption of the good, resulting in market failure. Thus, government intervention helps to bring about allocative efficiency and address underconsumption of health screening services.

## 2) Body: (2 well-explained reasons for market failure will suffice)

## (a) Imperfect Information argument

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However, due to imperfect information and complexity of medical information, individuals underestimate their personal benefits from consuming health screening services. For example, the elderly may be unaware and ignorant of the long-term benefits of health screening such as maintaining good health and minimising the risks of severe illnesses. Young healthy individuals may also feel that since they feel healthy and fit, there is no underlying health risk.

Hence, demand for health screening services under imperfect information  $(DD_1)$  is lower than the demand under perfect information  $(DD_0)$ .

According to figure 1, free market equilibrium (with imperfect information,  $DD_0$ ) occurs at output  $OQ_e$  at price  $OP_e$  where  $DD_0$  intersects SS. However, the socially optimal level of consumption is where  $DD_1$  intersects SS - output  $OQ_s$  (with perfect information  $DD_1$ ) at price  $OP_s$ . Hence, with imperfect information, too little resources will be diverted to the consumption and production of health screening services.

*<Identify and explain DWL>* A welfare loss represented by area ABC arises from imperfect information as the social benefits lost in <u>not</u> consuming  $Q_eQ_s$  units of health screening services exceeds the resources saved in <u>not</u> producing  $Q_eQ_s$  units of health screening services. Too little resources are allocated to the market, resulting in market failure.



## Figure 1: Market for health screening services (imperfect information)

# (b) Positive Externalities (in consumption) argument due to the pursuit of self-interest.

The benefits of health screening services are not confined only to the individual. Positive externalities are also generated in the consumption of health screening services. However, in the pursuit of self-interest, these externalities are ignored.

Health screening services brings about economic and social benefits to society over and above the private benefits that the individual receives from health screening services.

In the **pursuit of self-interest**, people only care about their private benefits from consuming health screening services such as the utility derived from being informed about their current health conditions (or cost savings from early detection to the individual) and they would ignore the positive externalities on third parties (e.g. employers, and society) on their consumption.

Such marginal external benefits include by going for health screening, consumers can seek for treatment earlier and remain healthy and productive at work. A more productive and healthier workforce help firms to achieve higher profits for firms and also drive economic competitiveness for a country, often making it a more attractive location for foreign investment which in turn contributes to job opportunities for the residents of the country and subsequently higher economic growth. Moreover, earlier detection of illnesses enhances survivability of severe cancer illnesses and helps to lower the need for acute impatient hospital treatment; thus, reducing the strain on intensive healthcare care resources in public hospitals (which are often subsidised using taxpayer's contributions).

The consequence is that there will be under-consumption **from society's point of view.** This will lead to a welfare loss to society.





The presence of such marginal external benefits (MEB) creates a divergence between the marginal private benefits (MPB) and the marginal social benefits (MSB) of consuming health screening services. This means that the marginal social benefit arising from the individuals' consumption of the good (MSB) is higher than the marginal private benefit (MPB) by the amount of the MEB.

The supply curve of health screening services is represented by the marginal private cost curve (MPC) and it shows the additional cost from each additional unit of health screening services produced. Assuming no production externality, MPC = MSC (marginal social cost) of production.

According to Figure 2, the free-market equilibrium point is at point A with output at  $0Q_e$  units of health screening services consumed at price  $0P_e$ , where **MPB=MPC**. However, at this output level  $OQ_e$ , MSB exceeds the MSC. The **socially desired output level is OQ\_s** units at price  $0P_s$ , where **MSB=MSC**. The free-market equilibrium has resulted in an <u>under consumption</u> of the good by  $Q_eQ_s$  units.

<*Identify and explain DWL>* The welfare or deadweight loss to society is represented by the area ABC. For every unit of the good under-consumed, MSB is greater than MSC. This means that the loss in benefits from not consuming QeQs units of health screening services exceeds the cost of the resources saved in not producing QeQs units of health screening services.

There is allocative inefficiency as too few resources have been allocated to health screening services bringing about market failure. As the positive externalities generated from the consumption of health screening services are deemed to be significant, there is a need for government intervention in the market for health screening services to address the allocative inefficiency and underconsumption.

NOTE: Excessive Income Inequality as a source of market failure is no longer accepted as a valid reason under the new syllabus.

(c) Excessive unequal income distribution: Inability to pay argument



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Kn	Knowledge, Application, Understanding, Analysis				
L1	Not addressing the requirements of the question	1-4			
	Brief points with little economic analysis				
	Significant conceptual errors				
	Mere stating/superficial explanation of reasons				
	<ul> <li>Lack of application – No examples given at all</li> </ul>				
L2	Some conceptual inconsistencies	5-7			
	Some reference made to diagrams drawn				
	<ul> <li>Evidence of economic analysis - but lacking scope and depth in explanation. This can include:</li> </ul>				
	<ul> <li>Lacking in depth in the explanation of the causes of market failure</li> <li>Some attempt to integrate examples to answer, but not consistently done</li> </ul>				
L3	Excellent and clear use of theoretical framework	8-10			
	<ul> <li>Good scope and depth in explanation that contextualises and made relevant to the market for health screening services</li> </ul>				

	Good use of examples to aid explanations	
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#### Examiners comments:

This part of the essay is better done than part b. The stronger scripts tie the analysis of sources of market failure to why the government needs to intervene to correct inefficient allocation of resources, and in doing so addresses the question explicitly. Students who do well for this question tend to be very meticulous and rigorous in their explanation with good examples of health screening in the analysis.

- 1. Incorrect or vague contextualisation to market
  - a. Weak scripts contextualise the healthcare market rather than health screening market
  - b. Some scripts provide a general contextualisation of MEB that does not show how the benefits arise from the consumption of health screening
  - c. Lack of clarity of the third parties when explaining MEB

[X] E.g. "MEB to society is that of achieving healthy workforce that is functional and efficient"

 $[\checkmark]$  Instead "MEB such as relieving the financial burden on family members and on society in general, whose taxpayer's money is heavily allocated to the funding of the healthcare industry, since with less consumption of health screening services come later detection of possibly treatable or previable disease and illnesses."

- 2. Missing elaboration and analysis
  - a. Many students did not explain what imperfect information is; instead these students state that there is imperfect information and thus there is divergence between the perceived MPB and actual MPB.
- 3. Conceptual errors:
  - a. Some students show confusion between positive externalities in consumption and imperfect information.
    - Some students mentioned that imperfect information arise due to consumers not having full knowledge of the full private benefits and the MEB. While it is not wrong, possessing full information of MEB does not result in allocative efficient outcomes since self-interested individuals (possessing full information of MEB), will disregard MEB. To show conceptual clarity, the focus of a question on imperfect information should be on MPB, and not MEB.
    - In terms of phrasing, some students write that imperfect information refers to consumers being unaware of MPB of health screening services. Use the phrase not being fully aware instead, as not being fully aware is not the same as unaware.
  - b. In the analysis for positive externalities, the MPC refers to production of health screening services; if students want to refer to the price paid by consumers for health screening, students should qualify that they are referring to "MPC for consumers".
- 4. Many scripts failed to clearly explain where free market equilibrium is as well as socially optimum level. Some of these answers took great effort to explain the divergence between MPB and MSB, but abruptly conclude that this divergence will result in a shortage without explaining that free market equilibrium is where MPB=MPC and socially optimum level is where MSB=MSC.

## Part (b):

## Introduction:

Given that market failure occurs in the market for health screening services, many countries around the world subsidise health screening services, including Singapore. The government has implemented several policies targeted towards improving the consumption of health screening services, especially at the basic © RI 2021 Y5/9757/Promos/2021 [Turn Over

level. The effectiveness of the policies will depend on the extent to which the policies address the underconsumption of health screening services that arise from the 3 reasons of market failure explained in (a). Possible policies: Indirect or Direct subsidies / Legislation (Mandatory Health screening) / Education campaigns / Government direct provision to supplement private sector – 2 well analysed policies can qualify for L3.

<The use of appropriate and specific examples will differentiate strong responses from the average response. Examples can be taken from Singapore or other countries>

#### Body

# Policies implemented by the Singapore Government to correct for market failure where health screening services is concerned.

#### 1. Subsidising health screening services to achieve allocative efficiency and equity

A subsidy is a negative tax. It is a payment made either to a firm or to a consumer when the firm produces or when the consumer buys a good or service.

#### i) Indirect Subsidies to Producers

The government can provide indirect subsidies in production such as grants to healthcare providers to provide health screening services.

<SG Application> Public health services such as in public hospitals and polyclinics are subsidised in Singapore and consumers can head to one of Singapore's public hospitals for a comprehensive health screening. Polyclinics also do offer health screenings but only for specific diseases (e.g. diabetes, hypertension and high cholesterol) and need to be ordered by the doctor. In Singapore, "Screen for life" is a national screening programme that encourages Singapore Citizens and Permanent Residents to go for regular health screening and follow up at subsidised rates.

<Application of Theory> This helps to lower the marginal private cost of providing health screening services to the public. This reduction in cost of production will translate to lower medical fees for the consumer as firms pass on the indirect subsidy to consumers in the form of lower prices. Figure 4 shows the effect of the provision of such a subsidy.

With an indirect subsidy of an amount equal to the MEB at  $OQ_s$  (vertical distance EB) to the producer, the MPC curve shifts downwards by the amount of the subsidy from MPC to MPC – indirect subsidy. Producers will be able to sell output 0Qs at a price of P1. The lower health screening fees encourage greater consumption (quantity demanded increase) of health screening services due to the income and substitution effect. Producers are incentivised to increase production of health screening as producers receive a higher post-subsidy price P2. Under-consumption of health screening services is corrected as the quantity of health screening services rises from 0Qe to 0Qs, where MPB=MPC – subsidy, the socially optimal output level, and the positive externality is said to have been 'internalised'. The deadweight loss to society (AES) is thus eliminated.

## Figure 4: Correcting under-consumption of health screening services via indirect subsidies



## OR ii) Direct Subsidies to Consumers

# Figure 5: Direct subsidies to consumers



Direct subsidies in consumption are subsidies given directly to the consumers.

<SG Application> In Singapore, Medisave is a national medical savings scheme that helps individuals set aside part of their income to pay for their personal or approved dependents' medical expenses, including health screening fees. The government provides a Medisave Top up between \$250 to \$900 that is adjustable yearly to all Pioneers and Merdeka Generation (MG) seniors.

<Application of Theory> In Figure 5, the initial equilibrium level of consumption without government intervention is at 0Qe where MPC = MPB. With government intervention of a direct subsidy (equal to the MEB at 0Qs of amount CD) given to consumers, consumers' purchasing power or disposable income has increased. Thus, this will increase the demand for health screening services and hence will shift the MPB curve to the right from MPB to MSB as elderly consumers are 'encouraged' to increase consumption, resulting in the socially optimal level, 0Qs where MPC = MPB + subsidy. While the market price has increased to P<sub>2</sub>, the out-of-pocket price paid with direct subsidy is actually P<sub>1</sub>. The under-allocation of resources would be corrected as the positive externality is said to have been 'internalised'. The deadweight loss to society (ABC) is thus eliminated.

Overall, since (direct or indirect) subsidies bring about a reduction in price ( $P_1$ ) of health screening services to the consumers, it makes health screening services more affordable and accessible to the lower income families in society, thereby achieving greater equity.

<Link to effectiveness> Subsidies force an internalizing of the positive externalities present and still allows the market to operate (though distorted by the subsidy). Subsidies thus seek to change the relative prices faced by economic agents in the hope that this will change their behaviour as it forces firms and consumers to take into account the full social costs and benefits of their actions. In figure 4, due to the subsidy given to the producers to entice increased production, the consumers benefit from a lower price and are also encouraged to consume more of the good.

# Ineffectiveness of subsidising health screening services

However, subsidies for health screening services have a similar criticism in the difficulty in assessing the amount of subsidies to be awarded due to imperfect knowledge. The valuation of the external benefit generated at the socially optimal output level is, in practice, a difficult task. For instance, to quantify in monetary terms, the benefit of a healthier and productive workforce is difficult. The emotional relief to family

members from prevention of critical illness would similarly be difficult to put a value to. An overestimation of MEB will lead to the over-consumption of the good (over subsidy). An under-estimation will lead to a less than optimal consumption though this level is at least more than the market equilibrium output level. *< If students discuss about Government failure it is acceptable too, but should be explained>* 

<In-body Evaluation: Undesirable/Unsustainable> High government expenditure is also required to finance the subsidy. This may require high direct tax rates like personal income tax rates and corporate tax rates that can subsequently discourage work effort, savings and investment in the country, as well as giving rise to the problem of brain drain in the country. Huge subsidies result in large opportunity costs as there will be less government reserves for other developmental projects such as the provision of public goods or even other merit goods like education. Huge subsidies could also result in long term budget deficits. These deficits may have to be financed by borrowing.

# 2. Law and Enforcement policy (Mandatory Health Screening for travellers and teens) to achieve allocative efficiency

Government regulation through **laws and administrative rules** provides the process of **controlling production or consumption activities**. Regulation compels consumers to comply and increase output and in turn, bring consumption levels to its targeted level.

<SG Application> For instance, during COVID-19, the Singapore government mandates travellers who are travelling from high-risk countries to undergo a Polymerase chain reaction (PCR) swabbed to test for the COVID-19.

<Application to Theory> Legislation therefore forces consumers to consume health screening services. Due to the high transmissibility of the COVID-19 delta virus, the MEB of health screening is likely to be very significant so as to minimise community transmission and slow down the pace of easing of safe management measures. This has the effect of increasing the demand for health screening services. As demand increases from DD<sub>0</sub> to DD<sub>1</sub> as seen in Figure 6 below, consumption increases from 0Qe to the social optimal level 0Qs. More resources are allocated to the production and consumption of health screening services. Allocative efficiency can thus be achieved, thus addressing market failure.

# Figure 6: Legislation in the market for health screening services



## Ineffectiveness of Law and Enforcement Policy

Actual enforcement of such regulations may be difficult and costly to force consumers to comply. Spot checks on schools and deployment of manpower at various immigration checkpoints to carry out health screening is costly and requires much government resources. If the government lacks the resources to monitor and enforce the regulations, the policy will be limited in its effectiveness to mandate compulsory testing and lead to still an under-consumption and under-allocation of resources.

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## 3. Public Education

By embarking on education and campaigns of various forms, the Singapore government hopes to correct the problem of imperfect information (which leads to underconsumption of health screening services).

<Application to Singapore> Through partnerships between National Cancer Centre Singapore (NCCS), Breast Cancer Foundation (BCF), Health Promotion Board (HPB) and many others, the Breast Cancer Awareness Month (BCAM) campaign was launched in 2020, that is themed 'It's Time for Breast Health'. The national BCAM 2020 campaign aimed to encourage women to play an active role in their breast health by regularly exercising, going for mammogram screenings and doing breast self-examinations at home.

<Application to Theory> Given that breast cancer remains the leading cancer among women in Singapore, education/campaigns increase the awareness of the benefits of health screening services on the maintenance of one's health, so as to change consumers' taste and preference towards breasts screening services. Hence, demand for health screening services can increase from D<sub>0</sub> (imperfect info) to D<sub>1</sub> (perfect info). In turn, equilibrium output and consumption can rise from Q<sub>e</sub> to the socially optimum level Q<sub>s</sub>, where DD<sub>1</sub> equals SS as seen in Figure 7 below.





# Ineffectiveness of Public Education:

- a) Campaigns advocating for health screening are long term measures which may not eventually increase the consumption of health screening services despite much resource poured into it by the Singapore government. Consumers' mindset and tastes and preferences do not change overnight. For older consumers, health screening services may not be a part of their lifestyle which makes it difficult to change and they may find it troublesome or a hassle doing so. Hence education and campaigns might be limited in effectiveness in encouraging consumption of health screening services in the short run.
- b) Campaigns advocating for health screening are likely to incur an opportunity cost on the government who may have better use of such funding on areas such as improving public infrastructure. Given the limited budget that the government has (tax rates in Singapore is currently one of the lowest in the world) and the government's philosophy towards spending (prudent and cautious), the scale of public education may be limited and hence jeopardising the extent of public outreach efforts to encourage consumption of health screening and may not fully address the market failure in the market for health screening services

# 4. Government as only supplier and provides it free of charge (accept if students write about Government as supplier who supplements private sector)

The government can correct to under-consumption of health screening services caused by excessive income inequality by directly providing health screening services and make them available to its users at a zero price (note that direct provision does not automatically mean it will be free). Given the huge external benefits, and importance that it is widely accessible, the government may believe that health screening services must not be left to the private sector provision alone.

<SG Application> In our schools, the Health Promotion Board (HPB) School Health and Dental Services conducts compulsory annual health screening, immunisation and dental services for primary and secondary school students for free. These services help to ensure the protection of teens' health and early detection of health issues, who are more vulnerable due to low immunity. Students from low-income households may not be willing and able to afford to pay for private health screening services; thus providing it for free tackles the issue of unwillingness or inability to pay for health screening.

<Application to Theory> According to Figure 8, when government sets price at zero, quantity demanded increases to Q<sub>foc</sub>, which happens to coincide with the socially optimal level at 0Qs. Deadweight loss of ABC is eliminated, and allocative efficiency is achieved.

# Figure 8: Free Provision by the Government to address excessive income inequality in the market for health screening services for consumers aged below 17.



## Ineffectiveness of direction provision / joint provision:

- a) In the real world, governments are unable to perfectly correct the under-consumption of merit goods. This is because in practice it is difficult to measure the size of external benefits (see above explanation) and extent of underconsumption arising from imperfect information. As a result, the government may over-provide for health screening beyond the socially optimal output level Qs.
- b) Direct government provision involves the use of government funds that rely on tax revenues. These funds have many alternative uses, each of which incurs an opportunity cost. Hence, it is not possible for the government to directly provide health screening services to all consumers for all age groups. Thus, the policy above can improve consumption of the consumer aged 17 and below but may not increase the consumption of health screening services for the rest of the population to bring about the socially optimal consumption level.

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# Evaluation and Conclusion

<*Points about desirability of policies can be credited for evaluation*> E.g. desirability of direction provision:

- The government can ensure that it has direct control over the supply of health screening services in Singapore. By controlling the supply of health screening services, the government can influence the infrastructural development and manpower deployment at primary and secondary schools. By allocating more resources to the provision of health screening services, direct government provision helps society achieve allocative efficiency.
- Direct provision also allows the government to influence affordability of health screening services in Singapore. Society may feel that the provision of such goods should not be left to the market which functions on the ability to pay. Due to their intrinsic desirability, health screening services, especially for young children and teens, should be made available to everyone, including lower income households. Thus, there is a need for the government to supplement the less-than-optimal quantities to ensure social equality. As supply is supplemented and rises, market price falls, making the good affordable to those who could not afford the good.
- **Time lags may occur.** It takes time for a government to recognize that market failure is occurring, to draw up an appropriate policy measure and to implement it. By the time policy measures are introduced, the problems may have become acute, requiring more radical measures, or economic circumstances may have changed, necessitating different measures.

Despite the limitations of each policy, acknowledge of Singapore's approach (i.e. use of 3 policies concurrently), including some judgment on the efficacy of Singapore's health screening policies in relation to how market failure is addressed. These could include any of the following ideas (not exhaustive):

- Imperfect information may be the root cause of market failure in the market for health screening in Singapore especially for adult consumers. Health screening may not be of a priority for many working adults' so long as one is 'feeling healthy'. They may hence not think that it is necessary to undergo regular health screening despite the fact that health screening costs have been made affordable via government subsidies. Targeted outreach programme to certain segments of the population can provide just-in-time and relevant information to the target so as to provide more customised information so that consumers' receptiveness can improve, and they can then be encouraged to go for more regular health screening.
- Subsidies may incur significant opportunity costs but in the case of Singapore, there are large reserves, and it is in a better position to offer high subsidies in the implementation of compulsory health screening amidst COVID-19 or for primary and secondary school students. In Singapore, given the lack of natural resource, labour is our most valuable factor of production and thus stresses the importance to ensure living and staying healthy.

Knowledge, Application, Understanding, Analysis				
L1	•	Explanation of the policies used by governments lack rigour in economic analysis or show flaws/weak rigour in economic analysis.	1-4	
L2	•	Attempt at balanced answer	5-7	
	•	Some minor lapses in economic analysis of both the effectiveness and limitations of the policies regarding various policies		
	•	Focus of the policies should be on how it addresses the under-consumption of health screening services		

L3	•	Balanced answer with <b>comprehensive analysis</b> of <b>both the effectiveness</b> <b>and ineffectiveness</b> of the government policies (at least 2 policies well- explained) with application specific to Singapore or other countries Clear use of theoretical framework Good scope and depth in explanation <b>Evaluation</b>	8-10
E1 E2	• • • • •	A one-liner conclusion that makes sense Unsupported judgment about the policies Alternative policies applicable to Singapore are stated rather than explained. Substantiated judgment about the policies through comparing the policies or qualifying these judgments. Explained suggestion of alternative policies or refinement to mentioned policies.	2-3
E3	•	<ul> <li>Insightful and perceptive evaluation         <ul> <li>Substantiated judgment about the policies through comparing the policies or qualifying these judgments</li> <li>For e.g. A judgment on whether the policies have been successful and whether changes are required in a specific context (e.g. Singapore)</li> </ul> </li> </ul>	4-5

# Examiners comments:

This part of the essay is not as well attempted as part (a). Stronger scripts provided concrete policy examples from Singapore or other countries to support their analysis. Weak scripts provided a very brief explanation of policies and/or brief anti-thesis. Answers require a mix of theoretical analysis as well as good examples. Many of the scripts ended up one or the other. Some were strong in their links towards how the policy tackles the market failure problem using a relevant diagram, but only had a brief mention of the possible policy application, i.e. a concrete example; others were lengthy on the examples used but had poor theoretical explanation as to how it worked.

- 1. Brief explanation of policies and unelaborated anti-thesis
  - a. Stating of the policy without elaborating about the policy using theory or economic framework
  - b. One liner AT
    - "Education and campaigns is only effective in the long run, as it takes time to change consumers' behaviour and mindsets about health screening."
  - c. Some gave AT points that are not addressing ineffectiveness but undesirable or inappropriateness
    - Over-use of opportunity costs as an argument for anti-thesis; many did not explain how it leads to ineffectiveness of policy to address the market failure. Some explanation were too generic and lacked contextual examples.

[X] E.g. "Money spent on such campaign thus results in a significant opportunity cost as it could have been invested elsewhere"

 $[\checkmark]$  Instead "However, such education campaigns may be ineffective as Singapore may be too busy and therefore do not pay attention to the lengthy explanations in such campaigns. Thus, they may not fully

comprehend the message of the educational campaign so their mindset about health screening may not change. Hence the policy may not be effective in increasing demand.

 $[\checkmark]$  "As the government has other priorities for spending and limited tax revenue, the government may not have enough funds to subsidise the full amount of MEB at Qs, thus the subsidy may be ineffective, and society will continue to be under consumed

- Strong scripts use policy specific anti-thesis points and draw links to ineffectiveness of policy
- d. Weaker scripts when explaining about direct or indirect subsidies did not specify the size of the subsidy (equivalent to the size of the MEB at socially optimal output level, Qs)
- 2. Some students attempted to use Singapore examples in their answers which is good. However, students should explain their examples rather than stating the policy.
- 3. Some students vaguely and incorrect use the 3Ms (MediSave, MediFund and MediShield Life) as an attempt to provide examples. However, each of these policies works differently and not all are examples of direct subsidies. *Strong scripts recognise that Top-Ups to consumers' Medisave account count towards an example of direct subsidy.*

# Thus, please get the Singapore examples correct:

- MediSave is a legislative intervention which mandates that individuals set aside a portion of their income for the purpose of financing health care costs, particularly hospitalisation costs. This has the effect of increasing demand for healthcare services which in turn will reduce the underconsumption problem. [This is not an example of direct or indirect subsidy]
- MediShield Life is a direct provision of health insurance by the CPF Board to all Singapore citizens and PRs. Note that individuals are required to pay for the health insurance, it is not provided free. In other words, direct provision is not synonymous with subsidy. Direct provision supplements what is provided in the private sector and has the effect of increasing market supply which reduces price.
- MediFund is a targeted subsidy (this is a direct subsidy) provided by the government to individuals who face difficulties with paying their bills. The amount of subsidies given to individuals depends on the individual and his/her family members' financial, health and social circumstances, as well as the size of the medical bill incurred. (Means-testing is a method to calculate the subsidies you'll receive based on your household income and other factors to ensure lower-income families receive more than higherincome households).
- MediFund Silver and MediFund Junior are carved out from MediFund to provide more targeted assistance for the needy elderly and the young respectively.
- Singapore government also provides health care subsidies (this is an indirect subsidy) for individuals using polyclinics, Class C and B wards of public hospitals, as well as Pioneer Generation individuals born before 1965.
- 4. Points of clarification
- a. Some scripts explained that imperfect information is the root cause of market failure without stating their assumptions; student should be aware that imperfect information is not the only root cause of market failure
- b. MSC does not shift when indirect policy is implemented; instead MPC curve shifts
- *c.* Government direct provision of health screening services and charges health screening FOC -> Increase in qty demanded (not demand) (movement down the demand curve)
- *d.* Use of quantity demanded is used very loosely especially when demand has changed; to avoid errors, students can use equilibrium qty or consumption has increased or decreased

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